ENVIRONMENTAL IMPACT STATEMENT

FOR

ANAEROBIC DIGESTION FACILITY

AT

ORMONDE ORGANICS Ltd,

KILLOWEN,

PORTLAW,

COUNTY WATERFORD

TABLE OF CONTENTS

APPENDICES

Drawings

Drawing No.	Drawing title	Scale
TPA_001	Record Place Map	1:10,560
TPA_002	Rural Place Map	1:2,500
01	Existing Site Plan	1:500
02	Proposed Site Layout	1:500 1:2000
05	Traffic Movement Plan	1:500
10	Existing Building 1 Plan	1:200
11	Existing Building 1 Elevations	1:200
12	Proposed Building 1 Elevations	1:200
13	Site Sections	1:200
15	Proposed Building 2 Layout	1:200 1:250
20	Proposed Building 3 Layout	1:200
25	Proposed Anaerobic Digester Tanks and Flare Layout	1:50 1:200 1:2000
50	Proposed Drainage Layout	1:500
51	Proposed Storm Sewer Sections	1:100 1:500
55	Drainage Details	1:500
60	Proposed GRP Beam and Infill Roof to Existing Steel Tanks Detail	1:500

NON-TECHNICAL SUMMARY

Introduction

Ormonde Organics Ltd. (Ormonde Organics) is Ireland's leading sludge management company. Its sewage sludge composting facility at Killowen, which is approximately 3kilometers (km) north of the town of Portlaw, County Waterford, has been in operation since 2007.

Ormonde Organics has seen an opportunity to introduce a new way of sludge treatment (anaerobic digestion) that will produce electricity and heat, which can either be used on site or sold to the National Grid. This will result in an increase in job numbers and help sustain the existing 20 full time jobs.

The proposed changes require planning permission and also a Waste Licence that will be issued by the Environmental Protection Agency (EPA) and this Environmental Impact Statement (EIS) has been prepared as part of the planning and waste licence applications.

Existing Site

The existing facility occupies the site and buildings of the former Michell Ireland tannery, which closed in 2003. The site covers 3.2 hectares (ha) and is accessed off the R680 Carrick on-Suir to Waterford road.

The site layout is shown on Drawing No 10P536-01. Composting is carried out in the main building, which has offices at the front. There is a workshop, weighbridge, paved open yards, parking areas and a disused waste water treatment plant. There are 20 workers including management, technical and office staff and general operatives.

Rainwater from the building roofs and yards is collected in drains and passed through an oil interceptor before it discharges to the River Suir, which is to the east of the site. Sanitary waste water is treated in an on-site septic tank.

The sludge treated at the site is produced at sewerage works operated by the local authorities. The sludges are mixed with woodchip and then loaded into specially constructed compost bays in the Compost Building. The bays have pipes in the floor through which air is pumped up into the mixture of sludge and woodchip. The objective is to maintain a high oxygen level in the mixture to encourage oxygen using (aerobic) bacteria to grow and feed on the organic matter.

The energy produced by the bacteria raises the temperature to more than 55°Centigrade, which is high enough to kill any harmful bacteria and viruses in the sludge (pasteurisation). Following this, the compost is allowed to stand for a period of time (maturation) and then screened to remove any large particles and ensure it suitable for applying to lands as a fertiliser.

The facility operates in accordance with planning permission granted by An Bord Pleanála and a Waste Permit granted by Waterford County Council. The planning permission allows the facility to take in and compost a total of 40,000 tonnes of sewage sludge, kitchen waste, green waste (grass and tree cuttings) and septic tank waste annually. The Permit specifies the way in which the facility should be operated to ensure it does not cause either environmental pollution, or nuisance to neighbours.

A planning application to expand the types of organic waste that can be accepted at the facility is currently being considered by Waterford County Council. The proposed acceptance of those additional wastes is considered cumulatively as part of this EIS.

Occasionally, complaints are received from nearby residents about odours from the site. These are linked to the wind direction. All of the complaints are investigated and if the site is the source, the appropriate actions are taken and the person who complained is informed of these.

Proposed Changes

Ormonde Organics has applied to the Department of Agriculture Fisheries and Food for approval to take in and compost food wastes that could contain materials defined as animal by-products (raw and cooked meats). The composting of such materials are regulated by a European Union (EU) Directive that requires controls to be provided to ensure that the materials are treated to such a level that the final compost does not present any risk to animal or human health.

These controls include providing separate processing areas for wastes containing animal by products and other wastes. To comply with the EU Directive, Ormonde Organics intends to construct separate entrances to the Compost Building and a new compost maturation and pasteurisation building.

The wastes that are currently composted can also be used to generate energy (heat and electricity). This can be done by using a different treatment process, called anaerobic digestion. Unlike composting, this process uses bacteria that do not need oxygen (anaerobic) to feed on the organic matter. The process breaks down waste into solid and liquid residues and gases. The gases include methane which can be used as a fuel to produce heat and electricity.

The wastes are fed into large fully enclosed tanks, which are continuously stirred and the temperature rises to 37^0C. The gases are drawn off and treated and fed to the gas engines which generate electricity and heat. The electricity will either be sold to the national grid, or used at the facility instead of the ESB supply and the heat may be used in the process. The residue from the process will include a fibre like solid and a liquid (digestate). The solid residue will be composted while the digestate, which contains nutrients, will be used on farmland as an alternative to chemical fertilisers.

The new anaerobic digestion plant will involve the construction of three new tanks, a new waste reception building, a building to house the gas engines and a gas flare that will only be used if too much gas is produced. The existing tanks in the wastewater treatment plant will

be converted and used to store the incoming wastes and the digestate. The existing septic tank and percolation area will be replaced by a new treatment system at a different location within the site.

Planning & Waste Management Policies

The proposed changes are consistent with the current Waterford County Development Plan and EU, national and regional waste management policies and plans. The proposed anaerobic digestion system, which will produce electricity and heat, complies with national and regional policy on biological treatment and development of renewable energy sources.

Existing Environment, Potential Environmental Effects and Mitigation Measures

Traffic

The proposed changes will not result in any change to the amount of waste that the facility is currently authorised to accept (40,000 tonnes/year). There will be a slight increase in the traffic 5 to 8 two way movements a week leaving the site, mainly tractors and vacuum tankers taking the digestate to farmers in the area, however the local road network can accommodate this and it will have a negligible impact on local traffic and nearby residents.

Soils & Geology

The top soil at the site is free draining while the subsoils are clayey tills that range from 12.5m to 34m thick. The underlying bedrock is limestone. The proposed changes will involve disturbance of the ground during the construction stage, but the impact will be limited, with no long term effect. The existing septic tank and percolation area is in the part of the site where the new digester tanks will be constructed. A new wastewater treatment plant and percolation area will be installed, and percolation area will be the only new emission point to ground.

The wastewater treatment and percolation area will be designed and installed in accordance with the guidance issued by the Environmental Protection Agency, which will ensure the percolation area functions properly.

Water

The proposed changes will not affect the quality of the run-off to the River Suir. The water quality in the Suir has been affected by other land uses upstream of the site, which has led to an increase in the nutrient levels in the river. There is no record of any flooding either within or outside the site boundaries

There will be an increase in the volume of rainwater run-off from the extension area. A storage tank will be built to collect and store the run-off and release it at a controlled rate to

the existing drains so that it does not cause flooding either within or outside the site boundaries. As there will be no direct discharge to groundwater, the impacts on groundwater will be imperceptible.

Climate

The climate in the area is mild and wet, with the prevailing wind from the west south west. The proposed changes will not have any impact on the local climate. The reduction in reliance on non renewable sources of electricity will have a positive impact in reducing the facility's overall carbon footprint.

Air Quality

The proposed changes will mean a slight increase in the level of traffic to and from the facility with a consequent minor increase in exhaust emissions and dust. The current dust control measures, which include damping down paved areas in dry weather, have proven to be effective and will continue to be used.

Odours from the sludge treatment process are controlled by an odour control system, installed in 2007, which collects air and treats it in a series of scrubbers and filters. This control system has proven to be effective. A new odour control system, similar to the one already in use, will be provided to collect and treat air from the new buildings where the wastes will be treated.

Noise

All waste processing is and will continue to be carried out either indoors or in fully enclosed units. The noise survey carried out to assess the noise from the proposed changes established that they will not cause an impact at the nearest residence, which is approximately 250m away. The proposed changes will have a neutral impact.

Ecology

The extension will result in a loss of a part of the broadleaf woodland to the east of the site. This woodland was planted in the early 1990s to screen the tannery and is not of significant ecological importance. The River Suir is a designated habitat (Special Area of Conservation). The proposed changes will not result in any change to the quality of the run-off from the site and the proposed development will have a minor impact on the river.

Landscape

The construction of the new buildings and tanks will change the appearance of the site and a number of the buildings will be visible from outside the site. The proposed external finish of the new buildings is in-keeping with the existing buildings and the changes will have a limited impact on the landscape.

Archaeology & Cultural Heritage

There are no known archaeological or heritage features at the site. The development works will involve ground disturbance, and these will be supervised to ensure that any unidentified archaeological feature that may be present will be properly investigated and assessed.

Human Beings

Land use in the surrounding area is a mix of residential and agricultural. The nearest house is approximately 250m from the existing site boundary and 400m from the proposed anaerobic digesters. There are no hospitals, hotels or holiday accommodation within 1 km of the site. Any impacts associated with the changes will be negligible.

Material Assets & Natural Resources

The site is already zoned for industrial development and it does not have a significant leisure or amenity value. The potential for damage to amenities and leisure land use from the proposed changes is negligible. The development will have a positive effect in that it will reduce reliance on energy from non renewable fossil fuels and the digestate will replace artificial fertilisers.

Interaction of the Foregoing

The proposed changes have the potential to impact on human beings, through emissions to air, mainly with odour. There is also potential for emissions to surface water to impact on the ecology in the River Suir. The location, design and proposed method of operation have taken account of the potential cumulative affects of the proposed development along with those from the existing operation and the proposal to accept additional types of waste to ensure that the facility will have an overall neutral to minor impact.

A1

LEGEND	
MH/CE	Manhole Cover
G	Road Gully
Hyd	Hydrant
WM	Water Meter
SV	Stuice Valve
SC	Stop Cock
Tel.	Telecom Cover
Tel.	Telecom Cover
RS	Road Sign
J.B.	Junction Box
TL	Traffic Light
LS	Lamp Standard
	Telegraph Pole
	Electricity Pole
	Hedge Outline
	Tree
AJ	Armstrong Junction
I/C	Inspection Cover
	Grass
	Site Boundary
	1.2m STOCK PROOF FENCE
	1.8m CHAIN LINK FENCE

Note:
ITM (Irish Transverse Mercator)
Co-ordinate System Used
North Sign Refers to Grid North
Level Tied to Ordnance Datum (Malin Head)
O.S. Sheet No. 5562-B 5497-D

LOCATION OF PRIVATE WELL

SITE NOTICE LOCATION

EXISTING SEPTIC & PERCOLATION AREA

EXISTING SITE PLAN
SCALE 1:500

Referenced drawings		Revision change notes			Issue register				
Dwg No.	Dwg Title	Rev.	Date	Description	Rev.	Date	Description	Dwn.	Chkd. Apprvd.
DW01	DESCRIPTION					04.11.11	PLANNING	BD	IB

NOTES:
1. DO NOT SCALE, USE FIGURED DIMENSIONS ONLY.
2. NO PART OF THIS DRAWING MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR STORED IN ANY RETRIEVAL SYSTEM OF ANY NATURE WITHOUT THE WRITTEN PERMISSION OF BOWE CONSULTING ENGINEERS AS COPYERITE HOLDER EXCEPT AS AGREED FOR USE ON THE PROJECT FOR WHICH THE DOCUMENT WAS ORIGINALLY ISSUED.

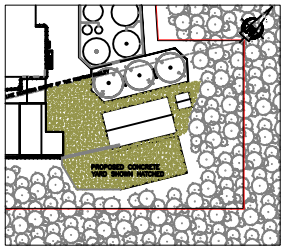
Drawing Title: EXISTING SITE PLAN
Date: 01.10.11
Scale: 1:500
Drawn By: BD
Checked By: IB

Client: ORMONDE ORGANICS
Job Description: PROPOSED ANAEROBIC DIGESTION PLANT AT PORTLAW, CO.WATERFORD
Project No: 10P536
Drawing No: 01
Rev:

BOWE consulting Engineers civil and structural

Bowe Consulting Engineers
(059) 9137422
E-mail: info@bce.ie
4 Castle Street Carlow
(059) 9137411
www.bce.ie

A1



PROPOSED CONCRETE YARD
SCALE 1:2000

Note:
ITM (Irish Transverse Mercator)
Co-ordinate System Used
North Sign Refers to Grid North
Level Ties to Ordnance Datum (Malin Head)
O.S. Sheet No. 5562-B 5467-D

SITE AREA
PROPOSED TOTAL SITE AREA = 58,916m2 (5.7hectare or 14acre)
EXISTING SITE AREA = 3.3hectare

LEGEND
PROPOSED EMISSION POINT LIST
E1 GAS FLARE
E2 CHP PIPE
E3 EXISTING BIOFILTER TO BE RETAINED
E4 PROPOSED BIOFILTER
E5 EXISTING BIOFILTER TO BE RETAINED
EXISTING SITE FACILITIES /BUILDINGS
ALTERED SITE FACILITIES/BUILDINGS
PROPOSED BUILDINGS/ SITE FACILITIES
SITE BOUNDARY
EXISTING GRASS
EXISTING TREES AND HEDGEROW
1.2m STOCK PROOF FENCE
1.8m CHAIN LINK FENCE

SITE NOTICE LOCATION

PROPOSED BUILDING 4
EXISTING BUILDING 1
PROPOSED BUILDING 5
PROPOSED BUILDING 2
PROPOSED BUILDING 3A
PROPOSED BUILDING 3B
NOTE ALL EXISTING TANKS TO BE ROOFED
EXISTING CONCRETE BUND TO BE EXTENDED TO ENCLOSE THE PROPOSED AD TANKS
AD TANK 1
AD TANK 2
AD TANK 3
FLARE
ENCLOSED CONVEYOR
6m OPENNING FORMED IN EXISTING BUND WALL. Ex. PIPES TO BE ADJUSTED
LINE DENOTING EXTENT OF THE EXISTING FACILITY
VENTILATION PIPE TO BE PLACED UNDERGROUND WHERE IT CROSSES THE PROPOSED YARD
NOTE: AGRI. SPEC. SILAGE STORAGE PIT WITH 5m HIGH SURROUNDING CONCRETE WALL
RELOCATE TREATMENT PLANT AND PERCOLATION AREA
TRIAL HOLE
TOP OF BANK
WEIGH BRIDGE
GATE
9.917m
11.523m
9.907m
11.980m
10.326m
9.660m

PROPOSED SITE LAYOUT
SCALE 1:500

Referenced drawings		Revision change notes			Issue register					
Dwg No.	Dwg Title	Rev.	Date	Description	Rev.	Date	Description	Drn.	Chkd.	Appvd.
						04.11.11	PLANNING	BD	IB	

NOTES:
1. DO NOT SCALE, USE FIGURED DIMENSIONS ONLY.
2. NO PART OF THIS DRAWING MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM OR STORED IN ANY RETRIEVAL SYSTEM OF ANY NATURE WITHOUT THE WRITTEN PERMISSION OF BOWE CONSULTING ENGINEERS AS COPYRIGHT HOLDER EXCEPT AS AGREED FOR USE ON THE PROJECT FOR WHICH THE DOCUMENT WAS ORIGINALLY ISSUED.

Drawing Title: PROPOSED SITE LAYOUT
Date: 01.10.11
Scale: 1:500 1:2000
Drawn By: BD
Checked By: IB

Client: ORMONDE ORGANICS
Job Description: PROPOSED ANAEROBIC DIGESTION PLANT AT PORTLAW, CO.WATERFORD
Project No: 10P536
Drawing No: 02
Rev:

BOWE consulting Engineers Civil and Structural

Bowe Consulting Engineers
(056) 9137422
E-mail info@bce.ie
(056) 9137411
Unit 4, Slieve Bawn Business Park, Abby Road, Carlow
www.bce.ie

PREAMBLE

This Environmental Impact Statement (EIS) has been prepared part of a planning application at the Ormonde Organics Ltd composting plant at Killowen, Portlaw, County Waterford to expand the range of waste treatment activities carried out at the facility.

The current planning permission authorises the composting of 40,000 tonnes/year of sewage sludge from urban wastewater treatment plants, septic tank sludges, biodegradable household wastes and green waste. Ormonde Organics is awaiting a decision on a planning application to expand the waste types that can be accepted including a range of non hazardous organic wastes, which are considered cumulatively as part of this EIS.

Ormonde Organics has a Waste Permit granted by Waterford County Council that authorises the composting of 8,000 tonnes/year of organic waste and also regulates the environmental emissions from the composting process.

Ormonde Organics proposes to construct an anaerobic digestion plant, with associated combined heat and power plant and to augment the existing composting capability. While the proposed changes will not result in any changes to the volumes of waste that are already authorised under the current planning permission, they will require planning permission. As it is proposed to treat more than 10,000 tonnes of organic waste, which is the maximum that can be authorised by a Waste Permit, a Waste Licence must be obtained from the Environmental Protection Agency.

A pre-consultation process was undertaken with the planning authority as part of the scoping of the environmental assessment. The National Parks and Wildlife Service and Inland Fisheries Ireland were notified of the proposed development. Ormonde Organics informed the occupiers of private residences in the area surrounding the subject site of the proposed changes.

The design of the new waste activities and proposed method of operation are based on Best Available Technique (BAT). This EIS examines the proposed activities and assesses potential impacts and significant effects on the environment. It includes an assessment of the cumulative effects of the proposed development, the existing operation and the additional wastes, whose acceptance is the subject of an earlier planning application.

The information contained in the EIS complies with Paragraph 2 of the Second Schedule of the European Communities Environmental Impact Assessment Regulations 1989, as amended by the European Communities (Environmental Impact Assessment) (Amendment) Regulations 2001.

The EIS follows the grouped format structure recommended in the Guidelines on the Information to be Contained in Environmental Impact Statements (March 2002), published by the Environmental Protection Agency (Agency), and the Agency's Advice Notes to these Guidelines. This structure assesses each relevant topic in a separate section, which describes the existing environment, the impacts associated with the proposed development and, where considered necessary, the proposed mitigation measures.

The contributors to the EIS are:

Bowe Consulting Engineers – Site Design &Layout, Surface Water and Foul Drainage and Control Measures

Address: Unit 4,
Strawhall Business Park,
Athy Road,
Carlow

BHP–Noise Assessment and Particulates Survey

Address: New Road,
Thomondgate,
Limerick,

O'Callaghan Moran & Associates – Soils & Geology and Water Assessment

Address Granary House
Rutland Street
Cork

Odour Monitoring Ireland – Air Quality Impact Assessment

Address: Unit 32,
DeGranville Court,
Dublin Rd,
Trim,
County Meath.

Dixon Brosnan. – Ecological Assessment/Appropriate Assessment – Natura Impact Statement

Address: DixonBrosnan
The Cedars,
Bridewood,
Ovens,
County Cork

No significant difficulties were encountered during the preparation of this EIS. As the proposed changes will not give rise to any significant increase in traffic volumes from that currently approved, a detailed Traffic Impact Assessment was not completed. Given the relatively small size of the extension area and the fact that a field survey was completed as part of an EIS for an earlier development, a specialist archaeological survey was not completed.

The ecological survey was carried out late in the season (October 2010), however the habitats potentially affected within the redevelopment area are of low value and the risk that species or habitats of significant value are present on the site is negligible. The River Suir is a Natura 2000 site and an assessment of the impact on this site is also provided in the Natura Impact Statement (Stage 1 Screening Report), which is a separate document and not included in the EIS.

1 INTRODUCTION

1.1 The Applicant

Ormonde Organics Ltd, the applicant, operates a sewage sludge and biodegradable organic waste composting facility at Killowen, Portlaw, County Waterford. Ormonde Organics is one of the largest sludge and organic waste management companies in Ireland and, in addition to the Portlaw facility, operates a Materials Recovery Facility in Youghal County Cork, a Hazardous Waste Facility in Dublin, a Sludge Treatment Facility in Cavan and a Transport Depot in Kilkenny.

1.2 Facility Overview

The facility is located on the site of a former tannery (Michell Ireland), which opened in 1993 and closed in December 2003. The compost facility, which opened in 2007, was developed to treat sewage sludge produced in local authority waste water treatment plants. As such it was exempt, under Section 51 of the Waste Management Acts 1996 to 2010 (Acts), from the requirement to hold either a Waste Licence or Waste Permit.

The current planning permission (Ref No PD.04/1813) allows the acceptance of organic wastes other than wastewater sludges. A copy of the planning permission is included in Appendix 1. These wastes, which are not exempt from the waste regulatory process and can only be accepted following the grant of a Waste Permit, include household biodegradable kitchen and canteen waste; garden and park waste, and septic tank sludges.

In September 2010, Waterford County Council granted Ormonde Organics a Waste Permit (Ref No WFP-WD-10-0003-01), to accept and treat a maximum of 8,000 tonnes/year of household biodegradable waste, garden and park waste and septic tank sludges. The 8,000 tonnes is included in the overall annual tonnage of 40,000 tonnes authorised by the planning permission.

In response to a change in the approach adopted by a number of local authorities to the treatment of sewage sludge, which resulted in a reduction in the volumes accepted at the facility, Ormonde Organics carried out a review of the organic waste market. The review identified an opportunity to expand the types of organic wastes that could be accepted at the facility.

The new waste types include sludges from industrial wastewater treatment plants operated by the food and drink manufacturing sectors in the South East (Carlow, Kilkenny, Wexford, South Tipperary and Waterford), and the other counties in Munster. In 2009, approximately 40,000 tonnes of industrial wastewater treatment sludges were produced, the vast majority of which was applied to land. In addition drink companies produced a significant quantity of organic process waste residues, which traditionally have also been applied to lands. In 2009, approximately 45,000 tonnes of such wastes were produced.

In April 2011, Ormonde Organics Ltd applied to Waterford County Council for a revised Waste Permit to allow the acceptance and treatment of the additional waste types. In June 2011, the Council issued the revised Permit (Ref No WFP-WD-10-0003-02), which authorises the acceptance and composting of non-hazardous industrial wastewater treatment sludges and other organic waste residues, however the Council stipulated that planning permission must be obtained for these wastes before they could be accepted at the facility. A copy of the Waste Permit is in Appendix 2.

In September 2011, Ormonde Organics applied for planning permission to expand the range of organic wastes that can be accepted at the facility and a decision is awaited from Waterford County Council on that application. In the interests of completeness, the potential impact of these additional EWC Code organic waste types is assessed cumulatively in this EIS.

1.3 Proposed Development

The biological treatment of food wastes requires approval from the Department of Agriculture Fisheries and Food under the Animal By Product Regulation and Ormonde Organics has applied to the Department for approval. The approval, which is expected to be granted in 2012, will stipulate measures to ensure the strict separation of waste containing animal by-products from the other wastes treated at the facility and requires the provision of separate maturation and pasteurisation capacity.

While the compost process can produce a high quality end product, it cannot take advantage of the energy generating potential of organic wastes. The anaerobic digestion of organic wastes, which results in the generation of a biogas that can be used a fuel in a combined heat and power plant, does allow the energy potential of the waste to be utilised.

The electricity generated from the gas produced by the anaerobic digestion process can either be used on-site, or sold to the national grid. The heat can also either be used on site or sold to nearby commercial/industrial users. This would be of significant economic benefit to Ormonde Organics Ltd and help the future sustainability of the business. The digestate and solid residue (fibre) from the digestion process can either be incorporated into the compost process, or applied directly to land.

Ormonde Organics proposes to construct an anaerobic digestion plant to treat 20,000 tonnes per annum of organic waste, with associated combined heat and power plant and to augment the existing facilities composting capability to comply with the Animal By Product Regulations. The combination of the composting and anaerobic digestion will give Ormonde Organics the flexibility to meet future changes in the market demand for energy recovery and the production of a high quality compost.

While the proposed changes will not result in any changes to the volumes of waste authorised under the current planning permission, they do require planning permission. As it is proposed to treat more than 10,000 tonnes of organic waste annually, a Waste Licence issued by the Environmental Protection Agency will also be required

2 WASTE MANAGEMENT & PLANNING POLICY

2.1 Introduction

This Chapter describes the waste management policy statements and plans and other relevant environmental and energy policies that affect the facility, and describes how it is consistent with European Union (EU), national and regional waste management and renewable energy legislation, policies, strategies and plans.

2.2 National Waste Management Policy

National waste management policy is grounded on the Department of the Environment and Local Government's policy statement of September 1998, *"Changing Our Ways".* This statement firmly bases national policy on the EU Waste Management Hierarchy. In descending order of preference this is: -

- Prevention;
- Minimisation;
- Reuse;
- Recycling;
- Energy Recovery;
- Disposal.

The policy statement was based on, and supported by, EU legislation that requires the reduction in the volume of biodegradable waste disposed to landfill.

"Changing our Ways" recognised that the achievement of these targets requires the development of alternative waste recovery facilities and significant expansion of the existing recycling infrastructure. It emphasised the utilisation of the potential of the private sector to deliver services.

The 2002 government policy statement *'Preventing and Recycling Waste - Delivering Change'* identified initiatives to achieve progress at the top of the Waste Hierarchy in terms of preventing waste arising and increasing recycling rates.

In 'Waste *Management – Taking Stock and Moving Forward' 2004*, the significant improvement in recycling and recovery rates achieved since 1998 were recognised, but the need for further expansion is emphasised. The statement confirms that Ireland's national policy approach remains *'grounded in the concept of integrated waste management, based on the internationally recognised waste hierarchy, designed to achieve, by 2013, the ambitious targets set out in Changing Our Ways'.*

In 2006, the National Biodegradable Waste Strategy was published. Its primary focus was to meet the limits set for the quantity of biodegradable municipal waste which is permitted to be sent to landfill under the Landfill Directive (1999/31/EC). A key element is the collection of source separated organic household and commercial waste or "brown bin" material, its treatment, and the opportunities to use this material as a resource in the development of the biological treatment industry.

In 2008, the Department of the Environment, Heritage and Local Government (Department) initiated a review of waste policy. The scope was to identify possible changes to policy at national level that would assist Ireland to move towards a sustainable resource and waste policy, including minimising the creation of waste and self-sufficiency in the reuse and recycling of materials. The review also sought to address how better to implement waste recovery in the context of the application of alternative technologies for waste management, which includes anaerobic digestion.

The EU Waste Framework Directive 2008/98/EC was introduced to coordinate waste management in the Member States in order to limit the generation of waste and to optimise the organisation of waste treatment and disposal. The Directive also established the first EU wide recycling targets. The Directive was transposed into Irish Law by the European Communities (Waste Directive) Regulations 2011 (S. I. No.126 of 2011).

In response, the Department initiated a further review of national waste policy, one of the objectives of which is to provide the necessary measures to ensure that waste undergoes recovery operations in accordance with Articles 4 and 13 of the Directive. The consultation document issued by the Department states that classification of a treatment process as a recovery activity will depend on the level of success in recovering material or producing heat and/or power and examples include anaerobic digestion plants.

South East Region Waste Management Policy

Section 7.4 of the Joint Waste Management Plan for the South East Region sets out proposals for energy recovery from waste, specifically including support for promotion of anaerobic digestion of agricultural waste streams with the recovery of biogas. In accordance with the RWP, the Region will promote the recovery of energy through appropriate processes of agricultural biological wastes and industrial sludges.

Waterford County Development Plan 2011-2017

The South East Regional Planning Guidelines 2010 recognise that the types of industries that now offer long-term prospects for generating revenues are in the new technologies including the green economy and renewable energy. Section 6.9 of the Development Plan recognises that the Green Economy will yield significant results for businesses, particularly in rural areas. A range of opportunities exist in renewable energies for farmers, energy producers and businesses. It is a policy objective (Policy ECD 15) to facilitate appropriate renewable energy infrastructure and promote the use of renewable energy among businesses and households throughout Waterford County.

Section 8.8 of the Development Plan defines renewable energy as any naturally occurring, theoretically inexhaustible source of energy such as sunlight, wind, rain, tides, waves, wood fuels, bio fuels, anaerobic digestion, landfill gas and geothermal heat which is not derived from fossil or nuclear fuel. It is policy (Policy ENV 10) to facilitate and encourage sustainable development proposals for alternative energy sources and energy efficient technologies. It is an objective of the Plan (Objective ENV 5 (d)) to support and encourage the appropriate development of the bio-energy sector and facilitate its development for energy production, heat storage and distribution.

2.3 Energy Policy

EU Directive 2001/77/EC, sets Ireland a national target of sourcing 16% of all energy consumption from renewables by 2020. In 2009, renewable energy sources met approximately 4.9% of Ireland's total energy requirements. Potential energy sources, such as organic sludges and locally produced biomass, can be used to generate electricity and heat to assist in meeting the national renewable energy targets. In May 2010, the Government launched the Renewable Energy Feed In Tariff (REFIT) Scheme to encourage the growth of renewable energies, particularly Anaerobic Digestion, as part of a programme to meet the Directive's objectives. The scheme sets the tariffs that will be paid to AD fuelled Combined Heat & Power (CHP) plants over a 15 year period and in November 2010 these were submitted to the European Commission for approval under the state aid programme.

2.4 Climate Change

Under the Kyoto Protocol, Ireland is required to maintain its Greenhouse Gas (GHG) emissions to 13% above its 1990 levels in the period 2008- 2012. The National Climate Change Strategy charts the way to achieve the targets. The strategy promotes the development of low carbon technologies, such as bio-heat and Combined Heat and Power, by industry as one of the key mechanisms of meeting the Kyoto targets. In 2009, the EU Commission agreed a package of proposals that will deliver on the EU's commitments to fight climate change and promote renewable energy up to 2020 and beyond. The package seeks to deliver a 20% reduction in total EU greenhouse gas emissions by 2020 (relative to 1990 levels) and at the same time to increase to 20% the amount of renewable energies in energy consumption.

2.5 Need for the Development

There is a recognised and pressing need, at both national and regional level, to expand the range of recovery options for non hazardous organic wastes in Ireland both in terms of reducing the volumes of food waste disposed of to landfill and the production of energy generation from renewable sources, which include organic wastes and biomass. The proposed development is consistent with the measures specified in national and regional waste management and energy policy statements to meet these needs.

3 ALTERNATIVES

This Chapter addresses the alternative considered, including plant locations and plant configurations.

3.1 Alternative Site

The original planning application for permission to develop the existing facility involved the preparation of an EIS that described site selection criteria applied to identify a suitable site for biological waste treatment. The Killowen site was deemed the most suitable for development because of the proximity to a developed transportation network, suitable zoning, distance from potential sensitive receptors and the ability of the existing buildings to accommodate the compost process.

The features of the site that render it particularly suitable for the proposed anaerobic digestion (AD) plant are:

(a) Proximity to target wastes:

The target wastes include sludges from industrial wastewater treatment plants operated by the agri-industry sector and process waste residues from the drinks industry, the majority of which operate under Integrated Pollution Prevention and Control (IPPC) Licences. Based on Annual Environmental Reports for 2009, approximately 40,000 tonnes of industrial wastewater treatment sludges and 30,000 tonnes of process residues from the drinks industry were produced in South East Region, with a further 95,000 tonnes produced in the other counties in Munster (Ref Table 3.1).

Table 3 1- Suitable Feedstocks

Industry	Region	Quantity (tonnes per annum)
Food	South East	~40,000
Food	Munster	~80,000
Drink	South East	~30,000
Drink	Munster	~15,000
Total		165,000

Source: AER 2009 of IPPC Licence holders in the South Eastern Region and Munster

While Ormonde Organics will focus on securing waste treatment contracts in the South East Region, the facility operates on a commercial basis and economics may dictate the acceptance of wastes from outside the region.

(b) Access:

Recent road developments, including the Waterford City Bypass, the Suir Bridge and the M9 linking Waterford with Dublin, have improved the accessibility of Killowen from all parts of the South East Region and surrounding areas.

(c) Existing Use:

The proposed changes are consistent with the current activities carried out at the site, which involves the composting of organic wastes. Ormonde Organics have a proven track record in the successful treatment of organic wastes at the site, which has been in operation for more than 3 years. Facility management are fully aware of the handling and storage measures required to minimise adverse environmental impacts arising from the treatment of organic wastes.

(d) Surrounding Land Use

The nearest domestic resident is located more than 250 metres from the northwest existing site boundary. The proposed anaerobic digestion plant will be to the east of the existing site and approximately 400m from the residence.

(e) Existing Infrastructure, Plant and Equipment

The existing site occupies 3.2 hectares and the existing offices, staff facilities and parking area have the capacity to accommodate the additional staff required to operate the anaerobic digestion plant. The above ground tanks, which were formerly part of the tannery wastewater treatment plant, are suitable for the storage of incoming wastes and the digestate from the anaerobic digestion process.

Some of the plant and equipment used in the composting process, are suitable for use in an AD plant. These include front end loaders, tankers and hook loaders

(e) Connection to National Electricity and Gas Grids

There is a 10kv supply to the site, which is fed from a 38kV station located in Portlaw. An initial assessment of the connection by Irish Grid Solutions indicates that it may either be possible to connect to the grid using the existing network, or alternatively establish a direct connection to the 38kv line in Portlaw.

A trunk main gas pipeline (running between Clonmel and Waterford City) is located to the east of the Portlaw at Mayfield/Knockane. There is a Bord Gais substation in the south of the existing site, which was used to supply gas to the tannery, but is no longer in use. This gives rise to the potential future connection to the main gas line substation to supply biomethane to the national gas grid

f) Proximity to Land Application Spread lands

Ormonde Organics already has contracts with local farmers to supply compost from the existing process. This is currently applied to land in accordance with approved Nutrient Management Plans. The townlands containing the landbanks include:

- Ballydurn, Portlaw, County Waterford;
- Coolnamuck, Carrick-on-Suir, County Tipperary;
- Joanstown Carrick-on-Suir, County Tipperary;
- Woodlands, Glenbower, Carrick-on-Suir, County Tipperary;
- Brittas, Glenbower, Grangemockler, County Tipperary;

Due to the nutrient properties and low environmental risks, the farmers who own the spread lands have expressed a strong interest in taking the solid residue and liquid digestate generated by the anaerobic digestion process.

Conclusion

The site is eminently suitable for the development of an anaerobic digestion facility. The only alternative to the use of the existing site is to develop a new anaerobic digestion facility at a separate location. Given the acquisition and development costs, this is not economically feasible.

3.2 Alternative Configurations

The configuration of the proposed AD plant took into consideration, proximity to neighbours, visual impacts, surface water control and ease of access. The area to the east of the existing buildings was considered to be the most suitable for the following reasons:

- It is well screened and this part of the site is not visible from the R680.
- It is furthest away from the nearest private residence (400m).
- It is close to the existing former wastewater treatment tanks, which will be used to store incoming sludges and the digestate.
- It allows easy access for deliveries of incoming sludges and removal of digestate.
- The construction works will neither interfere with nor disrupt the compost operations.

The existing tanks in the WWTP, while suitable for storage, are not designed to act as anaerobic digesters. An assessment of the potential to convert a number of the tanks for use as digesters, which was completed by the AD plant supplier, concluded that it was not practical to do so and that new specially designed and constructed tanks were required.

3.3 Alternative Technologies

Anaerobic digestion is one of the oldest biochemical technologies, however up until the 1970's, it was largely practiced on an industrial scale at wastewater treatment plants. Since then, it has grown in popularity and has been applied in the treatment of an increasing range of organic waste streams such as animal wastes, source separated organic food wastes and municipal solid wastes.

The proposed system is designed to cater for organic sludges produced in urban and industrial wastewater treatment plants. It will comprise a solids feeder and enclosed digestion that will be heated to 47^{O}C and continuously agitated. The process will produce a biogas containing approximately 65 % methane, which will then be treated and used as a fuel in an on-site combined heat and power plant. As the proposed system is tried and tested, and is particularly suited to the treatment of the organic wastes accepted at the facility, an alternative energy recovery technology was not considered

3.4 Do Nothing Alternative

If the AD plant is not installed, Ormonde Organics will continue to rely upon an external electricity supply (i.e. national grid) and will not be able avail of the renewable energy potential of the organic wastes it accepts. The facility's carbon footprint will remain unchanged, with no contribution to the reduction in national greenhouse gas emissions.

4 SITE DESCRIPTION

4.1 Introduction

This Chapter presents an overview of the existing facility location, layout, operation and emissions. More information on the ambient environmental conditions are presented in the following Chapters that address specific impacts associated with the proposed development.

4.2 Location

The facility is located at Killowen, Portlaw, County Waterford, at National Grid 11786N 24650E. It is approximately 3km north of Portlaw, 3km to the south of Fiddown, and 9km southeast of Carrick-on-Suir. The River Suir runs to the east of the site, approximately 350 metres from its eastern boundary.

The regional route R680 runs along the western boundary of the site and links Portlaw village to the south with Carrick-on-Suir to the north-west. Approximately 2km from the site is the R680 junction with the N24 linking Waterford to Clonmel and Limerick.

4.3 Surrounding Landuse

Lands surrounding the site are used for agricultural purposes and the immediate east and south of the site are planted with dense deciduous trees. The nearest dwellings in the vicinity of the site are located along the R680 and there are no dwellings within 250 metres of the site. The stretch of the River Suir to the east of the site is designated as a Special Area of Conservation (Lower Suir River SAC Site code 002137).

4.4 Site Layout

The existing site layout is shown on Drawing No 10P536-01. The main features are:

- Compost Building, which comprises
  - Waste Reception Areas ;
  - 11 No enclosed Forced Aeration Composting Bays;
  - Maturation Area (Bay 12);
  - Screening Area;
  - Offices.

- Odour Abatement System located to the south east of the Compost Building that treats odorous air from the Compost Building.

- Maintenance Workshop to the rear of the Compost Building;
- Disused above ground wastewater treatment tanks in a bunded area to the northeast of the Compost Building;
- Weighbridge;
- Natural Gas (Bord Gais) Substation
- Security Fencing;
- Paved open yards, bunded fuel storage areas and landscaped areas.

4.5 Drainage System

Surface Water

The existing drainage layout is shown on Drawing No 10 P536-50. Stormwater from roofs and paved areas is collected in the facility's surface water drainage system and discharged via an oil interceptor to a pipe that outfalls to the River Suir. The drainage system operates satisfactorily and there have never been any flooding problems either within, or outside the site boundary.

Wastewater

Wastewater generated at the site comprises sanitary wastewater from the offices. This is directed to the on-site septic tank, whose location is shown on Drawing No 10 P 356-50. The leachate produced in the composting process is recirculated and surplus leachate, which would require treatment, is typically not generated.

4.6 Plant, Equipment & Services

The existing plant, equipment and services include:

- Front Loading Shovels
- Forklifts
- Compost Turner
- Air Compressors
- Air extraction fans and ducting

- Odour Abatement Plant
- Telecom
- Electricity
- Water obtained from on-site well
- Sanitary wastewater treated in an on-site septic tank and percolation area.

4.7 Facility Management

The Facility Manager has 16 years experience in Waste Management and has a Certificate in Compost Facility Operation issued by Sligo Institute of Technology. The Deputy Manager has a BAgrSci and 5 years experience in waste management. The facility is certified to ISO 14001 Environmental Management System, ISO 9001 Quality System and OHSAS 18001 and copies of the Certificates are included in Appendix 3.

4.8 Operational Hours

Due to its nature, the composting process is continuous, 24 hours a day 365 days a year. Wastes are normally accepted and finished product consigned between 0700 and 2000 hours Monday to Saturday.

4.9 Waste Types

The current planning permission allows the acceptance of 40,000 tonnes of organic waste annually. Included in this figure are:

- Municipal wastewater treatment sludge,
- Household Biodegradable Kitchen and Canteen Waste,
- Other Biodegradable Waste (Garden & Park Waste), and
- Septic Tank Sludge.

Ormonde Organics has applied for planning permission to expand the range of non-hazardous organic wastes it accepts to include organic sludges generated by the food and drinks industry, sludges from water clarification and edible fats and oils.

The Waste Permit authorises the acceptance of 8,000 tonnes of industrial wastewater treatment plant sludge, including household kitchen and canteen waste, green waste and septic tank sludge. This 8,000 tonnes is part of the overall 40,000 tonne annual limit.

Household kitchen and canteen waste contains animal by-products (ABP), for example uncooked meat, that are subject to regulation by the Department of Agriculture, Fisheries and Food (DAFF). Ormonde Organics has initiated the DAFF approval process and will not accept any wastes containing ABP until the DAFF approval has been obtained. It is expected that approval will be obtained in 2012.

4.10 Waste Acceptance

Ormonde Organics has prepared a documented waste acceptance and handling procedure for the current operations that ensure only suitable wastes are accepted and that these are processed in a manner to produce a good quality product. A copy of the Procedure is included in Appendix 4.

The incoming wastes are weighed at the weighbridge and the accompanying documentation is checked. Any waste not deemed suitable is not accepted and the driver of the vehicle is instructed to return the waste to the producer. The weighbridge system (WIMS) is used to log all waste loads arriving at the site and the following information is recorded:

- Description of the waste including waste types (e.g. Sewage Cake)., and relevant European Waste Catalogue (EWC) codes;
- The origin of the waste, including all customer details;
- Haulier Details;
- Vehicle Registration;
- Driver Name; and
- Weight of the waste load.

4.11 Composting

Waste Reception

Upon leaving the weighbridge, all waste delivery vehicles are directed inside the Compost Building for off loading in the waste reception areas. There are separate areas for the municipal wastewater sludge and the household biodegradable waste and green waste. Following off-loading any large items in the household biodegradable wastes will be manually removed and bulking agents (shredded green waste) may be added.

Thermophilic Stage

The wastewater treatment sludges are loaded into one of nine dedicated enclosed forced aeration compost bays (Bays 1 to 9) located in the southern part of the building. Bays 10 and 11, which are similar to Bays 1 to 9, will be used for household waste. A batch of waste is placed to a depth of approximately 3 m in the Bay, temperature probes inserted and the bays are closed.

The wastewater treatment sludges are moved from Bay to Bay and regularly turned to enhance the composting process and the temperature is monitored until each batch has reached a temperature of more than 55^0C for more than three consecutive days to ensure that that material is sterilised.

To comply with DAFF requirements on the composting of household waste, a temperature of 70^0C will be achieved and maintained for a minimum of one hour in the Bays where waste that have the potential to contain ABP materials composted

Maturation & Screening Stage

Upon completion of the thermophilic stage, the sterilised wastewater treatment sludge is moved to the Screening Area, where it is screened, with the oversize sent back to the reception area for reuse, and the finished product then sent off-site for land application.

The household waste compost will be moved to a dedicated Maturation Area (Bay 12). Following maturation, the product will be moved to the Screening Area, where it is screened to remove any oversize materials (for example wood chip). The finished product is then sent off site and used for agricultural or horticultural purposes. The oversize is returned to the reception area for reuse.

Leachate Management

Leachate generated in the bays is collected in floor drains and directed to an underground concrete collection tank. The leachate from Bays 10 and 11, which will be used for wastes containing ABP, will be collected separately from that generated in the other Bays.

During the process, the moisture content of the materials is monitored and the leachate in the collection tank is recirculated to ensure optimum conditions are maintained. The process is a net water user and normally surplus leachate is not generated. In the unlikely event that surplus leachate is generated, it is sent for treatment at an off-site municipal wastewater treatment plant.

4.12 Materials Management

All waste storage and processing is carried out inside the Compost Building. Diesel for the mobile plant is stored in an above ground bunded storage tank located beneath a canopy adjoining the Workshop. A second oil storage tank is located in a bund on the western side of the Compost Building, but this is empty and not in use. Lubricating and hydraulic oils and coolants used in plant maintenance are stored inside the Workshop.

Ormonde Organics has developed site specific procedures to deal with spills and any emergencies that may arise to ensure that the appropriate response actions are taken by trained staff to minimise any associated environmental impacts. A copy of the spill procedure is included in Appendix 5.

4.13 Energy Efficiency

Energy consumption is a major operational cost and Ormonde Organics is committed to improving energy efficiency. This is achieved by recording fuel and electricity consumption and auditing power usage. In 2010, Ormonde Organics conducted an audit of electricity usage at the facility, which identified that electrical motors were the largest single user (68%) followed by lighting (2%) and heating (1%). Approximately 29% of the consumption could not be attributed to any particular usage and Ormonde Organics has initiated a programme to rectify this.

4.14 Site Security

The site is surrounded by hedgerows and concrete walls, with an entrance gate on the R680. The gate is kept locked and is opened by an electronic key code. There are CCTV cameras positioned at strategic locations around the site and these are monitored by a contract security firm when the site is closed. To satisfy the ABP requirements a stock proof and industrial fencing will be erected around the site.

4.15 Emissions & Mitigation Measures

The actual and potential emissions from the facility include noise, dust, exhaust gases from vehicles and mobile plant, odours, bioaerosols, surface water run-off and sanitary wastewater. Leachate generated during the composting processes is collected and stored in tanks located outside the building and there is no direct or indirect connection with the surface water drainage system.

Noise emission sources include the waste and finished product transport vehicles, the mobile plant, air compressors and air extraction fans. The closest noise sensitive location is 250m from the site boundary. The Waste Permit specifies the noise levels at monitoring points at the site boundary and the nearest noise sensitive location and also requires a noise monitoring survey to be completed annually.

Potential dust sources include vehicle movement over the concrete yards during dry periods and during the screening of the finished product. The screening is carried out inside the building, which minimises the risk of dust emissions to atmosphere. The Waste Permit specifies a dust deposition limit (350 milligrams/square meter/day(mg/m^2/d)) and requires annual monitoring. The Permit also specifies the dust control measures that must be applied, which include damping down of the roads and paved areas in dry weather.

The incoming wastes and the composting process are a source of odours. The composting process is also a source of bioaerosols. The existing odour control system comprises an air extraction system that maintains negative air pressure inside the Composting Building, including the Waste Reception Area, Bays 1-11 and the Maturation and Screening Area, and

directs odorous air and bioaerosols via ducts to an odour abatement system, which comprises wet scrubbers and two biofilters.

While the abatement system is operating effectively, facility management are continuously striving to improve the air handling system to make it more efficient, including upgrades to the air ducting system. In addition, Ormonde Organics are in the process of installing further odour abatement measures for the building entrances in the form of air curtains.

The abatement system is subject to a routine maintenance programme, which includes bi-annual air flow rate measurements and olefactometry testing at the surface of the biofilter. The Waste Permit requires weekly odour monitoring surveys at the facility and outside the boundary at odour sensitive locations.

The Permit also specifies emission limit values (ELV) for the biofilter (ammonia 50 parts per million (ppm); hydrogen sulphide 5ppm and mercaptans 5ppm). These parameters must be monitored quarterly monitoring at two monitoring points inside the site boundary and annually at the biofilter. The annual biofiter monitoring also includes amines, pH, moisture content and bacteria. Bioaerosols and particulates (PM10) must also be monitored annually at the two internal monitoring points.

Surface water run-off from the paved areas and building roofs discharges, via an oil interceptor to the River Suir. The Waste Permit sets emission trigger limits of 25 milligrams /litre (mg/l) Biochemical Oxygen Demand (BOD) and 30 mg/l Suspended Solids. Any exceedance of these levels requires corrective action to be undertaken.

Sanitary wastewater is directed to the on-site septic tank, with the effluent from the tank distributed across a percolation area. This is the only direct emission to ground at the site.

5 PROPOSED DEVELOPMENT

5.1 Introduction

This Chapter describes the proposed anaerobic digestion plant and the changes to the existing composting operation. It provide details of the proposed infrastructure, waste handling, treatment and support activities and outlines the emission control measures incorporated into the design and method of operation to eliminate and/or mitigate environmental impacts. Further information on the impacts associated with the construction and operation of the anaerobic digestion plant is provided in the following Chapters.

5.2 Site Development

The proposed site layout is shown on Drawing No 10 P 536-02. The existing buildings and structures will be retained. The majority of the proposed infrastructure will be constructed on an area adjoining the eastern site boundary which encompasses 2.5ha. The overall development will include:

- 2 No. double height airlock entrances to the northwest and southeast ends of the front elevation of the existing Composting Building (Building No. 1), providing fully sealed areas for tipping trucks for odour abatement purposes (total sq m 331 sq m);

- New Building No. 2 linking to the southeast side of existing Building No. 1, comprising 2 No. pasteurisation areas, 5 No. maturation bays and a workshop, which allow for the separation of wastes containing animal by-products from other wastes (1,974 sq m);

- 3 No. above ground Anaerobic Digester (AD) Tanks for the treatment of 20,000 tonnes per annum of non-hazardous organic waste and biomass, located in a bunded area to the southeast of the existing (disused) Waste Water Treatment Plant (WWTP) tanks;

- The conversion of the existing WWTP tanks for storage of incoming organic waste and/or digestate from the AD process by the retrofitting of covers;

- New Building No. 3(A) to the southeast of the proposed AD tanks, comprising an organic waste reception area and Combined Heat and Power (CHP) generator to convert methane from the AD process to electricity for use on-site (1,333 sq m);

- A drier building (Building No. 3B) and adjacent gas flare stack associated with the CHP Plant (93 sq m);

- A new agricultural silage pit/ biomass storage area to the southeast of Building No. 3 with associated underground effluent storage tank; and

- A new air treatment biofilter to the southwest of Building No. 2.

- In addition, the proposed development will include concrete paving surrounding the proposed new structures, a new surface water drainage system to connect to the existing system, provision of a new sanitary wastewater treatment system and percolation area to the southwest of proposed Building No. 2, drilling a new groundwater supply well and sealing the existing well, and all other ancillary works above and below ground. Details of the changes to the site services are included in Appendix 7.

5.3 Construction Stage

The construction stage will involve the following:

- Site clearance and excavation work for the foundations of the digester tanks, the new buildings; the extension of the surface water drainage system and the installation of the new septic tank and percolation area.

- Construction of new buildings.

- Construction of foundations for the new AD digesters.

- Installation of the digester tanks and supporting plant with aid of crane and other lifting equipment.

- Construction of biomass storage area.

- Construction of the new surface water drainage lines and retention tank and connection to the existing system.

- Installation of new septic tank and percolation area and connection to the existing foul sewer.

- Installation of new odour abatement system including biofilter ducting and electrical fans.

- Installation of the CHP plant and ancillaries including gas engines and backup flare.

- Connection to National Electricity Grid.

- Commissioning of AD plant, odour abatement system and CHP plant.

The construction and commissioning will be phased over a 12 month period. The works will typically be carried out between the hours of 07:00 – 19:00 Monday to Friday and 07:00 –

17:00 on Saturdays. Normally, no works will take place on Sundays or Public holidays. The actual construction hours may vary depending on weather conditions and seasonality.

The construction works will involve the use of standard construction plant, such as:

- Tracked Excavators.
- Dumpers.
- Generators.
- Wheeled Excavators.
- Mobile Crane.
- Teleporter(s).
- Delivery vehicles (for plant and equipment) including articulated and rigid body vehicles

The connection to the national grid will be completed by ESB Networks in conjunction with contractors designated by Ormonde Organics.

5.4 Surface Water Drainage

Stormwater from the roofs of the proposed buildings and paved open areas will be collected in a new surface water drainage system that will connect to the existing system. The layout is shown on Drawing No 10 P 536-50. The proposed development will increase the total impermeable area by 8,400m^2 and will increase the volume of surface water run-off generated at the site during storm events.

Run-off from the new building roofs and impermeable area will be collected and directed to a new oil interceptor and into a storm water retention tank that will be fitted with a flow restrictor at the outlet to limit the flow at the outfall. The outfall will connect to the existing drainage system before entering the existing sump.

A shut off valve will be fitted on the outlet from the sump. The valve will, when activated, allow the surface water to be contained within the site in the event of an incident or accident at the facility that could give rise to surface water pollution. There will be no change to the location of the outfall to the river.

5.5 Wastewater

Wastewater generated at the site comprises sanitary wastewater from the offices which is treated in the on-site septic tank, whose location is shown on Drawing No 10 P 356-50. This

tank is within the footprint of the proposed digester tanks. A new wastewater treatment system and percolation area will be installed to the west of Building No 2.

The leachate produced in the composting process is recirculated and surplus leachate that would require on-site treatment is typically not generated. Any surplus leachate that may arise in the future will be treated in the proposed AD plant.

The proposed AD plant will not generate a wastewater that requires treatment on-site. The liquid digestate produced in the process will be sent from the site and applied to agricultural lands. Any run-off from the silage storage area will be collected and treated in the AD plant.

5.6 Waste Types and Quantities

The proposed changes will not result in any changes to either the quantities of waste accepted or the general waste acceptance procedures described in Section 4.10 of this EIS.

Designated staff members operating the weighbridge system (WIMS) log all waste loads arriving at the site and the following information is recorded:

- Description of the waste including waste types, (e.g. Sewage Cake)., and relevant European Waste Catalogue (EWC) codes;
- The origin of the waste, including all customer details;
- Haulier Details;
- Vehicle Registration;
- Driver Name; and
- The weight of the waste load.

Upon leaving the weighbridge, all waste delivery vehicles will be directed to the appropriate off-loading or temporary storage points, where the materials will be inspected. If staff members are satisfied that the load is acceptable it will be tested and processed as required. Any loads considered to be suspect will be removed to a dedicated Quarantine Area inside Building 2 for further inspection. If the inspection identifies the materials do not meet the relevant acceptance criteria, the staff will arrange for the load to be returned to the producer.

5.7 Composting

To accommodate the Animal By Product Regulatory requirements regarding strict separation of waste containing animal by-products from other wastes, additional maturation and pasteurisation capacity will be provided in new Building 2. To facilitate effective odour control, air locks (Buildings 4 and 5) will be installed on the northern and southern entrances to the Compost Building. There will be no change to the composting process described in Section 4.11 of this EIS.

5.8 Anaerobic Digestion (AD)

The fully enclosed AD system is proposed to process up to 20,000 tonnes per annum of non-hazardous organic waste and biomass, for example silage. Three (3 No.) purpose built digester tanks will be constructed. The organic wastes will, depending on the available processing capacity, either be fed directly into the AD process or temporarily stored in the former wastewater treatment tanks. A concrete lined silage storage area will be provided, which will be used to store biomass before it is fed into to the process

The treatment process will begin in the Waste Reception Building (Building No. 3A), where the organic wastes and biomass will be off loaded and fed, using a loading shovel, into a 40m^3 slide feeding system, which will move it via a fully enclosed conveyor to the tanks. The contents of the tanks will be continuously agitated and maintained at an optimum temperature of 47^{O}C.

The AD process, which takes approximately 50 days for each batch to complete the digestion and post digestion stages, produces a biogas, fibre and digestate. The biogas consists largely of methane and carbon dioxide, but also contains a small amount of hydrogen sulphide and ammonia, as well as traces of other gases. The biogas will be treated to reduce the levels of ammonia and hydrogen sulphide.

The treated gas will be used as a fuel in two gas engines in CHP plant. There are a number of utilisation options for the heat and electricity generated in the CHP, which include meeting on-site energy needs, exported to the national grid. A gas flare with a capacity of 600m^3/hour will be provided as a back–up for when the gas engines are shut down for routine servicing.

The digestate and fibre have a significant nutrient and soil enhancement value and will, depending on the time of the year, either be immediately sent off site for application of agricultural lands, or stored in a number of the converted wastewater treatment tanks until ground/weather conditions allow land application.

5.9 Emissions & Mitigation Measures

The actual and potential emissions associated with the construction and operation of the development facility include noise, dust and particulates, exhaust gases from vehicles and mobile plant, odours, bioaerosols and surface water run-off. All of these are generally similar in nature to the current emissions and are amenable to effective mitigation measures, such as those specified in the Waste Permit. Details of the proposed mitigation measures are presented in the following Chapters.

6 TRAFFIC

6.1 Introduction

This Chapter describes the existing traffic conditions and the impacts of the proposed introduction of the AD plant and changes to the composting operation. It is based on the Traffic Impact Assessment completed in 2004 for the original planning permission, which was based on an annual waste input of 40,000 tonnes of solid organic wastes for treatment in the composting plant and 60,000 tonnes per annum of liquid waste in the wastewater treatment. Planning permission was granted for the 40,000 tonne capacity composting plant, but the operation of the wastewater treatment plant was refused.

6.2 Existing Road Network

The site is accessed of the R680, which runs to the east of the town of Portlaw and connects with the N25 at Kilmeaden to the south and to the north east with the N24 and the R698 at Fiddown. The R680 has a carriageway width of about 5.5m with minimal verges. The road surface is in good condition and has a reasonable riding quality.

Recent road developments in the South East Region, including the Waterford City Bypass, the Suir Bridge and the M9 linking Waterford with Dublin, have improved the regional access to facility from all parts of the South East Region and surrounding areas.

6.3 Site Access

The facility is accessed via the single site entrance on the R680. The sight lines, site frontage and general site layout have been designed in accordance with the relevant planning permission and conditions attached thereto. As the majority of the existing and prospective customers are located more than 20 km from the site, the primary routes used by delivery vehicles are, and will remain, the N24 from the north and the N25 from the south. There is adequate space inside the entrance to accommodate all vehicles accessing the site and there is no requirement for queuing on the R680.

6.4 Existing Traffic

A traffic survey was completed over a five day period (Monday 30/08/2010 to Friday 03/09/2010). This survey was conducted by a traffic enumerator positioned outside the site entrance. All traffic passing the entrance between 09:00-13:00 and 14:00-17:00 was recorded using the National Roads Authority (NRA) Enumerators Form.

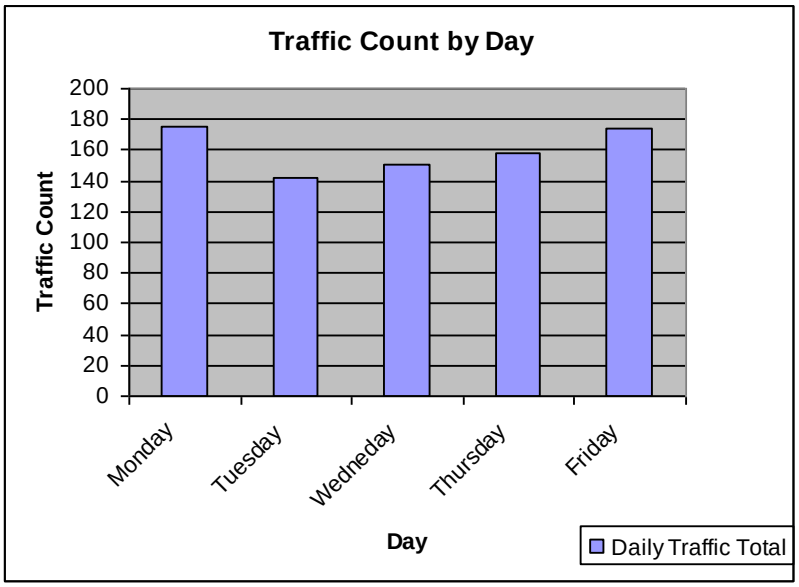
The average vehicle counts over the 5 day survey period are presented in Table 6.1

Table 6.1 - - Traffic Survey 5 Day Period Monday (30/08/2010) - Friday (03/09/2010)

Vehicle Type		Time								
		09:00 - 10:00	10:00 - 11:00	11:00 - 12:00	12:00 - 13:00	13:00 - 14:00	14:00 - 15:00	15:00 - 16:00	16:00 - 17:00	***Day Total***
Pedal Cycles		6	1	1	2		1	8	5	***24***
Motor Cycles		16	7	7	8		5	15	19	***77***
Motor Cars		470	266	297	339		239	324	428	***2363***
Light Goods Vehicles (LGV)		106	65	100	98		65	108	121	***663***
Agricultural Tractors		8	9	6	4		5	6	8	***46***
Miscellaneous		0	0	1	0		0	0	0	***1***
Buses		2	2	0	0		0	3	2	***9***
Heavy Goods Vehicles (HGV)	Truck	26	21	28	37		32	27	35	***206***
	Artic	4	5	8	9		7	4	7	***44***
	Truck & Trailer	6	2	2	2		1	2	4	***19***
Period Totals		***638***	***376***	***448***	***497***		***354***	***495***	***625***	***3452***

Motor cars constitute the majority of the vehicles (65.6%), followed by LGVs (19.2%) and HGVs (7.8%). The peak hours are 09:00 -10:00 and 16:00-17:00. Over the survey period, total vehicle numbers were higher on Monday and Friday, with fewer recorded on Tuesday, Wednesday and Thursday. (Figure 6.2)

Figure 6.2 – Total Daily Traffic Counts



Traffic to the site includes deliveries, collections and staff and visitors private vehicles. The deliveries are predominantly organic sludges and woodchip, with occasional oil and other materials deliveries. The collections are confined to compost which is sent off-site for land application.

The current activity generates approximately 250 two way traffic movements per week, which includes approximately sixty (60 No) hook trucks delivering waste, approximately fifteen (15 No) articulated vehicles that collect the compost and approximately fifty (50 No) private vehicles used by staff and visitors. This equates to approximately 7.3% of the total weekday vehicular traffic on the R680.

6.5 Predicted Traffic

The composting process achieves a volume reduction of up to 30% of the waste treated. While the AD process also reduces the volume, the reduction is in the region of 10-15%. Assuming a 50:50 split between composting and AD and that the AD end products (fibre and digestate) are sent off site for application to land and not incorporated into the composting process, the proposed AD process will lead to a slight increase in the number of collection vehicles.

The additional traffic movement is estimated to be in the region of 5 to 8 extra collection vehicles per week, which will comprise a combination of tractors and vacuum tankers and articulated vehicles. The movements will be distributed over Monday to Friday, and will involve and additional 1 to 2 two way trips daily. This equates to a maximum weekly increase of 3.8 % to the combined tractor and HGV traffic and 0.3% to the overall vehicular traffic movements on the R680.

6.6 Impacts

During the construction stage there will be an increase in traffic accessing the site, including private vehicles used by construction staff and materials delivery vehicles. Ormonde Organics operates a one way traffic management system and this shall continue throughout the construction stage.

The proposed development will not result in an increase in the quantities of waste accepted (40,000 tonnes per annum), changes to the routes used to access the facility or alterations to the times the wastes are delivered and the treated materials collected. There will be a very slight increase in traffic movements to and from the site.

6.7 Mitigation

The development will slightly increase the overall traffic volumes on the R680, but as the existing road network can accommodate the proposed traffic, mitigation measures are not required. Ormonde Organics has developed a Traffic Management Plan for the operational stage, to ensure that traffic within the site boundary moves in a safe manner. The proposed plan is shown on Drawing No 10 P 536 05.

6.8 Assessment of Impacts

The very slight increase in traffic movements associated with the proposed development will have a negligible impact.

7 SOILS & GEOLOGY

7.1 Introduction

This Chapter describes the soils and bedrock conditions at the facility. It is based on a desk study of available information on the local geological conditions, derived from a review of databases maintained by Teagasc, the Geological Survey of Ireland (GSI) and information included in the EIS prepared for the existing site in 2004. The latter includes a report on the installation and pump testing of groundwater wells in 1990 and a description of a geotechnical investigation completed in 1991. The report on the well installation and testing is in Appendix 6.

7.2 Bedrock Geology

The bedrock geology is shown on Figure 7.1, which is derived from the GSI 1:100.000 Geology of East Cork-Waterford Sheet 22. The map shows that the bedrock beneath the site comprises limestone and dark-grey calcareous shale of the Ballymartin Formation, which is a Dinantian Lower Impure Limestone, with the Porters Gate and Kiltorcan Formations approximately 200m to the west.

The logs of the wells installed in 1990 indicates that the bedrock is heavily weathered, with numerous fractures and cavities encountered from the top of the bedrock to a depth of 20m. Based on the results of pump tests completed in 1990 (Ref Section 8.3), it appears that the site is likely to be underlain by the Porters Gate Formation.

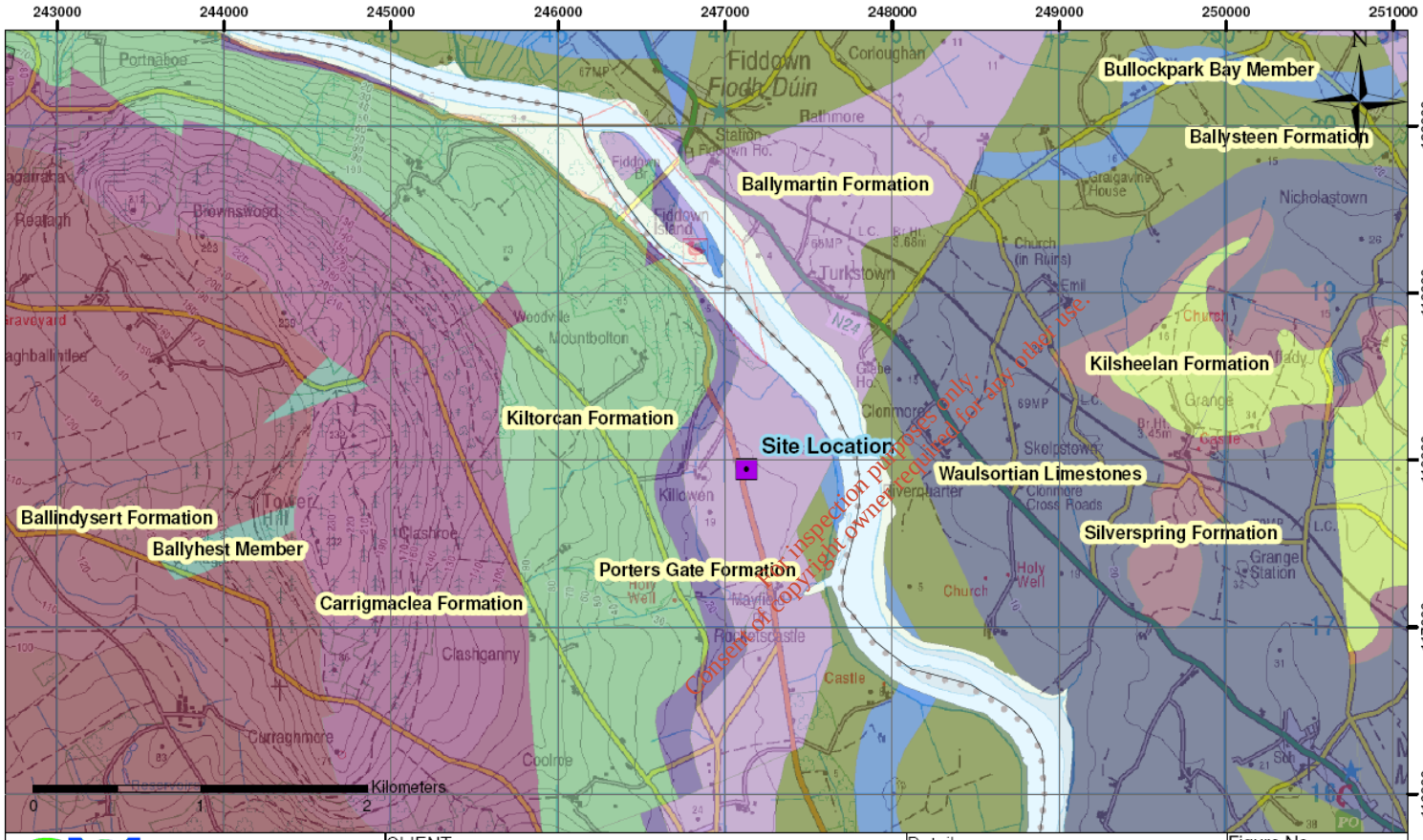
7.3 Soils & Subsoils

The Teagasc FIPS-IFS soil map indicates that the topsoil is either basic mineral deep well draining (BminDW) soil, or made ground, while the underlying subsoils comprise Carboniferous limestone tills (Figure 7.2).

The 1991 geotechnical investigation established that the soils and subsoils comprised 0.3m of topsoil overlying approximately 2m of medium dense brown silty clayey sand with gravel and cobbles, which in turn was underlain by at least 2m of firm to stiff, brown, sandy, silty clay with some gravel, cobbles and the occasional boulder.

The borehole logs for the wells installed in 1990, established the subsoil thickness ranged from 34m in the north central part of the site to 12.5 m in the north east of the site. This indicates that the depth of subsoil thins moving east towards the river.

Figure 7.1 - Geology



O'Callaghan Moran & Associates.
Granary House, Rutland Street,
Cork, Ireland.
Tel. (021) 4321521 Fax. (022) 4321522
email: info@ocallaghanmoran.com

CLIENT
Ormonde Organics Ltd

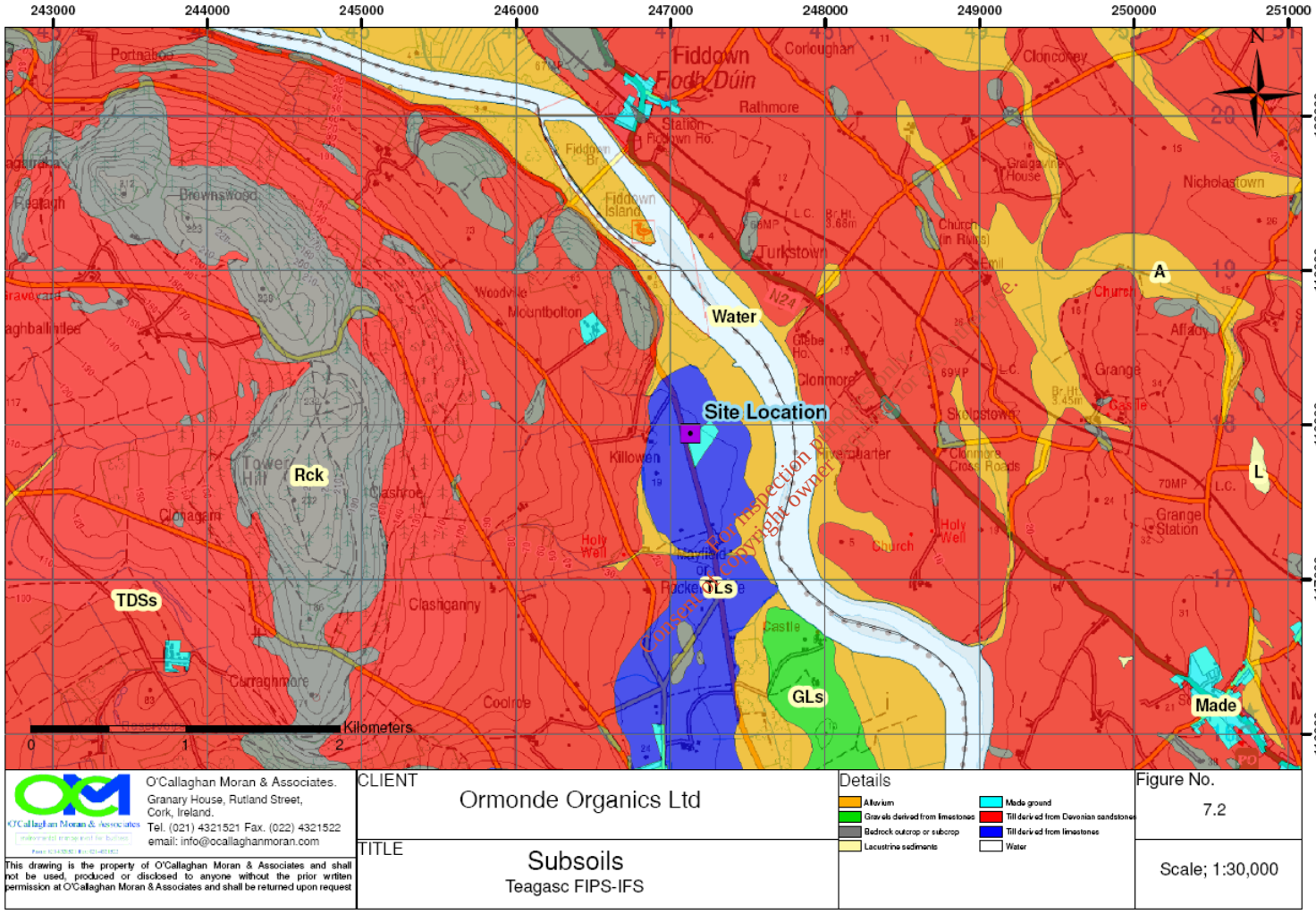
TITLE
Bedrock Geology
GSI 1:100,00 Geology of East Cork-Waterford Sheet 22

Details
- Ballindysert Formation
- Ballyhest Member
- Ballymartin Formation
- Ballysteen Formation
- Bullockpark Bay Member
- Carrigmaclea Formation
- Kilsheelan Formation
- Kiltorcan Formation
- Porters Gate Formation
- Silverspring Formation
- Waulsortian Limestones

Figure No.
7.1

Scale; 1:30,000

Figure 7.2 – Subsoils



7.4 Impacts

The proposed changes will involve the excavation of soils and subsoils for the foundations of the new buildings and the AD tanks together with the associated services including the installation of surface water drains and underground ductwork, the construction of a new septic tank and percolation area and the provision of effluent storage tank at the biomass area. The excavated soils and subsoils will be retained on site and used either to achieve building formation levels, or for landscape works.

There is the potential for spills/leaks to occur when refuelling vehicles and mobile plant during the construction stage. Such leaks/spills could impact the exposed subsoils. In the operational stage, there is the potential for leaks/spills to occur to ground during the delivery and handling of the incoming wastes, the storage and removal of the digestate, leaks from the biomass effluent storage tank and malfunction of the septic tank system.

7.5 Mitigation Measures

Construction Stage

During the construction stage the topsoil will be stripped and stockpiled in a manner that does not adversely affect the soil structure. The measures by which this will be achieved will be described in a Construction Management Plan (CMP) prepared in advance of the works

It will be a condition of the contract between Ormonde Organics and the building contractor that the CMP specify how materials with the potential to adversely affect soil quality, for example oil, will be stored and handled in a manner that minimises the risk of accidental spills or leaks and complies with Conditions 3.7.1 and 3.9 of the Waste Permit relating to proper storage of materials and provision and maintenance of spill containment and clean-up equipment.

Given the relatively small volumes of potential polluting material (diesel, lubricating and hydraulic oil) that will be stored on site during the construction stage, and the mitigation measures that will be applied, it is considered that any impact on the soils associated with spills and leaks will be negligible, with no long term effects.

Operational Stage

In the operational stage, all waste processing will be carried out inside fully enclosed buildings, tanks and compost bays. The digester tanks will be located in a bund provided with impermeable concrete floor, which will prevent any accidental spills or leaks from impacting on the underlying soils. The converted wastewater treatment tanks, which will be used to store the incoming wastes and digestate, are also located in a bund provided with an impermeable concrete floor.

The effluent storage tank at the biomass storage area will be constructed in accordance with best practice for farm effluent storage facilities. The septic tank design and installation will

comply with the guidance specified in the EPA Manual on Wastewater Treatment Systems for Small Communities, Business, Leisure Centres and Hotels and the Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses.

The design and construction of all the tank and drum storage areas will comply with Conditions 3.8.1 and 3.8.2 of the Waste Permit, which requires that all such areas are impervious to the materials stored and that there is adequate retention capacity to contain any accidental spills or leaks.

The concrete floors inside the buildings, in the bunded areas and in the paved open yards used by vehicles will comply with Condition 3.5.3 of the Waste Permit and will meet the requirements of British Standard (BS) 8110-Structural Use of Concrete, or an equivalent agreed with Waterford County Council. All the bunds, the biomass effluent storage tank and the underground surface water drainage pipes will be subject to routine inspection and integrity testing specified in Condition 6.8 of the Waste Permit to confirm they are fit for purpose.

Based on the site design and the inspection and testing of the bunds and tanks, pipelines and containers, which will be conducted in the operational phase, the risk of uncontrolled release of spills/leaks to the ground will be minimised.

7.6 Assessment of Impacts

The impact of the proposed development, both in the construction and operational stages, on the soils and bedrock will be negligible, with no long term effects.

8 WATER

8.1 Introduction

This Chapter describes the surface water and groundwater regimes beneath the facility. It is based on a review of databases on the local hydrological and hydrogeological conditions maintained by the EPA, the GSI, the National Parks and Wildlife Service (NPWS) and the Office of Public Works (OPW), and information included in the EIS prepared for the existing facility in 2004. It also takes into consideration the guidance in 'The Planning System and Flood Risk Management Guidelines for Planning Authorities.

8.2 Surface Water Catchment

The site is in the catchment of the River Suir, which is approximately 350m to the east of the site. The Suir rises in Tipperary and joins the Nore and Barrow in Waterford Harbour. It is 115 miles in length and drains a total catchment of 1,394 square miles. Two unnamed tributaries of the Suir join the river approximately 500m to the north and south of the site, with the confluence of the River Clodiagh and the Suir approximately 2km to the south of the site.

The stretch of the river to the east of the site is part of the Middle Suir. It is tidal and is categorised as a Transitional Water Body under the South East River Basin District (SERBD) Management Plan (Appendix 8).

Flood Risk

The flood zone maps maintained by the OPW describe the lands immediately adjoining the west bank of the Suir as 'benefiting lands' (Figure 8.1). 'Benefiting lands' are defined as being subject to either flooding or poor drainage, which would benefit from drainage works. The OSI 6"Map (Figure 8.2) indicates that the 'benefiting lands' are to the west of an area that was subject to flooding on Spring Tides.

A levee has been constructed along western bank of the river, between the area affected by the Spring Tide flooding and the 'benefiting lands'. This levee extends from Mountbolton Wood to the north of the site to the confluence of the Clodiagh and Suir to the south.

The Ormonde Organics site is not within or adjoining the 'benefiting lands' and drainage from the site does not discharge to these lands. Surface water drainage from the site is piped to an outfall to the Suir. The OPW databases contain no records of any flooding either within the site boundary, or on the lands immediately adjoining the site (Figure 8.1). There have been no incidents of flooding either within the site boundaries, or on the adjoining lands since the existing composting facility opened.

Figure 8.1

OPW *National Flood Hazard Mapping*

Summary Local Area Report

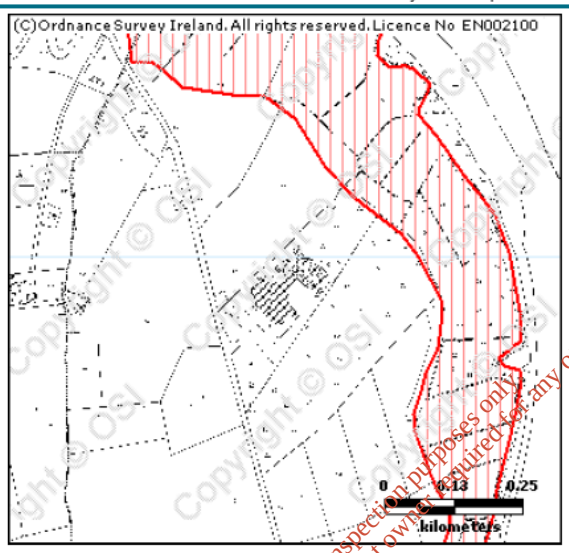
This Flood Report summarises all flood events within 2.5 kilometres of the map centre.

The map centre is in:

County: Waterford

NGR: S 472 179

This Flood Report has been downloaded from the Web site www.floodmaps.ie. The users should take account of the restrictions and limitations relating to the content and use of this Web site that are explained in the Disclaimer box when entering the site. It is a condition of use of the Web site that you accept the User Declaration and the Disclaimer.



Map Scale 1:10,458

Map Legend	
	Flood Points
	Multiple / Recurring Flood Points
	Areas Flooded
	Hydrometric Stations
	Rivers
	Lakes
	River Catchment Areas
	Land Commission *
	Drainage Districts *
	Benefiting Lands *

* Important: These maps do not indicate flood hazard or flood extent. Thier purpose and scope is explained in the Glossary.

3 Results

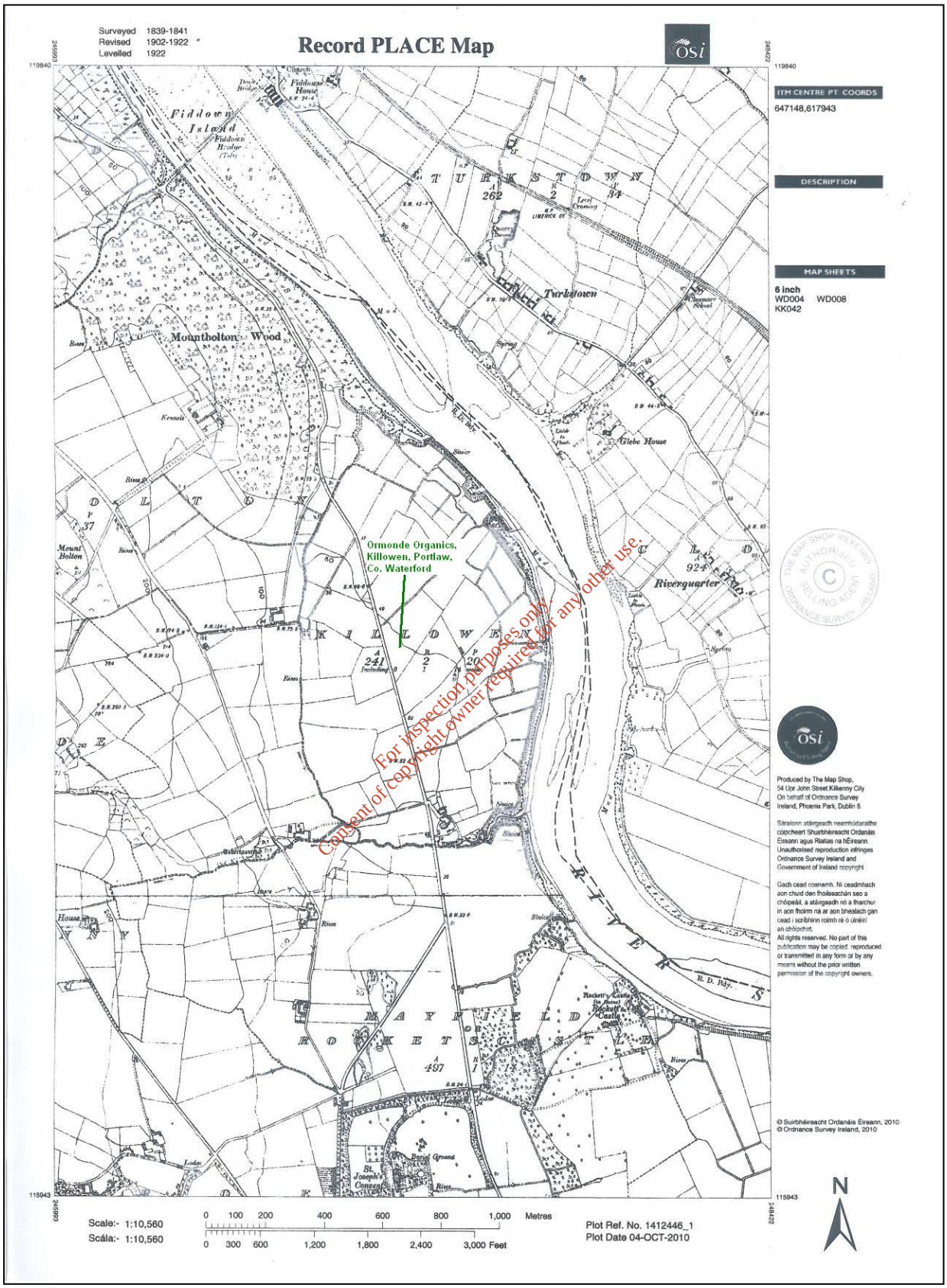
1. Portlaw Scrouty recurring — Start Date:
County: Waterford — Flood Quality Code:4
Additional Information: Reports (1) More Mapped Information

2. Portlaw north recurring — Start Date:
County: Waterford — Flood Quality Code:4
Additional Information: Reports (1) Press Archive (9) More Mapped Information

3. Portlaw Rocketscastle junction recurring — Start Date:
County: Waterford — Flood Quality Code:4
Additional Information: Reports (1) More Mapped Information

Report Produced: 02-Sep-2011 9:37

Figure 8.2



Natura 2000 Site

The Suir is designated as a Special Area of Conservation (SAC) from immediately south of Thurles to the tidal stretches at the confluence with the Barrow/Nore immediately east of Cheekpoint in County Waterford. (Lower Suir River SAC Site code 002137). This includes the stretch up and downstream of the Ormonde Organics site. A detailed description of the SAC and an assessment of the impacts of the proposed development is presented in Chapter 12.

Surface Water Quality

There is no available chemical water quality data for the stretch of the Suir east of the site. The EPA's water quality databases, which are derived from the SERBD Plan, identifies the stretch of the Suir from Fiddown to the north of the site south to Waterford City as being of Moderate Status and Eutrophic (Appendix8). The eutrophic, or nutrient enriched, status is attributed to landuse upstream of the facility.

8.3 Hydrogeology

Aquifer Classification

The subsoils are not significantly water bearing. The bedrock geology map indicates that the site is underlain by the Ballymartin Limestone Formation. The Ballymartin Formation is classified by the GSI as a Locally Important aquifer which is moderately productive only in local zones (Ll) (Figure 8.3). The information from the borehole log for the onsite well indicates a highly weathered and fractured bedrock, and a 72-hour pump test conducted at the site in 1990 established that the aquifer could sustain a yield of 900m^3/day. A copy of the 1990 report on the well installation and testing is included in Appendix 6. This information indicates that the site is underlain by a more productive bedrock aquifer formation.

The on-site production well provided a sustainable yield of 450m^3/day to the former tannery. Given the reported yields from the pump test well and the on-site production well, it is probable that the GSI mapping may not be accurate and that the site is underlain by either the Porters Gate Formation, which is classified as Regionally Important Aquifers (RF). Given the generally limited data on which the boundaries between bedrock formations are delineated, particularly underlying very thick subsoils, boundary variations of several hundred metres are not unusual.

Aquifer Vulnerability

The GSI assigned aquifer vulnerability rating, which indicates the potential susceptibility to contamination from pollution sources at the ground surface, is Low (Figure 8.4). The vulnerability rating is based on the nature and depth of the subsoils. Site specific information shows that subsoils at the site comprise a till, which is between 12.5 and 34m in depth (Ref Section 7.3). As the tills contain clay and are more than 10m thick, the vulnerability rating at the site is confirmed as Low.

Figure 8.3

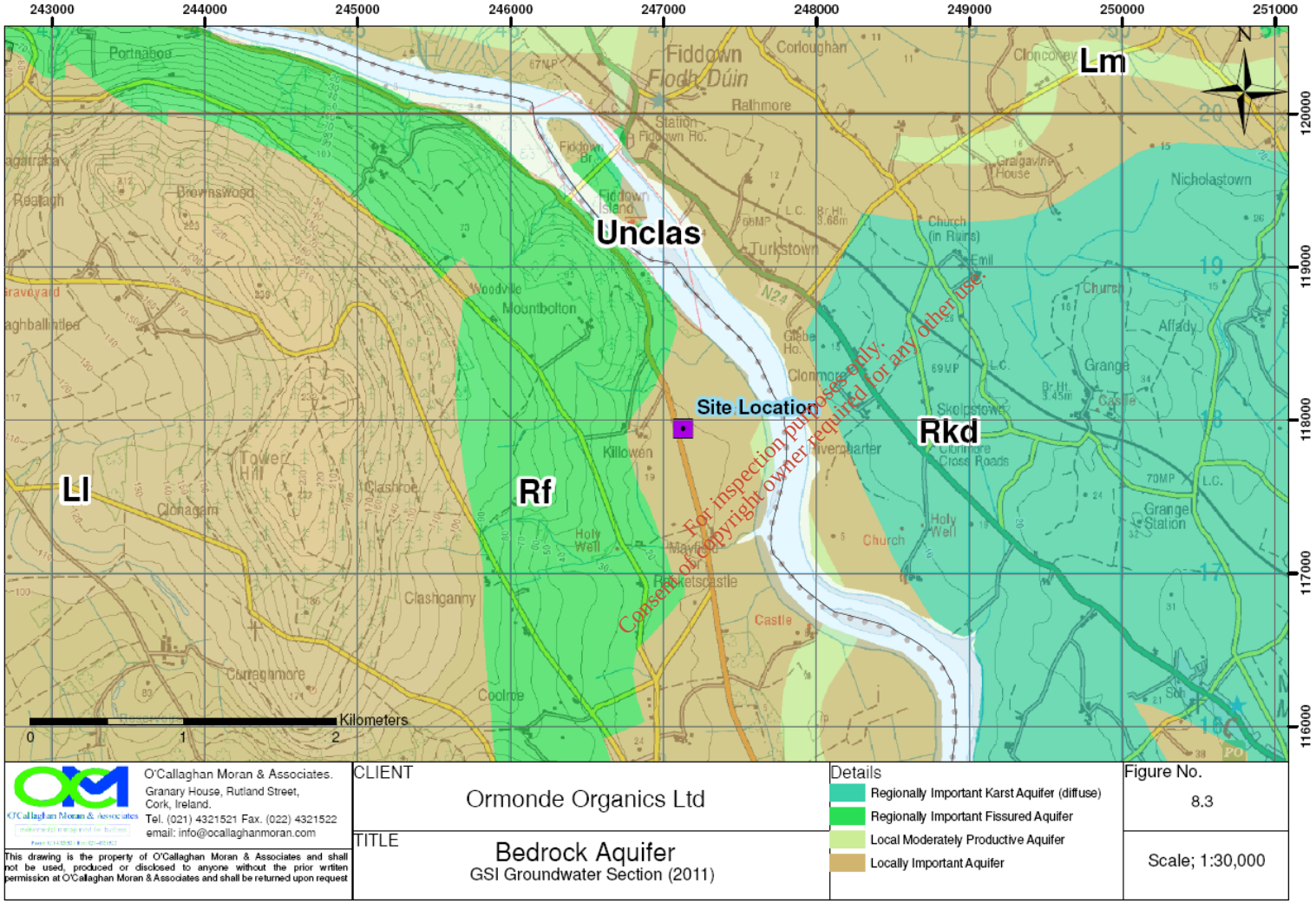
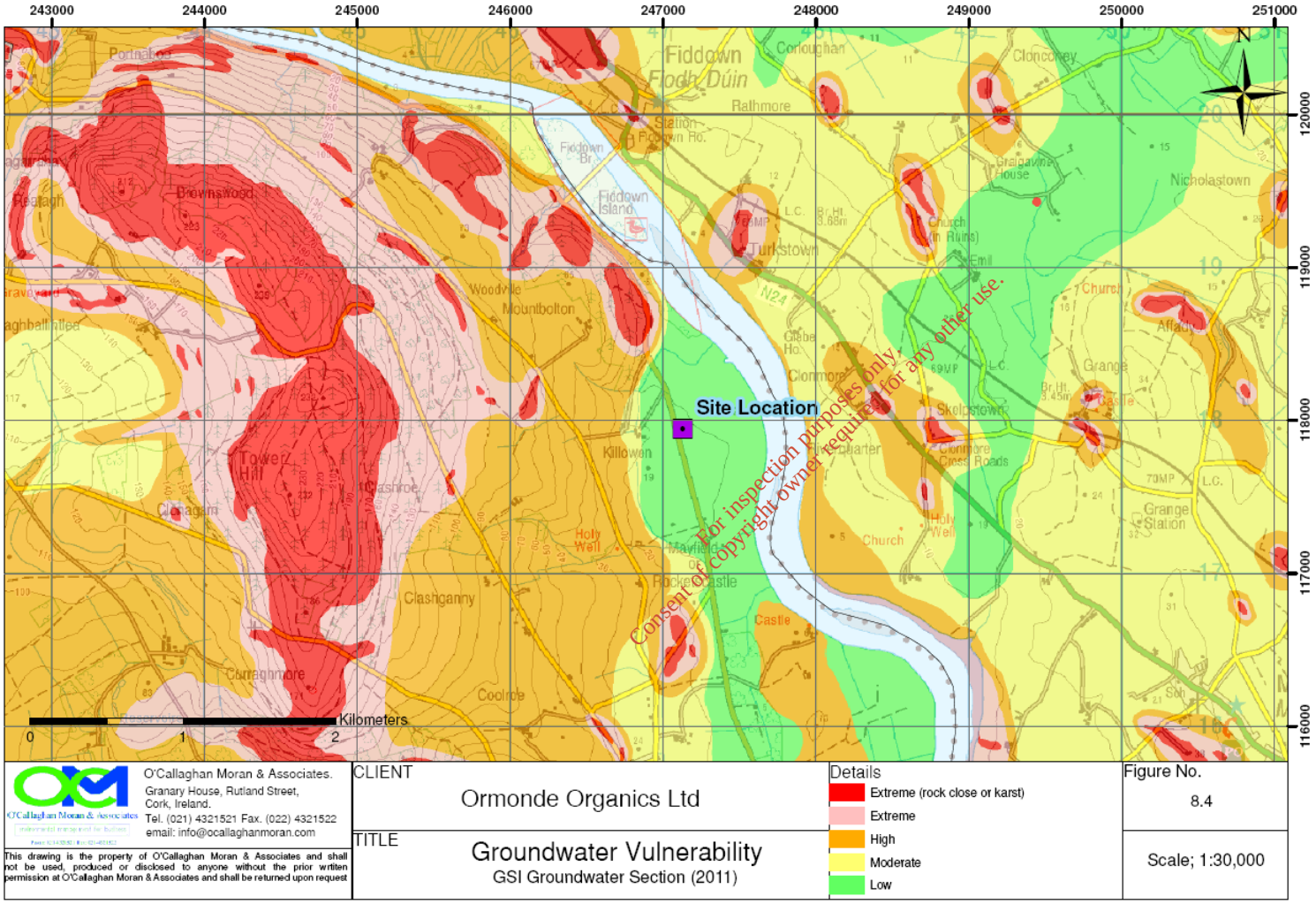


Figure 8.4



Groundwater Flow Direction

The direction of groundwater flow is influenced by the topography and the proximity to the River Suir, and is expected to be predominantly from west to east. It appears, based on the information in the 1990 report on the well installation, that there is hydraulic connectivity between the bedrock aquifer and the River Suir.

Groundwater Quality

The aquifer beneath the site belongs to the Clonmel Groundwater Body, as defined by the SERBD Management Plan. Groundwater quality monitoring conducted in 1990 established that the water quality was good. OCM collected a sample of the water form the on-site well on the 14th December 2010 and sent it for laboratory analysis. The results are presented in Table 8.1, which also includes the 1990 results.

For comparative purposes, the Table includes the Groundwater Regulations Threshold Value (TV), which were introduced in 2010 (S.I. 9 of 2010) on foot of requirements from the Water Framework Directive. The TVs were developed to assess groundwater quality for large water bodies using large drinking water supply wells and are threshold values, which if exceeded indicate that an adverse impact on groundwater quality has occurred.

The 2010 results are consistent with those recorded in 1990. The groundwater quality is good, with all of the parameters well below the relevant TV.

Table 8.1 Groundwater Quality

Parameter	Units	Well 2010	1990	TV
pH	pH Units	8.12	7.7	NE
Electrical Conductivity	mS/cm	0.432	0.39	0.800-1.875
Ammonical Nitrogen	mg/l	<0.2	<0.005	0.065 – 0.175
COD	mg/l	<7	-	NE
Chloride	mg/l	21.8	18	24 – 187.5
Potassium	mg/l	1.1	1.1	NE
Sodium	mg/l	8.7	10	150
Sulphate	mg/l	11	13	187.5
Nitrate as NO_3	mg/l	8.1	12.3	37.5
Total Suspended Solids	mg/l	<10	-	NE
Total Alkalinity	mg/l	174	184	NE
Mineral Oil	mg/l	<0.01	-	NE

NE – TV not established
<-denotes below the analytical detection method

Nearby Wells

A search of the GSI well database identified one well, which is used for industrial water supply, approximately 500m to the north and side gradient of the site. This well has a reported yield of 1,000m^3/d.

Surface Water

Stormwater from the existing roofs and paved areas is collected in the facility's surface water drainage system. All run-off passes through an oil interceptor on the northern site boundary and then to a sump is in the north east of the bund around the former wastewater treatment tanks, from where there is an underground pipe to an outfall in the river. The buildings and paved areas site occupy an area of approximately 18,609 m^2. In a rain fall event of 50mm/hr (one in 100 year return), the maximum discharge to the river is 185 litres/second (l/sec).

Stormwater from the roofs of the proposed buildings and paved open areas will be collected in a new surface water drainage system that will connect to the existing system. There will be no change to the location of the outfall to the river.

A 50mm one hour rain event will generate approximately 224m^3 of run-off from the roofs and paved sections of the extension area that connect to the new drainage system. A storm water retention tank will be installed at the location shown on Drawing No10 P 356-50. The tank will have a capacity of 224m^3 and will be fitted with a flow restrictor, for example a 'hydrobrake' that will limit the out flow to 10.9 l/sec, which is the equivalent for a non developed green field area. The combined discharge from the entire site during a 50mm one hour event will be 195.9l/sec.

Wastewater

Wastewater generated at the site comprises sanitary wastewater from the offices which is treated in the on-site septic tank, whose location is shown on Drawing No 10P356-50. This tank is within the footprint of the proposed AD tanks. A new sanitary wastewater treatment system, comprising a wastewater treatment unit and percolation area will be installed to the west of Building 2.

The leachate produced in the composting process is recirculated and surplus leachate that requires treatment is typically not generated. The current contingency arrangement for any such leachate is to send it to off-site wastewater treatment plant. Any surplus leachate that may arise in the future will be treated in the AD plant. Depending on the type of biomass, there is the potential for effluent to be generated during the storage of this material. All liquid generated in the storage area will be collected in a concrete underground storage tank and fed into the AD process.

The AD process will not generate a wastewater that requires treatment on-site. The liquid digestate produced in the process will be stored in the converted wastewater treatment tanks, which will provide a minimum three months storage, and then sent from the site and applied to agricultural lands. Any run-off from the silage storage area will be collected and treated in the AD plant

8.4 Impacts

The proposed development will extend the impervious area of the site, which will increase the volume of rainwater water run-off to the River Suir and reduce potential groundwater recharge. Based on the annual average rainfall and evapotranspiration rates, the potential reduction in recharge will be 4,873 m^3/year, which is derived from

Total impermeable area of extension:	8,400m^2 (including the biomass storage area)
Annual Rainfall:	1122mm (rainfall data for Portlaw)
Annual Evapotranspiration:	530mm.
Potential Recharge	592 mm (Annual Rainfall –Evapotranspiration)

The additional run-off will increase the volume of rainwater discharged to the River Suir. It is estimated that the run-off from the impermeable areas of the extension that connect to the drainage system during a 1: 100 storm return event (50mm rainfall over one hour) will be 224m^3.

Activities with the potential to impact on surface water and groundwater quality during the construction stage include:

- Run-off from excavation and construction areas that may be contaminated with silt of oil from leaks from road vehicles and mobile site plant and elevated pH from mass concrete construction,
- Spills and leaks of stored fuels

Activities with the potential to impact on surface water and groundwater quality during the operational stage include:

- Run-off from open yard areas, that may be contaminated with silt and small amounts of oil from leaks from road vehicles and mobile site plant,
- Spills and leaks of materials, for example oil, leachate, digestate, with the potential to cause pollution, and
- Firewater run-off.

8.5 Mitigation Measures

Construction Stage

During the construction stage, materials with the potential to adversely affect surface and groundwater quality, for example oil, will be stored and handled in a manner that minimises the risk of accidental spills or leaks. Appropriate spill containment and clean-up equipment

will be maintained at the construction area, as required by Condition 3.7.1 of the Waste Permit.

Given the relatively small volumes of material that will be stored on site during the construction stage, and the mitigation measures that will be applied it is considered that any impact on surface water associated with spills and leaks will be negligible, with no long term effects. Based on the nature and thickness of the subsoils (>10m of clayey till), any leaks or spills at the ground surface or leaks in the shallow subsurface will have negligible impact on groundwater.

Operational Stage: Surface Water

Rainwater run-off from the roofs of the new buildings and paved areas will be collected and directed to an attenuation tank via a new oil interceptor. The tank will have a retention capacity of 244m^3, which will contain the run-off from a 1:100 year return storm event (50mm in one hour) from the proposed extension area (6,992m^2) that will connect to the drainage system. Run-off from the biomass storage area (1,409m^2) will be directed to an effluent collection tank, which will not be connected to the drainage system.

The outlet from the tank will connect to the existing surface water drainage system. A flow control system, for example a 'hydrobrake' will be installed on the outlet from the attenuation tank that will limit the flow to 10.9/lsec, which is equivalent to overland flow from unpaved areas. In a 50mm one hour storm event, the additional total flow from the impermeable areas of the entire site will be 196/l/sec, which equates to a 5% increase in the flow from the existing site.

In the operational stage, all waste processing will be carried out inside fully enclosed buildings and tanks. Leachate generated in composting process will be collected and stored in underground storage tanks located inside the building. The levels in the tanks will be monitored to ensure the liquid does not overflow the tanks, and escape from the building

The new digester tanks will be located in appropriately sized and constructed bunds that will prevent any accidental spills or leaks from entering the surface water drainage system. The converted wastewater treatment tanks, which will be used to store the incoming wastes and digestate, are also located in a bunded area.

The effluent storage tank at the biomass storage area will be designed and constructed in accordance with best practice for farm effluent storage facilities. There will be no direct or indirect discharge of leachate or sanitary wastewater to the surface water drainage system. Sanitary wastewater will be discharged to the new septic tank.

The design and construction of all the tank and drum storages areas will comply with Conditions 3.8.1 and 3.8.2 of the Waste Permit, which requires that all such areas are impervious to the materials stored and that there is adequate retention capacity to contain any accidental spills or leaks and prevent release to the surface water drainage system.

Materials with the potential to adversely affect surface and groundwater quality, for example oil, will be stored and handled in a manner that minimises the risk of accidental spills or leaks. Ormonde Organics has developed site specific procedures to deal with spills and any

emergencies that may arise to ensure that the appropriate response actions are taken by trained staff to minimise any associated environmental impacts. Appropriate spill containment and clean-up equipment is provided at the facility, as required by Condition 3.7.1 of the Waste Permit.

In the event of an incident or accident at the facility, including a fire that could give rise to the risk of surface water pollution, the shut off valve on the outlet sump will be closed to contain the contaminated surface water within the drainage system. Following any such incident, the water that accumulates in the drainage system will be tested to identify the appropriate management option.

Operational Stage: Groundwater

The on-site abstraction well is located inside the Compost Building, where one of the new air locks, (Building 4) will be constructed and this area will be used for waste reception. To avoid contamination of the well, it will be decommissioned and sealed in accordance with guidance issued by the Institute of Geologists of Ireland (IGI). A replacement will be drilled to the north west of the Building, at the location shown on Drawing No10 P 536-50. The well will be constructed in a manner that prevents the ingress of rainwater run-off from the ground surface.

The concrete floors inside the buildings, in the bunded areas and paved open yards used by vehicles will comply with Condition 3.5.3 of the Waste Permit and will meet the requirements of British Standard (BS) 8110-Structural Use of Concrete, or an equivalent agreed with Waterford County Council. All the bunds, the biomass effluent storage tank and the underground surface water drainage pipes will be subject to routine inspection and integrity testing specified in Condition 6.8 of the Waste Permit to confirm they are fit for purpose.

The site design and the inspection and testing of the bunds and tanks, pipelines and containers, which will be conducted in the operational phase, will minimise the risk of uncontrolled release of spills/leaks to the ground, which is the pathway for the downward movement of contaminants towards the water table. The nature and thickness of the subsoils (>10m of clayey till) will impede the downward migration of contaminants.

The new wastewater treatment unit will be designed to cater for a population equivalent (pe) of 4. The design and installation will comply with the guidance specified in the EPA Code of Practice: Wastewater Treatment and Disposal Systems Serving Single Houses. This will ensure that treated effluent discharged to the percolation area does not adversely impact on groundwater quality

8.6 Assessment of Impacts

Given the size of the groundwater body (930km^2) and the thickness and of the subsoils, which limit recharge, the reduction in potential groundwater recharge (4,973m^3/year) will have no effect on the bedrock aquifer at either a local or regional scale.

The increase in the run-off from the extension area during storm events will be the equivalent to that from a green field. This will not give rise to any risk of flooding in the River Suir

The risk of impact on surface water quality during the construction stage is low, while the risk to groundwater is negligible. The risk of impact on surface water quality during the operational stage is low, while the risk to groundwater is negligible

9 CLIMATE

9.1 Introduction

This Chapter describes the climate at the facility and is based on meteorological data obtained from the Rosslare Meteorological Station, which is approximately 70 km from the site and wind direction recorded at the on-site weather station.

9.2 Meteorological Data

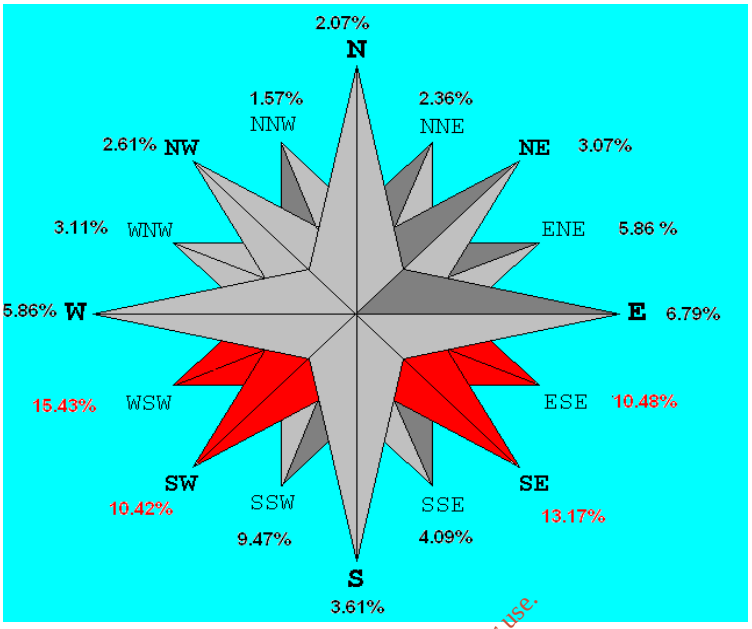
The climate in the area can be described as mild and wet, with the prevailing wind direction from the south west. Average rainfall, temperature, humidity and wind speed and direction for the Meteorological Station at Rosslare is presented in Table 9.1.

Table 9.1 Meteorological Data: Rosslare

Rainfall	
Annual average	877.2 mm
Average maximum month (Dec)	97.6 mm
Average minimum month (July)	50.6 mm
Temperature	
Mean Daily	12.6°C
Mean Daily Maximum (July)	17.9°C
Mean Daily Minimum (Jan)	3.9°C
Relative Humidity	
Mean at 0900UTC	84%
Mean at 1500UTC	71%
Wind (Knots)	
Frequency of calms	0.6%
Prevailing direction	South West
Prevailing sector	South West

A summary of the wind directions (in %) over a one year period (. October 2009 to September 2010) recorded at the on-site weather station is shown on Figure 9.2. The prevailing wind direction was from West South-West (WSW), closely followed by South-East (SE), East South-East (ESE) and South West (SW).

Figure 9.2 - Wind Directions at Killowen, Portlaw 2009 - 2010



9.3 Impacts

The proposed changes to operations will not result in any impacts on the climate or microclimate at the site. The reduction in reliance on non renewable sources of electricity due to on-site generation of electricity using the biogas will have a positive impact in reducing the facility's overall carbon footprint

9.4 Mitigation Measures

As the proposed development will not have any adverse impact on either the climate or the microclimate, mitigation measures are not required

9.5 Assessment of Impacts

The proposed development will have no negative impact, but will have a positive impact by reducing the facility's carbon footprint.

10 AIR QUALITY

10.1 Introduction

This Chapter describes the ambient air quality, assesses impacts of the proposed changes and discusses mitigation measures. It is based on dust and PM10 monitoring conducted by BHP, odour and gas monitoring conducted by Odour Monitoring Ireland (OMI) Ltd and air dispersion modelling carried out by OMI. The monitoring and modelling reports are included in Appendix 9.

10.2 Existing Activities

Ormonde installed and commissioned an air emission abatement system in the Compost Building before composting began to control odour emissions from the process. The system provides negative ventilation inside the building and draws the odorous air to the treatment plant, located to the south of the building.

The system comprises initial treatment in wet (sulphuric acid/water) scrubbers, following which the air is passed through two biofilters, one containing a light expanded clay aggregate (LECA) medium and the second containing woodchip. The scrubbers are designed to reduce ammonia level in the air prior to the air entering the biofilters and the spent scrubbing liquid is used in the composting process.

The air flow is spilt between the two filters. The LECA unit has a treatment capacity of 46,829m^3/hour and the wood chip unit can treat 27,282 m^3/hour, giving a total capacity of 74,111m^3/hour. The wood chip medium is replaced at approximately 18 monthly intervals, while the LECA medium does not have to be replaced. The wood chip removed from the filter is used in the compost process.

In 2010, Ormonde Organics commissioned OMI to assess the performance of the system. The assessment included monitoring odours, amines, ammonia, hydrogen sulphide and mercaptans at the inlets and outlets to both filters. The OMI report (Odour and Gas Monitoring of Two Bioliflters at Ormonde Organics Composting Facility, Portlaw County Waterford, November 2010) concluded that the system was performing satisfactorily.

The LECA biofilter had an odour removal efficiency of 97%, while the woodchip filter had an efficiency of 95%. The amine, ammonia, hydrogen sulphide and mercaptan levels at the outlets were all below the emission limit values set in Schedule D3 of the Waste Permit.

10.3 Existing Air Quality

There are currently two point emissions to air (A1 LECA and A2 Woodchip Biofilters) and the Waste Permit specifies the emission limit values (ELV) at these points (ammonia 50 parts per

million (ppm); hydrogen sulphide 5ppm and mercaptans 5ppm). These parameters are monitored annually at the biofilters. In addition to these, amines, pH, moisture content and bacteria are monitored annually at the biofilters.

The Permit requires weekly odour monitoring surveys at the facility and outside the boundary at odour sensitive locations. Amines, ammonia, hydrogen sulphide and mercaptans are monitored quarterly at two monitoring points inside the site boundary. The Permit requires bioaerosols and particulates (PM10) to be monitored annually at the two internal monitoring points, while dust deposition must be monitored annually at four locations

PM10 monitoring was conducted on 15th October 2010. The monitoring was carried out at five monitoring locations, 4 onsite and at the nearest sensitive location. The PM10 values at all monitoring locations are below the limit (50 µm) set in the European Union Air Quality Framework Directive. Dust monitoring was carried out at 4 monitoring locations at the site between September and October 2010. All of the levels were below the dust deposition limit of 350 mg/m^2/day at all monitoring locations.

The OMI assessment of the efficiency of the odour abatement system, completed in October 2010, confirmed that amine, ammonia, hydrogen sulphide and mercaptan levels at the outlets from the biofilters complied with the ELVs set in the Permit.

In September 2011, OMI completed an assessment of both the odour impacts associated with the existing facility and the air quality impacts associated with the proposed development. (Dispersion Modelling Assessment of Existing and Proposed Biological Treatment Facility to be located at Ormonde Organics, Fiddown, Portlaw, County Waterford)

The assessment of the odour impacts associated with the existing facility was based on five years of sequential meteorological data from the Rosslare weather station. This was to provide a worst case assessment of predicted ground level concentrations. The modelling concluded that, in the worst case, an odour plume originating at the biofiters would extend furthest in a south easterly direction to a distance of approximately 200m from the biofilters, but would not impact on any sensitive receptors.

Ormonde Organics receives occasional complaints from neighbours concerning odours, all of which are recorded and investigated. Where site activities are identified as being a potential cause of the complaint, corrective actions are implemented and the results communicated to the complainant.

10.4 Impacts

The proposed changes will give rise to the following additional point emission sources to air:

- Odour Control Unit (LECA bio filter) at the AD Plant
- Two Gas Engines
- Gas Flare (will only be used intermittently when gas engines are being serviced)

The emission points are shown on Figure 6.1 in the OMI .dispersion modelling report in Appendix 9. Emissions will include oxides of nitrogen, oxides of sulphur, carbon monoxide, particulates, hydrogen chloride, non methane volatile organic compounds and odours.

10.5 Mitigation Measures

The current air quality and odour management controls and procedures will continue to be implemented at the Compost Building. New air locks will be provided at the entrances on the western side of the building use to access the separate wastewater treatment sludge and household organics reception areas (Ref Drawing No 10P536-02).

A new odour abatement plant comprising an air extraction system, wet scrubber and LECA, will be provided to treat odours from the proposed Maturation and Pasteurisation Area (Building 2) and the AD Waste Reception Building (Building 3A). The filter, whose design will be similar to existing LECA system, will be located adjacent to the western side of Building 2.

The abatement system is considered to comply with the Best Available Technique requirements for the biological waste treatment. The new system will have a treatment capacity of 45,000 m^3/hour and produce an exhaust gas that contains less than 1000 Ou_e/m^3, giving a total treatment capacity (existing and new filters) of 119,111 m^3/hour. The proposed design and method of operation will be approved by the EPA before the unit is installed and commissioned.

In addition to the new odour abatement system, the following mitigation measures will be applied;

- The new buildings will be provided with a high integrity building fabric that achieves an air leakage rate of ≤3m^3/m^2/hour;
- Buildings 2, 3A and 3B will be provided with negative ventilation that achieves a pressure of at least 10 Pascals (as with Building 1 existing). The air will be ducted to the new odour abatement system;
- All sumps and tanks will be fitted with high containment efficiency covers;
- The slide feeder in Building 3A will be placed under negative pressure to minimise odorous air releases within the building;
- The new buildings and odour treatment system will be assessed by an independent experienced contractor to confirm the building integrity (leakage rate, smoke integrity test and absolute pressure test) and odour treatment performance;
- An odour management plan (OMP) will be prepared for the entire facility. The plan will specify the routine inspections and maintenance that must be carried out to ensure the odour control system continues to operate efficiently.

10.6 Assessment of Impacts

The OMI September 2011 assessment included air dispersion modelling to assess the impacts of the emissions in the context of the relevant air quality standards and guidance, which included:

- Air Quality Standards Regulations (S.I. No 271 of 2002);
- Directive 2008/50 EC on ambient air quality and cleaner air for Europe
- Horizontal Guidance Note, IPPC H4 Parts I and 2 UK Environment Agency
- Air Dispersion Modelling from Industrial Installations Guidance Note AG4 2010 (EPA).

The assumptions, including the performance specification of the new odour abatement system and mitigation measures that will be incorporated into the design and construction of the new buildings, used in the modelling and the methodologies applied are detailed in the OMI Report. As the gas flare will only run when one of the gas engines is shut down for servicing, and the emissions are less than that from the engine, it was not included in the modelling.

The modelling confirms that all the emissions from the site, including those from the existing and proposed emission points, will comply with the applicable air quality standards (oxides of nitrogen, oxides of sulphur, carbon monoxide, hydrogen chloride, hydrogen fluoride, benzene and particulates). The odour plume will spread in a north westerly to south easterly direction, between 100 and 200m from the emission points and will not impact sensitive receptors. Therefore the proposed changes will have a neutral impact.

11 NOISE

This Chapter discusses the impacts of noise associated with the proposed extension of waste activities. It is based on a daytime and nighttime survey and predictive assessment completed by BHP. The BHP report is included in Appendix 10.

11.1 Noise Survey

Methodology

The survey was conducted on 14th October 2010 during day and night time hours when the facility was fully operational. The methodology applied, including the instrument calibration procedures, is described in the BHP Report in Appendix 10.

Measurement Locations

Monitoring was carried out at the four onsite monitoring locations (N1 – N4) and the nearest noise sensitive location specified in the Waste Permit. The survey included both day-time and night-time.

Emission Sources

Noise emissions arose from several sources, the main ones being;

- Truck movements, approximately 12 per day entering the facility, these trucks average (80 dB)
- Caterpillar Loader IT62H (106 dB)
- Caterpillar Loader IT14G (102 dB)
- JCB Loader 456 EHT (109 dB)
- JCB Loader 436 EHT (105 dB)

Measurement Parameters

The measurement parameters applied were: -

1) L_{aeq} is the equivalent continuous sound level. This is used to describe a fluctuating noise in terms of a single noise level over the sample period;

2) L_{amax} is the instantaneous maximum sound level measured during the sample period;

3) L_{Amin} is the instantaneous minimum sound level measured during the sample period;

4) L_{A10} is the sound level that is exceeded for 10% of the sample period. It is typically used as a descriptor for traffic noise;

5) L_{A90} is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The "A" suffix denotes the fact that the sound levels have been "A-weighted" in order to account for the non-linear nature of human hearing. All sound levels are expressed in terms of decibels (dB) relative to 2x10-5 Pa.

Survey Findings

The survey results are presented in Table 11.1.

Table 11.1 Noise Survey Results October

Location	Sampling Interval	Duration (mins)	L_{AEQ} dB	L_{A10} dB	L_{A90} dB	Wind speed m/s	NOTES
N1	1316-1331	15	57.4	61.5	41.8	0.1-1.2	The location is close to the front of the operation by the main road. Traffic noise is the main noise source. The plant is barely audible in the background
N2	1336-1351	15	61.5	68.4	46.5	0.1-1.1	Traffic noise is the main source of noise. The facility was operating up to 40 dB.
N3	1355-1410	15	49.7	56.8	44.0	0.1-1.5	The location is located to the rear of the site. Distant traffic is audible up to 48 dB. Site activity was recorded up to 43 dB.
N4	1414-1439	15	44.3	59.4	41.8	0.1-0.6	Distant traffic is audible up to 46 dB. Birdsong was audible up to 50 dB at times. Otherwise the area was quiet.
NSL (daytime)	0923-0938	15	48.1	40.6	29.1	0.1-1.0	Traffic noise from R680 is the main noise source. 6 cars passed during the monitoring reaching up to 55 dB while 1 lorry passed reaching up to 70 dB. No sound was audible from the Ormonde Organics facility.

The results of the night time survey at the NSL are presented in Table 11.2

Table 11.2 Noise Survey Results

Location	Sampling Interval	Duration (mins)	L_{AEQ} dB	L_{A10} dB	L_{A90} dB	Wind speed m/s	Sampling notes
NSL (night-time)	0520-0535	15	42.8	39.4	27.5	<0.1	The area was quiet during monitoring. No traffic passed and no sound was audible from the Ormonde Organics facility.

The LAeq levels at locations N1 and N2 exceed the daytime limit of 55dB(A) set in the Waste Permit. However the exceedance is attributed to noise from traffic on the R680 and not facility operations. In the daytime, the dominant source of noise at the noise sensitive location (NSL) was traffic on the R680. The nightime noise levels at the NSL were less than the nightime limit of 45dB(A). There was no tonal or impulsive component recorded.

11.2 Existing Noise Environment

The noise surveys have established that the noise from the current operations comply with the limits set in the Waste Permit. The dominant noise in the area is traffic on the R680, and Ormonde Organics have not received any complaints from neighbours about noise emanating from the facility

11.3 Impacts

The current occupational noise levels for the machinery on site are as follows:

Noise Source	Ppeak dB (A)
Caterpillar Loader IT62H	106
Caterpillar Loader IT14G	102
JCB Loader 456 EHT	109
JCB loader 436 EHT	105
Incoming Trucks	80

The additional proposed development sees the addition of the digester tanks and associated processing equipment (Combined Heat & Power Unit). The principal noise emitting components of the proposed AD plant include:

- Propellers/Mixers inside the digesters – these generate maximum noise levels of 74 dB. The digester tanks will be fully covered.
- The maximum noise levels of the CHP unit is projected as 90 dB. The CHP unit will be completely enclosed with insulated walls, thereby significantly reducing the noise levels.
- Other equipment including Coulisse Dampers, CHP Stack and Cooler Table

11.4 Mitigation Measures

The following mitigation measure will be implemented:

- The internal access roads will be maintained to reduce vehicular noise, especially banging from empty trucks.
- A speed limit of 30 km/hr will apply for vehicles moving inside the site boundaries.
- A review of reversing sirens will be carried out with a view to their possible replacement with white sound technology.

- External doors on entrances to operational areas will only be opened to allow vehicle movements

- Periodic noise monitoring will be carried out to ensure compliance with the emission levels set in the Waste Permit.

11.5 Assessment of Impact

The predictive assessment completed by BHP concluded that noise levels resulting from the proposed development will not exceed 55dB (LAEQ) at the current noise monitoring locations. This will comply with the day time limits set in the Waste Permit. The slight increase in traffic will not have any impact on the noise levels.

12 ECOLOGY

12.1 Introduction

This Chapter describes and evaluates the habitats with their representative flora and fauna and assesses the impacts associated with the proposed development. It is based on the ecological assessment completed by Dixon Brosnan Ltd, whose full report containing all of the supporting information and references, is included in Appendix 11. Dixon Brosnan also prepared a Natura Impact Statement (NIS) Stage 1 Screening Report, which is a separate document from this EIS

12.2 Methodology

Initial Consultation

The local officer of the NPWS was consulted and did not note any particular concerns relating to the facility or the proposed redevelopment.

Site Survey

The field survey was carried out on 28th October 2010 to identify, map and evaluate habitats. The survey covered the entirety of the site and surrounding environs of the proposed development area, hereafter referred to as the "study area". The methodologies applied are described in the Dixon Brosnan Report in Appendix 11.

12.3 Existing Environment

The site is on the west bank of the Lower Suir River. The immediate surrounding lands include farmland, dominated by improved pasture, and broad leafed woodland plantations. Other prominent landscape features include the lower River Suir with its associated riparian woodland of willows and levees. Hedgerows, treelines, trackways and public roads are also present. The study area contains a number of minor watercourses. The site itself is dominated by artificial surfaces which include the buildings, yards and parking areas.

As, there are no designated conservation areas either within or immediately adjoining the proposed development site, the proposed development does directly impact any Special Area of Conservation (SAC), Natural Heritage Area (NHA), Special Protection Area (SPA), National Park or Nature Reserve.

The facility is approximately 300m from Lower Suir River SAC (site code 002137). A list of all the protected sites within 10 km of the proposed development site is in Table 12. 1 with the locations of the most relevant sites to the facility shown on Figures 12.1, 12.2 and 12.3.

Table 12.1. Protected Sites within 10km of Proposed Development Site.

Site	Code	Distance
SAC &cSAC		
Lower River Suir	002137	280 meters N & E
pNHA		
Lough Cullin	000406	2.71km W
Lower River Suir (Coolfinn, Portlaw)	000399	1.92km S
Fiddown Island	000402	520 meters N
Portlaw Woods	000669	2.61km S
River Suir Below Carrick-On-Suir	000655	5.72km NNW
Tibberaghny Marshes	000411	2.98km N
Nature reserves		
Fiddown Island Nature Reserve		520 Meters N

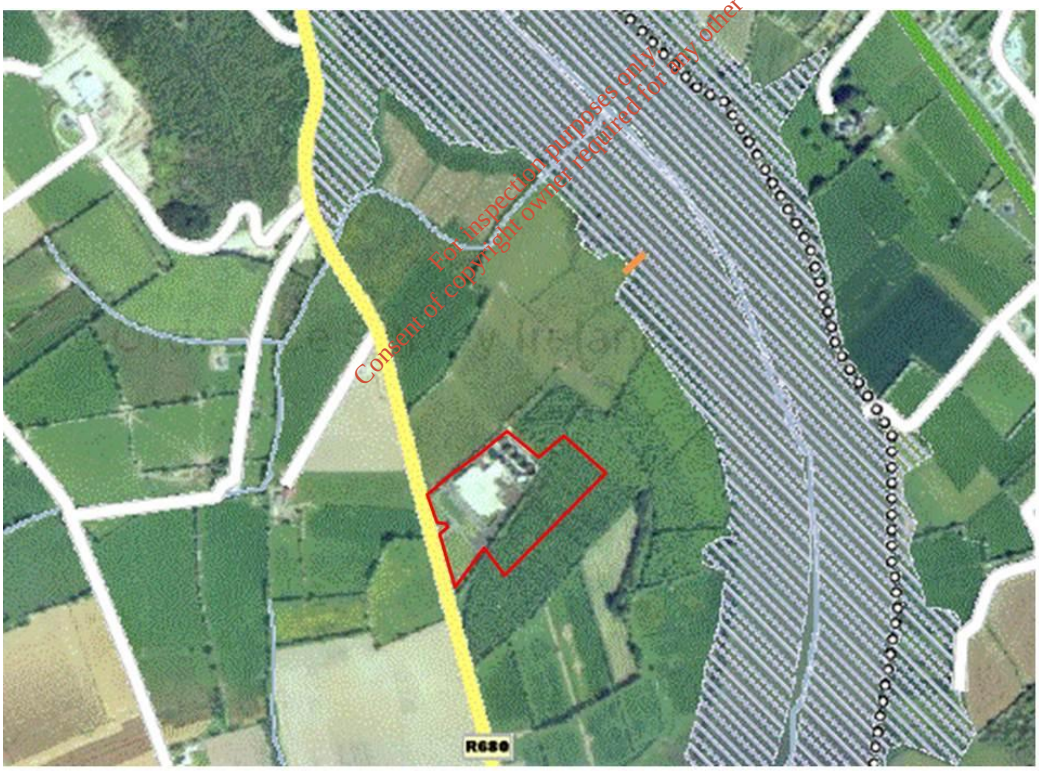


Figure12.1 Proposed Development Area (outlined in red) and the existing Surface Water Discharge Point (indicated in orange) in relation to the Lower Suir SAC (hatched).

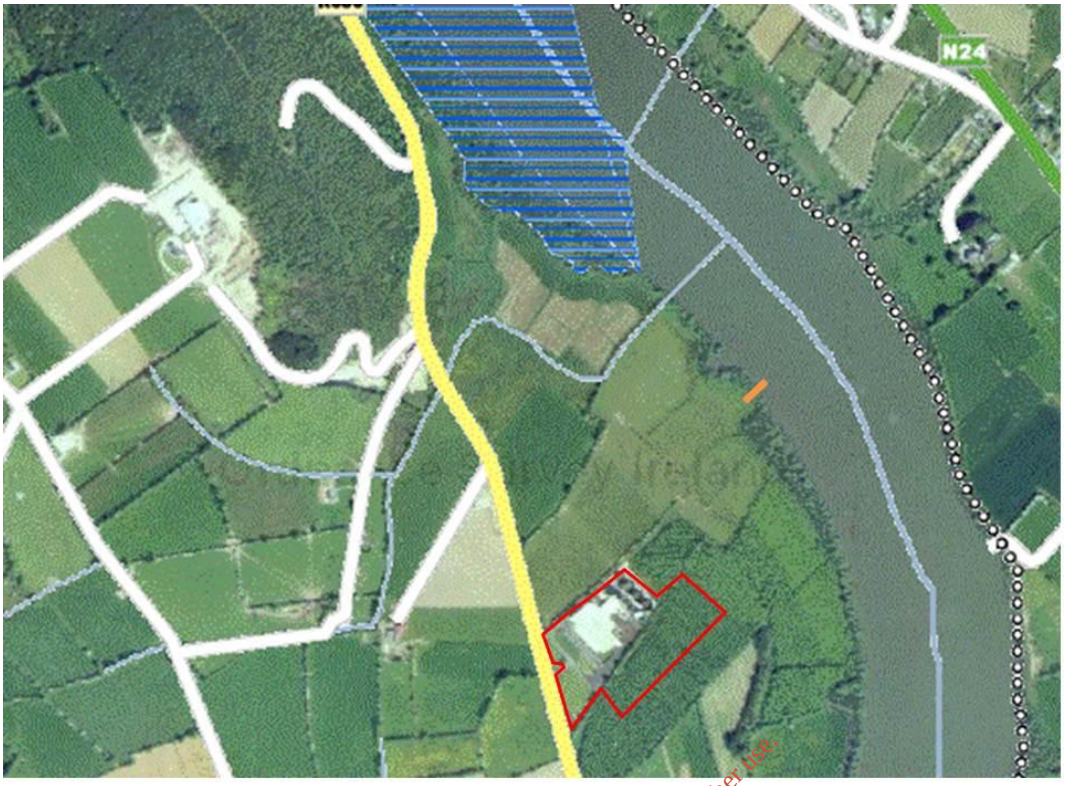


Figure 12.2 Proposed Development Area and the Discharge Point in relation to the Fiddown Island pNHA (hatched)

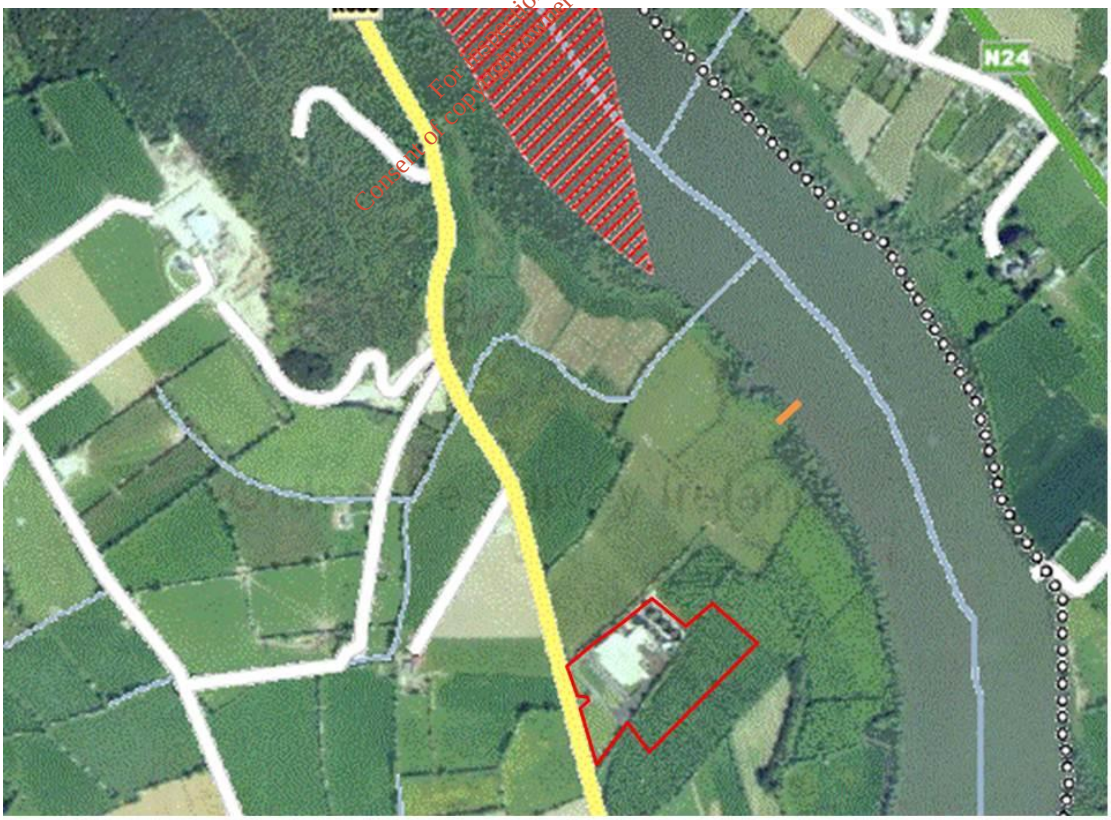


Figure 12.3. Proposed Development Area and the Discharge Point in relation to the Fiddown Nature Reserve (hatched).

SPA, sCAS and pNHA are protected under the European Habitats and Birds Directives and the Irish Wildlife (and Amendment) Acts, 1976 and 2000 respectively. The most relevant sites are the Lower River Suir SAC and the Fiddown Island Nature Reserve, which is upstream of the facility.

Lower Suir cSAC

This site consists of the freshwater stretches of the River Suir immediately south of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore east of Cheekpoint in County Waterford and its many tributaries, including the the Lingaun, Anner, Nier, Tar, Aherlow, Multeen and Clodiagh in Tipperary and the Clodiagh in County Waterford..

The site was selected as a cSAC due to the presence of the priority habitats listed in Annex I of the E.U. Habitats Directive - Alluvial Wet Woodlands and Yew Wood and other habitats also listed in Annex 1, which include Floating River Vegetation; Atlantic Salt meadows, Mediterranean salt meadows; Old Oak Woodlands and Eutrophic Tall Herbs. The site is also home to the following species listed on Annex II of the Directive - Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Crayfish, Twaite Shad, Atlantic Salmon and Otter.

Fiddown Island Nature Reserve

The Reserve occupies 21ha, was established in 1988 and is State owned. Features of Interest include an alluvial woodland dominated by tree willows formerly used for basket making. The vegetation is characterised by tall herbs, sedges and grasses. It is covered in willow scrub and bordered by reed swamps - the only known site of its type in Ireland.

12.4 Evaluation of the Ecological Importance of the Site

12.4.1 Terrestrial Habitats

The terrestrial habitats within the development area or potentially affected by the development are listed below and are shown on Figure 12.4.

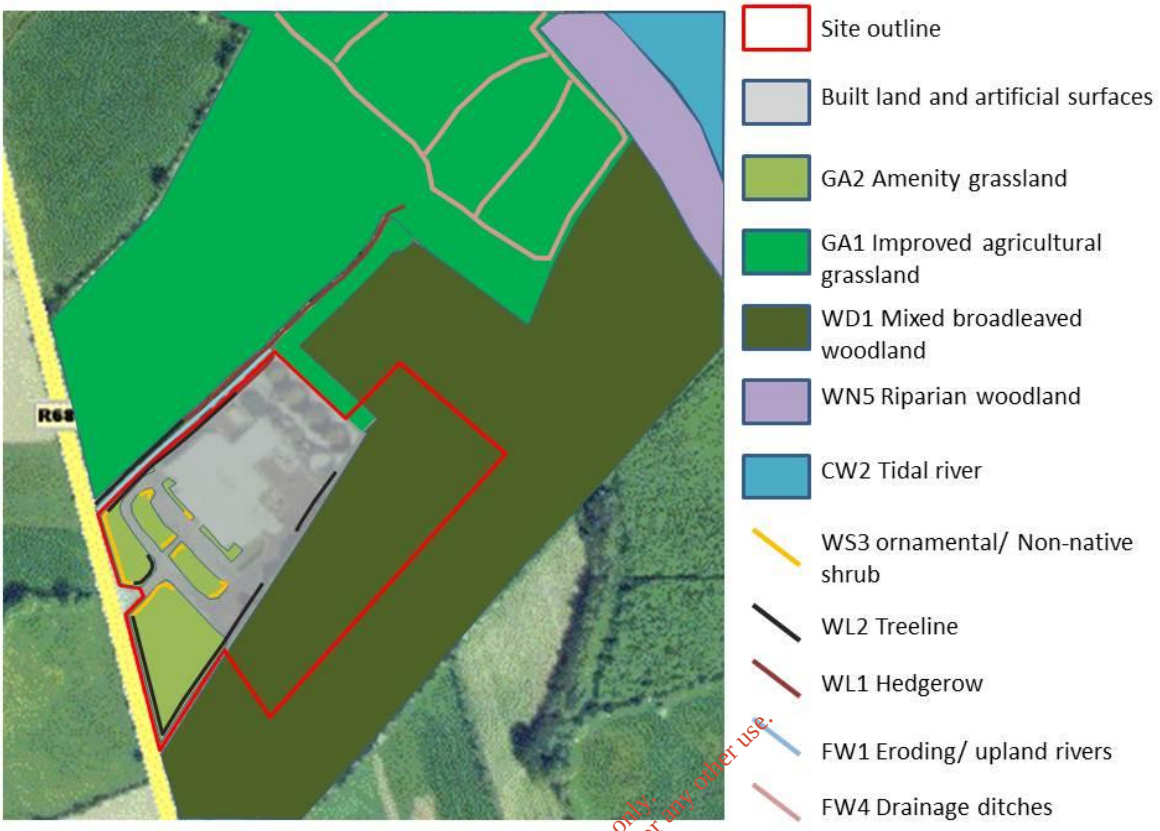


Figure 12.4

GA1 Improved Agricultural grassland

This habitat includes grassland that has been reseeded and regularly fertilised. It is dominated by grass species, particularly rye-grass, with a poor complement of agricultural weed species. The adjoining land to the north and west of the site are classified as improved agricultural grassland, which is heavily grazed and/or used for silage. Poorly drained areas within this habitat have been colonised by soft rush.

WD1 Mixed broadleaved

This refers to the immediate adjoining lands to the south and east. Both consist of plantation grown ash and sycamore. The trees are closely spaced and approximately 8 m tall. This area appears to be quite well maintained and regularly thinned. The ground flora is dominated by bramble, nettle and moss species, with broadleaved dock, ivy, male fern, holly, elder and blackthorn also recorded.

WL1 Hedgerow

The northern boundary of the site is marked by both hedgerow and treeline. The species mix is predominantly gorse with hawthorn and bramble. Downey birch and sycamore were also present in the hedgerow.

WL2 Treelines

The treeline on the northern boundary of the site is a purposefully planted treeline used a screen to obscure the view of the treatment plant from the road and neighbouring houses.

This treeline consists primarily of Leyland cypress and Scot's pine with ash, sycamore, birch and eucalyptus also included.

WN5 Riparian woodland

Adjacent to the river is a dense area of Riparian woodland dominated by white willow, with crack willow and grey willow also present. The dense under story vegetation in the field layer includes nettle, bramble, dock (*Rumex spp*) and reed canary grass.

BL3 Built land and artificial surfaces

This habitat type includes all the buildings, sheds, storage tanks and yards within the active site. Very little vegetation occurs within the working areas. The few species observed included rye grass, smooth sow thistle, broadleaved dock, daisy, broadleaved plantain and yarrow. These were all recorded in cracks in concrete or at the base of buildings.

WS3 Ornamental/ non-native shrubs

At the main entrance to the site there is a landscaped area. Shrubs such as cotoneaster are common, with Leyland cypress and eucalyptus trees also present. This species poor habitat surrounds a well maintained lawn of rye grass.

GA2 Amenity grassland

The rye grass lawns is species poor with ribwort plantain, daisy, dandelion, hop trefoil and creeping thistle as infrequent ruderals.

Based on the habitat surveys, the relative values of each terrestrial habitat are described in Table 12.2. The value of a habitat is site specific, and is partially related to the amount of that habitat in the surrounding landscape. The evaluation is based the National Roads Association *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (NRA, 2006a)

Table 12.2 Terrestrial Habitat Value

Habitat Type/Species	Relative Habitat Value	Comments
GA1 Improved agricultural grassland	**Low value E**	Habitat is highly modified with low species diversity.
WD1 Mixed Broadleaved woodland	**Low - Moderate value E-D**	Recently established plantation with low species diversity and dominated by ash and sycamore. Potential to develop into more diverse woodland.
WL1 Hedgerow	**Moderate value D**	Diverse with remnants of semi-natural habitat, locally important for wildlife. Valuable as corridors and refuges for wildlife amongst artificial and highly modified habitats.
WL2 Treelines	**Low value E**	A highly modified, mostly artificial habitat maintained as a screen. Regularly trimmed to facilitate the movement of machinery through the site.

Habitat Type/Species	Relative Habitat Value	Comments
WN5 Riparian woodland	**International value A**	This habitat is included within the boundary of the cSAC. It is a natural woodland associated with the lowland depositing river. Diversity appears high and this habitat serves as valuable refuge for wildlife.
BL3 Built land and artificial surfaces	**Low value E**	Highly modified habitat artificial habitat, of minimal value to wildlife.
WS3 Ornamental/ non-native shrubs	**Low value E**	Highly modified and regularly maintained habitat; mainly evergreen shrubs. Limited potential for birds.
GA2 Amenity grassland	**Low value E**	Highly modified and regularly maintained habitat. .

Mammals

The prevalence of pasture with hedgerows and mixed broadleaved woodland surrounding the proposed development site makes it suitable for badgers. However the site itself is of no value for this species. A survey of the site and surrounding area, to approximately 300 meters from the site boundary, did not record any signs of badger activity.

No buildings will be directly affected by the proposed development, and no treelines or hedgerows, which could provide commuting routes or feeding opportunities for bat species will be affected.

Otters occur along both the freshwater and tidal section of the Suir River and are listed as a qualifying interest for the Lower River Suir SAC. No evidence of otters was found in the study area and similarly no active holts were recorded in the areas that will be impacted by the development. The species may periodically utilise the thin reedbeds and riparian woodland along the riverbank adjacent to the proposed development area for resting and is expected to hunt within the Suir River. However the site itself is of no value for this species.

Other mammal species protected under the Wildlife Acts 1976 and 2000, which could conceivably occur, are red squirrel, Irish hare, pine martin, hedgehog and stoat. The Irish hare is widespread in the Irish countryside but was not observed within the proposed development are or any surrounding habitats. Hedgehog and stoat are widely distributed and may be present in proximity to the proposed development site. The nearest deer population is over 20km to the west near Kilsheelan.

No evidence of foxes was recorded in any of the habitats surrounding the site. Rabbits were observed in the dryer grasslands and fields. Field mouse, bank vole and brown rat are almost certainly present and pygmy shrew are also likely to occur within the study area.

Reptiles and Amphibians

The common newt and common frog are protected species under the Wildlife Act 1976 and 2000. Neither species were observed, however it is likely that common frog is present within wetter grassland areas and drainage ditches within the overall study area.

Birds

General bird surveys were carried out in conjunction with the habitat survey. October is too late to carry out a breeding bird survey, as summer visitors that breed on the site are absent and some resident species remain inconspicuous until spring. However, a good general picture of the bird communities can be gained from examination of the habitat types present and general bird observations. Generally the development area is of limited value for birds and no specialised bird surveys were considered necessary.

12.4.2 Aquatic Habitats

FW1 Eroding Upland Rivers

This habitat type is represented by a seasonal stream which flows along the northern boundary of the site and is associated with the hedgerow and treeline habitats. As it leaves the site and hedgerow, it enters a system of drainage ditches in the field system between the proposed development site and the River Suir. At the time of the site visit, this was a dry stream bed which was overshadowed by the surrounding treeline and hedgerow. It is of low ecological value.

Tidal rivers CW2

A tidal section of the River Suir is approximately 300 meters to the east of the proposed development area. This section of the river is approximately 280 meters wide and is characterised by deep slow water. The western bank, adjacent to this site, has a levee approximately 5 meters high. The riverside bank of this levy is dominated by willows including white willow, cracked willow and osier. Reed canary-grass and common reed were also present along the water's edge and along the levy.

FW4 Drainage ditches

A system of drains and ditches occurs in the field system between the facility and the River Suir. Soft rush and jointed rush were recorded throughout this habitat with reed canary-grass and common reed recorded in lower areas closer to the River Suir.

The relative values of each Aquatic habitat type are described in Table 12.3.

Table 12.3 Aquatic Habitat Value

Habitat Type/Species	Relative Habitat Value	Comments
FW2 Depositing lowland river	**International value A**	This habitat is outside of the proposed development area and will not be directly affected by this development. As part of the Lower River Suir SAC it is considered a high value habitat.
FW4 Drainage ditches	**Low value E**	The system of drainage ditches supports a moderate diversity of flora and will not be directly affected by the proposed development.
FW1 Eroding upland rivers	**Low value E**	Of low ecological value.

Aquatic Fauna

The River Suir runs over limestone for most of its length and is considered a highly productive trout fishery. It also gets a substantial run of salmon.

A number of species listed in Annex II and V of the EU Habitats Directive occur within the Lower River Suir cSAC-River Lamprey, Sea Lamprey, Brook Lamprey, Atlantic Salmon, Twaite, Shad and Allis Shad. Sea Lamprey, River Lamprey and Salmon migrate through the tidal sections of the river in proximity to the site and both Shad species occur in estuarine conditions. Two listed invertebrate species, Freshwater Pearl Mussel and White Clawed Crayfish are also present in the Lower River Suir SAC, however neither species is likely to occur within the tidal section of the Suir in proximity to the site.

12.5 Impacts

Potential impacts on terrestrial habitats and fauna include direct habitat loss and disturbance or displacement of fauna due to increased noise and disturbance during the construction and/or operation phase.

Potential impacts on aquatic habitats and fauna include a deterioration in the quality of the surface water run-off from the site during the construction stage. The possible causes include;

- Increases in suspended solids levels in surface water runoff from excavation areas;
- Increases pH in the run-off from areas where bulk liquid cement is used, and.
- Release of fuel, lubrication or hydraulic oils to the surface water drainage system from storage tanks or construction vehicles or plant and equipment operating close to watercourses.

Potential impacts in the operational stage include the uncontrolled release of suspended solids, nutrients or hydrocarbons.

12.6 Mitigation Measures

General Measures

All construction and operatational staff be informed of the importance of the need to protect the River Suir SAC. A noise management plan will be developed and implemented during the construction stage to minimise disturbance.

*Aquatic Flora & Fau*na

To minimise the potential impacts on aquatic flora and fauna including fisheries, macro-invertebrates and aquatic plants, particularly those associated with the release of suspended solids, the following mitigation measures will be implemented.

- A detailed method statement will be produced to minimise the production and escape of suspended solids and other contaminants to the watercourses. This will include a contingency plan to deal with any significant pollution incidents with the potential to impact on the SAC. Site engineers and construction workers, including sub-contractors, will be briefed on the environmental issues and pollution control methods before going on-site.

- The only discharge to the River Suir will be surface water from the existing facility which discharges through appropriately sized and maintained silt traps and an oil interceptor. Wastes are processed indoors and only moved between the buildings in sealed containers; therefore no nutrient enrichment of surface water is expected to occur.

- The proposed changes to the site layout will involve alterations to the surface water drainage system within the site, but will not give rise to any new surface water emission points or changes in the quality of the surface water discharge.

12.7 Assessment of Impacts

The predicted impacts on terrestrial and aquatic habitats, taking into consideration the proposed mitigation measures, are shown in Tables 12.4 and 12.5 and the predicted impacts on fauna are described in Table 12.6

Table 12. 4 Impacts on Terrestrial Habitats

Habitat Type/Species	Relative Habitat Value	Impacts
GA1 Improved Agricultural Grassland	**Low value E**	**Neutral**. Already highly modified and easily replaced.
WD1 Mixed Broadleaved Woodland	**Low -Moderate value E-D**	**Minor negative.** A small area of this habitat will be affected.
WL1 Hedgerow	**Moderate value D**	**Neutral**. This habitat is on the periphery of the proposed development area, and no alterations to this habitat are planned.
WL2 Treelines	**Low value E**	**Neutral**. This habitat is on the periphery of the proposed development area, and no alterations to this habitat are planned.
WN5 Riparian Woodland	**International value A**	**Neutral.** No impact on this habitat will occur.
BL3 Built Land and Artificial Surfaces	**Low value E**	**Minor Negative to Neutral**. Already highly modified and easily replaced. The area to be developed is entirely within this habitat.
WS3 Ornamental/ Non-Native Shrubs	**Low value E**	**Neutral**. Already highly modified and easily replaced.
GA2 Amenity Grassland	**Low value E**	**Neutral**. Already highly modified and easily replaced.

Table 12.5 Impacts on Aquatic Habitats

Habitat Type/Species	Relative Habitat Value	Impacts
Tidal River CW2	**International value A**	This habitat is on the periphery, and therefore outside of the proposed development area.. The proposed changes to the site layout will involve alterations to the surface water drainage system, but will not give rise to any new surface water emission points or changes in the quality of the surface water discharge quality. A NIS screening report concluded that there would be no significant impact on the Lower River Suir SAC. **Under the NRA scheme any impact on a designated site which is considered of international value is considered major. In practical terms however, the impact is considered minor to moderate negative.**
FW4 Drainage Ditches	**Low value E**	No significant impact on this habitat is envisaged. The impact will be **minor negative**
FW1 Eroding Upland Rivers	**Low value E**	**Neutral**. This seasonal habitat is on the periphery of the proposed development area.

Table 12 6. Predicted Impacts on Fauna

Species	Relative Species Value	Impacts
Badgers	**Protected under the Wildlife Acts 1976 and 2000**	The pasture lands surrounding the study area is suitable for foraging badgers. No signs of badgers were recorded on site, or in any of the surrounding habitats. **No impact** on this species is expected to occur.
Otter	**Protected under the Wildlife Acts 1976 and 2000. Included in Annex II of the Habitats Directive**	Otters have extensive territories. It is unlikely that the proposed localised construction work, approximately 300 meters from the river, would seriously disrupt their activities. They depend on salmonids and other fish species as a food source and construction should not compromise water quality and the fishery. Any long term impact is likely to be **negligible.**
Birds	**Protected under the Wildlife Acts 1976 and 2000.**	The most significant impact arising from a species conservation viewpoint is the loss of individuals of rare species. No nesting habitat is located within the proposed development site. No Annex I species are predicted to occur in the immediate surrounding habitat. The proposed development is likely to cause short term disturbance to birds during the construction phase mainly as a result of noise, and site development works. However, these impacts are likely to be **minor in the short-term and negligible in the longterm.**
Bats	**Protected under the Wildlife Acts 1976 and 2000.**	No impact on bats is envisaged.

13 LANDSCAPE & VISUAL IMPACT

13.1 Introduction

This Chapter assesses the potential effects of the proposed development on the visual resources of the site and its surroundings and its potential impact on the general landscape character.

13.2 Methodology

The assessment of the landscape is based on guidelines in the document 'Landscape and Landscape Assessment, Consultation Draft of Guidelines for Planning Authorities, 2000', the 'Waterford County Development Plan, 2011-2017', site inspections carried out in November 2011 and a review of Ordnance Survey maps.

The study area was defined based on the visibility of the facility and the analysis of public viewpoints. The choice of viewpoints was influenced by identification of private residences, key vantage points and the visibility of the existing and proposed buildings. A 2km zone of visual influence is depicted on the VRP Location Plan (Figure 13.4 and Appendix 12) and illustrates the stretches of road where it is possible to get views/ partial views of the facility. This also shows the location of each of the Visual Reference Points that provide the most conspicuous views of the facility in this zone.

Weather conditions on each day were acceptable for assessing all types of view. The accompanying photographic survey depicts the vegetation from surrounding public roads in early winter conditions, when deciduous trees have lost most of their foliage and thus have minimal screening effect (Appendix 12).

This Landscape and Visual Impact Assessment (LVIA) assesses the magnitude and significance of the changes to the landscape character and visual setting as a result of the proposed development. The significance is dependant on the sensitivity of the affected landscape or visual receptor and the magnitude of change that is judged to have resulted from the proposed development. These are based on:

- **Landscape Effects:** The likely nature and scale of changes to individual landscape elements and characteristics and the consequential effect on the landscape character and quality, resulting from this proposal; and

- **Visual Effects:** The change in the character of the available views resulting from this proposal and the change in the visual amenity of its receptors (i.e. those who will see it).

To consider the magnitude and significance of any change to the existing situation, the following issues are taken into account:

- The sensitivity of the view taking into account both the public accessibility of the land where views are possible and the likely sensitivity of that view given the distance, travelling speed, intervening vegetation and land usage;

- The quality and value of the existing landscape at each Visual Reference Point;

- The degree to which the proposal will be visible within the surrounding area; and

- Any other changes in the existing landscape e.g. new road junctions.

13.3 Site Context

Surrounding Landuse

The landscape in the area around the site is dominated by forestry, the River Suir and its tributaries and pasture/ tillage field systems. These are shown on Figure 13.1. The red dots represent private residences and farm holdings to the north, west, southwest and south of the site. The topography slopes generally from west to east towards the River Suir.

The land immediately to the northeast, east, southeast and south of the facility is covered with deciduous woodland. This woodland, which includes the proposed extension area, was planted at the time the original tannery was constructed in the early 1990's. South of the woodland are agricultural lands that are used for pasture, tillage and horticulture, and the River Clodiagh, which flows east to its confluence with the River Suir.

To the northeast of the woodlands, the lands are poorly draining pasture that slope down to the River Suir. Cattle graze the lands over most of the year. There is a 5m high levee on the western bank of the river that screens these from the Suir. To the north, the land use is mainly grassland, with some tillage, with Mountbolton Wood further north.

The R680, which runs from north to south, forms the sites western boundary. The lands to the west of the road are primarily used for animal grazing and tillage.

Existing Site

The layout of the existing site is shown on Drawing No. 10P536-01 and on the aerial photograph below (Figure 13.2). The site comprises an existing composting facility with a disused Waste Water Treatment Plant (WWTP) to the rear, left over from the pervious Tannery operation at the site, dating from the early 1990's (PL24/5/88120; WCC Reg. Ref. 663/91).

Figure 13.1 Site and its Surrounding Landscape Features

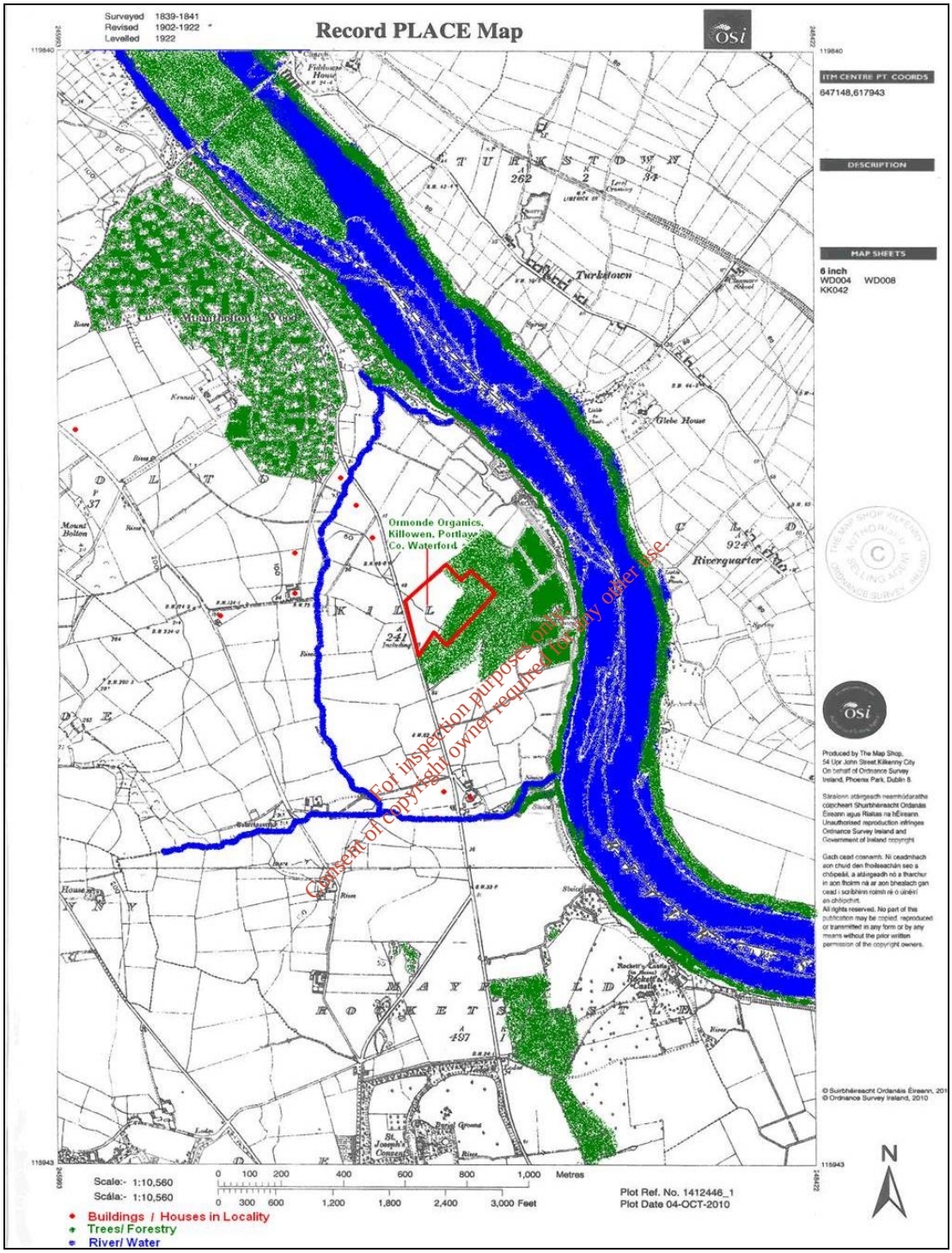


Figure 13.2 Existing Site Layout

The main building is visible at the site entrance on the R680 (Figure 13.3), however the boundary walls, mature trees and grassed mounds provide substantial screening, with only the south facing panels and roof of the building being visible.

Figure 13.3 Site Entrance Looking East

13.4 Landscape Character

There are no known landscape designations pertaining to the application site and no protected views that might be impacted upon by the existing or proposed development.

13.5 Landscape Sensitivity

The Waterford County Development Plan, 2011-2017 contains mapped areas of the County according to their capacity to absorb development without changing the distinctiveness and character of the landscape.

The subject site is within the "Normal Category" in the Sensitivity Zoning Key, which states:

> *"A common character type with potential to absorb a wide range of new developments."*

The agricultural/ industrial appearance of the existing shed structure on site has a good ability to absorb further development without causing severe landscape or visual impacts. Screening is also provided by surrounding deciduous woodland and hedgerows, which together with the enclosing topography gives the site strong capacity to absorb additional development.

13.6 Visual Reference Points

The assessment identified 16 No. principal viewpoint locations within a 2 km radius of the subject site where publicly accessible views are available (see Figure 13.4 and Appendix 12). These viewpoints are important in determining the indicative visibility of the site from these key points and the likely visual receptors.

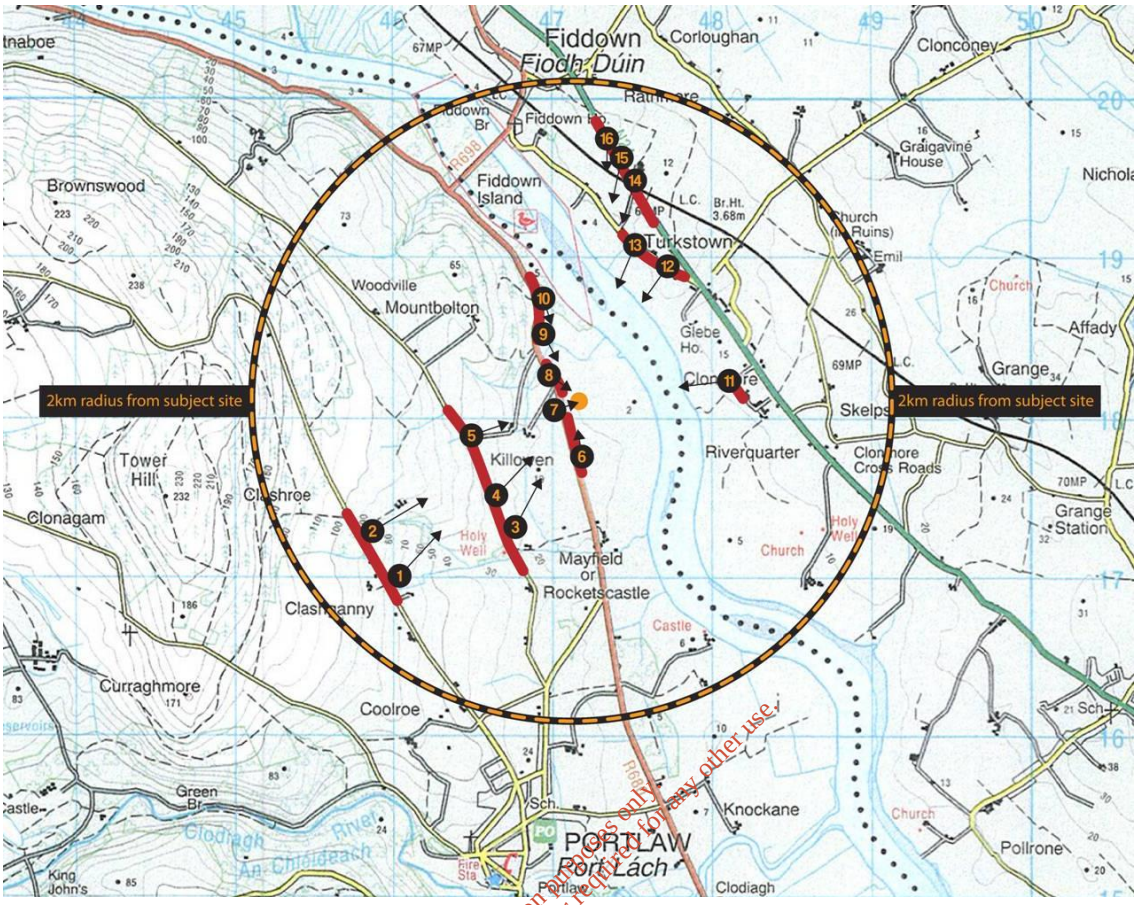
In general, the subject site has a tight visual envelope having regard to the very limited number of places where any part of the development is visible.

Views of the facility are from National, Regional and Local roads in the vicinity and primarily provide distant, partial or glimpse views of the facility. Figure 13.4 also demonstrates those areas from which there will clearly be no view and therefore no visual effect.

Where visible, the existing composting facility has an agricultural or industrial appearance, given the shed-like design of the facility and the colour and nature of the materials used. The design of the existing facility is considered appropriate within the rural landscape setting.

Typically (where the facility is visible) only the ridge and/or eaves of the facility are distinguishable, due to the topography of the local landscape and the degree of screening provided by local vegetation. Accordingly, impacts on the visual amenity of the surrounding area are not likely to be significant.

Figure 13.4 VRP Location Plan



13.7 Impact of the Proposed Development

The proposed development is described in Chapter 5 of the EIS. In brief, it comprises the construction of 2 No. new double height entrance structures to the existing composting building (Building 1), 3 No. new buildings (Buildings 2, 3(A) and 3(B)), anaerobic digestion tanks, gas flare, a new biofilter, enclosing the existing WWTP tanks and silage pit.

The proposed layout is shown on Drawing No. 10P536-02 and the elevations are shown on Drawing Nos. 10P536-12, 10P536-15 and 10P536-16. Sections through the existing site and the proposed development are shown on Drawing No. 10P0536-13.

For the purposes of LVIA, the elements of the development likely to be most relevant include height, massing and exterior appearance of the proposed structures (in comparison to that existing) and any potential alterations to existing vegetation.

The ridge height of the existing composting building (Building 1) is approximately 22 metres AOD. Proposed Buildings 2 and 3B, the AD digesters and the gas flare will be lower than this at 19.8m, 14m, 18m, and 18 metres AOD, respectively.

Proposed Building 3A to the rear with a ridge height of 23.3 metres AOD and Buildings 4 and 5 (the 2 No. proposed entrances to Building 1) with ridge heights of 22.5 and 23.1 metres AOD will be up to a maximum of 1.3 metres higher than the existing Compost Building.

13.8 Mitigation Measures

The purpose of mitigation is to avoid, reduce and where possible remedy or offset any significant negative (adverse) effects on the environment arising from the proposed development.

Mitigation measures have been carefully considered by the design team and have been integrated cohesively within the proposal. Primary measures consider aspects such as siting, access and layout.

The design and site layout of the buildings took into consideration the need to minimise the associated visual impact. The proposed structures are proximate to the existing structure and very similar in terms of design, height and scale. The Anaerobic Digester (AD) plant and the new buildings are located in an area of the site that is effectively screened from public viewing points due to a combination of the existing building, the topography and the woodland planting.

The new buildings will be finished with an external cladding similar to that existing on Building 1.

The front elevation of the Compost Building to the R680, which is where the new air lock entrances (Buildings 4 and 5) are proposed, is already effectively screened from public viewing points by the hedgerows and landscaping at the site entrance.

The AD plant is located adjacent the existing WWTP tanks to the rear of the existing composting building while Building 3A, the tallest structure on site, is orientated such that it presents its gable/ narrowest elevation to the public road, which significantly reduces the potential visual impact.

Additional lighting required in the operational areas to allow safe access in the darker winter months will be directed towards the operational area and not the site boundary.

13.9 Effects on Landscape Character and Visual Amenity

There will be temporary short-term adverse effects during the construction period including an increase in existing levels of local traffic. Taller elements involved in the construction works, such as cranes are likely to have localised adverse visual impacts during construction of the proposed development.

The proposed development will alter areas of existing vegetation within the site. The extended site area will involve removal of a portion of the existing woodland to the east/ southeast but this is not expected to have a negative effect on visual impact given the degree of planting that will remain. From public viewing points, the removal of this area of trees is not expected to be appreciable.

The proposed structures will serve as an extension of the agricultural/ industrial character of the existing facility. The sheds are of a scale and appearance which is similar in character to

that existing, resulting in a negligible impact on landscape character from this element of the proposal.

The enclosed nature of the site and the existing development thereon restricts the extent of impact on the wider landscape character and the effects on this part of Waterford will be slight over the situation pertaining at present. The topography and vegetation restricts views into the proposed site, minimising the visual impact of the proposed structures.

Predicted Visual Impact

The visual impact is limited by the small area of visual influence of the development. For residential properties in the vicinity, the impact on visual amenity would be **negligible to slight adverse** over the situation that pertains at present.

The site is not visible from the majority of roads in the vicinity and only partial glimpse views can be obtained at certain locations. The visual impact effects would be **negligible** when set against the existing situation.

For the most part the proposed development will be only partially distinguishable from the existing development and will experience a **slight adverse** visual impact when set against the existing situation.

'Worst Case' Scenario

The photographs of the site and existing facility are taken in winter (November 2011) when the surrounding trees have lost most of their foliage. As such, they depict the 'worst-case' scenario of potential visual impact with reduced screening effect of deciduous vegetation providing increased views of the development. Even in this scenario, the site has the capacity to facilitate this development with minimum adverse impact.

The potential visual impact will be reduced when screening provided by tree foliage returns.

13.10 Assessment of Impacts

While the proposed development will change the layout and appearance of the site, the impact of such changes on the landscape character and visual amenity will be **neutral to slight adverse**.

The proposed development is located in an area with strong enclosing topography and is surrounded by dense woodland to the northeast, southeast and south of the subject site. This effectively screens the existing development from view which as a result is not particularly conspicuous within the landscape. As a result of this, and by virtue of the existing development itself, the subject site has high potential to absorb the proposed development, which will have minimal impact on visual amenity.

With reference to the current existence of a composting facility (formerly a tannery with associated waste water treatment plant) and the design and nature of buildings on site, the

proposed development is not considered to be out of character with the existing land use of the area.

It is considered that the proposed development will result in a **negligible to slight adverse** alteration on the existing landscape setting, character and visual amenity.

14 HUMAN BEINGS

14.1 Introduction

This Chapter assesses the impacts of the facility on the local population. It describes the economic activity, social consideration, land uses, health and safety and significance of impact. It is based on information obtained from the Portlaw Local Area Plan 2007 – 2013 (PLAP).

14.2 Existing Environment

The lands surrounding the site are primarily used for agricultural purposes, with the area immediately to east and south planted with dense deciduous trees. The nearest dwellings are located along and to the west of the R680 and there are no dwellings within 250 metres of the site (Figure 14.1). The stretch of the River Suir to the east of the site is designated as a Special Area of Conservation (Lower Suir River SAC Site code 002137).

The main use of land in the area surrounding the site is agricultural, predominantly grassland used in dairy and beef production, with a smaller amount of tillage and also horticulture. The PLAP identifies the environmental regulations and schemes, for example the Rural Environmental Protection Scheme (REPS) which encourage farmers in the area work in an environmentally friendly and productive manner. The uptake of such schemes assists with reducing potential hazards like water pollution from the storage and land application of animal manures and fertilisers.

The European Communities (Good Agricultural Practice for the Protection of Waters) Regulations 2006 S.I. No. 378 of 2006, and European Communities (Good Agricultural Practice for the Protection of Waters) Regulations 2009 S.I. No. 101 of 2009, requires farmers to prepare nutrient management plan and provides strict guidelines in the use of chemical and organic fertilisers to ensure that surface water and groundwater are protected from pollution.

14.3 Human Health

Bioaerosols (airborne micro-organisms typically <5 um in diameter) can be generated during the handling and turning of organic waste materials and they present a potential health risk at biological treatment facilities. A study conducted by Cre (the Composting Association of Ireland) concluded that, based on a review of international literature, the general population is not at risk and that there is no clear evidence that either the public or workers at composting facilities have been affected by bioaerosols.

The composting is carried out indoors, which reduces the potential for the spread of the bioaerosols. The air extraction and treatment system and biofilter further reduces the risk of the escape of bioaerosols from the building. All facility staff are provided with the appropriate training and personal protective equipment to minimise the risks of health impacts.

While odours do not present a direct risk to health, they can be a significant nuisance and cause of discomfort, which can indirectly affect human health. All wastes are and will be stored and processed either indoors or inside fully enclosed tanks, thereby mitigating any potential health impacts on occupants of the nearest residences and farms.

The existing and proposed buildings are designed to minimise the escape of odours from waste processing areas. Odorous air from the waste handling and processing areas is and will be collected and treated in appropriately designed and operated abatement systems, which will ensure odours associated with the proposed changes will not be a nuisance. Details of the existing and proposed odour control measures are presented in Chapter 10.

With the exception of the treated effluent discharged from the new sanitary wastewater treatment system, there will be no routine emissions to either ground or groundwater, which minimises the risk to groundwater and the risk to groundwater use a drinking water supply either at present or in the future.

14.4 Socio Economic Activity

The construction stage will generate approximately 50 jobs directly. As the AD plant will be supplied by a Waterford based company it is expected that the majority of the employees will be from the county. The changes will increase employment levels at the facility and contribute to sustaining the existing jobs.

When operational, the proposed AD plant will not adversely affect the existing economic activities in the surrounding area, nor will it reduce the potential for the future expansion of economic activities. The proposed development is in keeping with national and local waste management policy objectives and existing and proposed land use patterns, and will not result in the loss of any amenities or rights of way.

14.5 Environmental Nuisances

The existing facility and the proposed development are designed and will be operated in accordance with the conditions of the Waste Permit. This will either eliminate, or minimise to the greatest practical extent, the risk of environmental nuisance, (noise, dust, odours, birds and vermin). The relevant mitigation measures have been described in detail in Chapters 5, 6 and 10.

14.6 Impacts

There are a number of positive environmental and socio economic benefits associated with the development

- **Energy Production.** The development will generate renewable energy (Biomethane) from the organic waste. The electricity generated and supplied to the grid will reduce the carbon footprint of the operation and assist in reducing reliance on importing fossil fuels for electricity generation.

- **Fertiliser:** This AD digestate is a high nutrient product which is very suitable for use as a fertiliser. Local farmers have expressed a strong interest in using the digestate as an alternative to some chemical fertilisers. This would be consistent with REPS and result in cost savings for the farmers.

- **Waste Recovery:** The facility will accept wastes generated by food and drink industries in the South East region. It will provide an alternative and environmentally better management option for the wastes that might otherwise be sent to landfill or land spread.

- **Employment**: The development will provide additional short term employment in the area during the construction phase and, in the long term, both increase job numbers and assist in sustaining employment levels at the facility, which have been threatened by a reduction in the volumes of municipal wastewater treatment sludges accepted.

14.7 Mitigation

The mitigation measures incorporated into the design and method of operation of the existing facility and the proposed development have been described in previous Chapters.

14.8 Assessment of Impact

The proposed development will have a neutral impact with imperceptible consequences for Human Beings.

15 ARCHAEOLOGY

This Chapter describes the archaeological significance of the site and assesses the impacts of the development. Given the size of the site, the available information on site history, and the scale of the proposed changes, the archaeological assessment was confined to a desk study.

15.1 Methodology

The desk study included a review the Record of Monuments and Places (RMP) of the Heritage Service of the Department of Environment Heritage & Local Government, a review of Ordnance Survey maps for the area and the Portlaw Local Area Plan (2007-2013), and the EIS prepared in 1991 as part of the planning application for the tannery.

15.2 Archaeological Records

The Archaeological Survey completed in 1991 included an inspection of the existing site and lands in the immediate vicinity. The inspection and search of the Sites and Monuments Records, which at the time were maintained by the OPW did not identify any record of any archaeological feature within either the existing site or the proposed extension area. A copy of the Archaeological Assessment Report is included in Appendix 13 and the findings are summarised below

There were no features of archaeological significance in the footprint of the existing facility or the immediate vicinity. The area was inspected for the presence of Fulachta Fia which was pre-historic cooking areas but none were identified, with the closest recorded being approximately 750m to the east. The closest recorded structure to the site is a tower located 500m to the east of the site.

A review of the Records of Monuments and Places did not identify any archaeological features in the townland of Killowen or records of the features identified in the 1991 assessment.

15.3 Impacts

There is no record of any archaeological feature on the site. The proposed development comprises construction in a previously undeveloped area to the east of the existing site boundary, which has the potential to impact on unidentified archaeological features.

15.4 Mitigation

The Portlaw Local Area Plan 2007-2013 (PLAP) states that any archaeological material is not to be unduly damaged or destroyed and sufficient opportunity be afforded to investigate and record any material of archaeological significance at proposed new developments. In the unlikely event that archaeological finds are discovered, the construction works programme will be amended to allow a thorough examination by an experienced competent archaeologist. No further mitigation measures are required.

15.5 Assessment of Impact

There is no record of any archaeological features within the proposed extension area. If any such features are identified in the construction stage, they will be examined and recorded. When operational the facility will not impact on archaeological features in the vicinity of the site.

16 MATERIAL ASSETS/ NATURAL RESOURCES

16.1 Introduction

This Chapter describes the material assets on and in the environs of the site, assesses the associated impacts and presents mitigation measures.

16.2 Amenities

Neither the existing facility nor its immediate environs have a significant leisure or amenity potential. The development will require the removal of a small portion of a deciduous woodland to the south east of the site, however this is private property and not used for amenity purposes. Therefore, the proposed changes will not have any impact on amenity use in the vicinity of the site.

16.3 Local Infrastructure

The proposed development will result in a slight increase in traffic on the local and regional road network, the impact of which is described in Chapter 6. The facility has 10kV electricity supply, which is fed from a 38kV station located in Portlaw. Electricity generated in the on-site CHP plant will be connected to the National Grid. .

A trunk main gas pipeline (running between Clonmel and Waterford City) is located to the east of the Portlaw at Mayfield/Knockane. There is a Bord Gais substation in the south of the existing site, which was used to supply gas to the tannery, but is no longer in use. This gives rise to the potential future connection to the main gas line substation to supply biomethane to the national gas grid.

16.4 Agriculture

The proposed development will not have any impact on agricultural land use in the area. The development will require the removal of a small portion of a deciduous woodland to the south east of the site, however this was planted to screen the former tannery and not for commercial forestry.

The proposed development will have a positive impact on agricultural practices in the vicinity of the site, as the digestate produced by the AD process has a high nutrient value, with the potential to replace certain inorganic fertilisers

16.5 Natural Resource Consumption

The existing facility is a significant consumer of materials, and energy in the form of electricity and oil. The composting process does not typically require water and the only water usage is in the canteen and toilets. Water for this purpose is obtained from an on-site well. The average annual materials and energy consumption rates are:

- Woodchip, which is used as a bulking agent in the composts and as a biofilter medium– approximately 6,000 tonnes per annum.
- Sulphuric Acid used in the odour abatement system – approximate 390m^3 per annum
- Electricity – approximate 840,000 kwh per annum
- Diesel used in the on-site mobile plant – approximate 120m^3 per annum.

The proposed development will not increase the overall tonnages of waste accepted, but there will be a reduction in the amount of waste being composted, with a consequent reduction in the quantity of woodchip that will be required. Assuming a 50:50 ratio between composting and AD, the amount of woodchip used could be halved.

As there will not be any change to the waste tonnage accepted, there will not be any significant change to the operational hours of the mobile plant and the associated diesel consumption.

There will be an increase in electricity consumption due to the electrical motors installed in the AD plant (mixers, elevators and conveyors) and additional yard lighting, however this will be off set by the electricity generated in the on-site CHP plant.

The volume of sulphuric acid is directly linked to the ammonia concentration of the odorous air collected and treated in the odour abatement system. It is estimated that the new odour abatement system will result in a 30% increase in acid consumption.

16.6 Mitigation

As the proposed development will not have any adverse impacts on materials assets and resource consumption, mitigation measures are not required.

16.7 Assessment of Impact

The proposed development will have a negligible adverse impact on material assets associated with increased traffic. It will have beneficial impact on resource consumption by reducing reliance on fossil fuels.

17 INTERACTION OF THE FOREGOING

17.1 Introduction

Earlier Chapters describe the impacts associated with the proposed changes and the mitigation measures. This Chapter discusses the significance of the actual and potential direct, indirect and cumulative effects of the changes due to interaction between relevant receptors. It is based on the combined physical, environmental, visual and socio-economic impact of the development on the receiving environment.

17.2 Human Beings / Air

The proposed AD plant has the potential to impact on human beings arising from noise, dust, vehicle exhaust emissions and odour. The location, design and proposed method of operation have taken account of these emissions and effective mitigation measures, which comply with the requirements of the Waste Permit, have been identified and applied. These measures, which are described in detail in Chapter 10, include ensuring the building fabric integrity is appropriate and the installation of a new odour abatement system.

17.3 Surface Water / Ecology

Surface water run-off from the existing site and proposed extension are discharges to the River Suir which is a cSAC. There is the potential for contaminants in the run-off to impact on the river ecosystem. The proposed design and method of operation, incorporates measures to minimise the risk of contamination of the run-off. These measures, which include the provision of a new oil interceptor and storm water retention capacity, will result in a minor impact on the River Suir.

17.4 Cumulative Effects

The assessment of impacts of the proposed development took into consideration the impacts of the existing facility and the proposal to expand the types of waste accepted. The baseline surveys were conducted during typical operational hours and the predictive assessments included the impacts of both the existing emissions and those associated with the additional waste types that will be accepted at the proposed development

ABBREVIATIONS

AD –	Anaerobic Digestion
BOD –	Biochemical Oxygen Demand
CHP –	Combined Heat & Power
CSO –	Central Statistics Office
EPA –	Environmental Protection Agency
EIA –	Environmental Impact Assessment
EIS –	Environmental Impact Statement
EU –	European Union
GHG –	Greenhouse Gases
HGV –	Heavy Goods Vehicle
Kv –	Kilovolts
Kwh –	Kilowatt Hour
LGV –	Light Goods Vehicle
MW –	Megawatt
OMI –	Odour Monitoring Ireland
OSI –	Ordnance Survey Ireland
PLAP –	Portlaw Local Area Plan 2007 - 2013
PM10 –	Particulate Matter 10 micrometers or less
PPE –	Personal Protective Equipment
REFIT –	Renewable Energy Feed-In Tariffs
REPS –	Rural Environmental Protection Scheme
TOC –	Total Organic Carbon
VFA –	Volatile Fatty Acids
VOC –	Volatile Organic Compounds
WMO –	World Meteorological Organisation
WWTP –	Waste Water Treatment Plant

DRAWINGS

APPENDIX 1

APPENDIX 2

APPENDIX 3

APPENDIX 4

APPENDIX 5

APPENDIX 6

APPENDIX 7

APPENDIX 8

APPENDIX 9

APPENDIX 10

APPENDIX 11

APPENDIX 12