

2. DESCRIPTION OF RECEIVING ENVIRONMENT

2.1 Climate

Ireland lies in the middle latitudes and its climate is largely determined by the prevailing westerly winds and its position on the western seaboard of the European landmass. The main features of the Irish climate are mild winters and cool summers.

The climate of the South East region is described by meteorological measurements collected by the national Meteorological Service at their network synoptic stations in the region and from rainfall observations recorded at nearby rainfall gauging stations.

2.1.1 Rainfall

The nearest rainfall station to the site is at Rosslare, which is approximately 40km south of the Greenstar facility. The annual average rainfall data for the Rosslare station is presented in Table 2.1.1. From this data the average annual rainfall is calculated to be 877.1mm/annum.

Evaporation will be low as the existing site comprises of roofed area and a concrete yard rainwater will rapidly flow to covered drains. There will be no transpiration from plants at the site. As such, the effective rainfall at the site will be close to the total rainfall.

2.1.2 Wind

The strongest and most frequent winds are from the southwest and the second most frequent are from the west. Forty five percent of all winds are from these two directions. The least frequent wind directions are from the east and southeast.

Table 2.1.1 Wind Direction at Rosslare

Wind Direction	Frequency (%)
North	8.6
Northeast	10.1
East	7.1
Southeast	6.4
South	15.9
Southwest	25.4
West	16.0
Northwest	10.5

Source: *The Climate of Ireland, P.K.Rohan.*

The most frequent winds are from the southwest (25.4%) followed by the west and south (approx. 16%). The least frequent winds in the region are from the southeast, east and north (6.4%, 7.1% and 8.6% respectively). The frequency of winds from the northeast and northwest are 10.1% and 10.5% respectively.

2.1.3 Temperature

The climate of the area is temperate with mean daily temperatures in January and July of 8.2°C and 17.9°C respectively. The average annual temperature is approximately 12.6°C. The mean temperatures are taken from monthly and annual averages of air temperature for each hour of the day at Rosslare between 1961 and 1990.

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2.2 Air Quality

2.2.1 General

Waste facilities have the potential to affect air quality by the following emissions to the atmosphere:

- Aerosol emissions.
- Decomposition gas emissions.
- Odour emissions.
- Dust emissions.

2.2.2 Aerosol Emissions

Aerosol emissions do not occur at the Greenstar site as no liquid waste or sludges are handled at the facility.

2.2.3 Decomposition Gas Emissions

Currently the facility only handles a small quantity of putrescible waste. The proposed facility will be designed to transfer domestic, commercial and industrial wastes and this will involve handling a larger quantity of putrescible material. The retention time of the putrescible waste on site will be short (less than 48 hrs and normally less than 24 hours) and for this reason there will be no accumulation of decomposition gases at the facility. Any putrescible waste kept for longer periods (e.g. bank holiday weekends) will be kept in closed containers awaiting transport out of the site. The domestic, commercial and industrial wastes will be processed in aerobic conditions and minor amounts of carbon dioxide may be produced as the waste decays. This gas will disperse rapidly within the building, which will be well vented and further dispersed as it exits the doors of the building. Experience of similar facilities suggests that levels of decomposition gases would be undetectable outside the waste transfer building and for this reason gas emissions were not measured as part of the EIS.

2.2.4 Odour Emissions

Currently, as stated above, the facility handles very little putrescible waste and odours are not considered a problem at the site. The proposed new facility will contain a larger quantity of putrescible waste and this will increase the potential for odours to be emitted from the site. These wastes will be processed indoors and as with similar existing facilities in other parts of the country, odours are expected to be generally mild or imperceptible at the site boundaries. The odours emitted from non-hazardous solid waste are considered a nuisance to the public rather than an environmental hazard and controls of this potential nuisance are presented in Section 3.4.6.

Odours were not monitored at the site as part of this EIS as there is currently very little potential for odour emissions from the site processes. The greatest potential for odours will not exist at the site until the larger quantities of putrescible waste are handled (i.e. after construction of the new facility). Odours are usually measured by olfactory methods and are quite subjective, therefore the Company proposes to keep a register of complaints of odours, as this is considered a more appropriate method of monitoring odours at this type of facility.

2.2.5 Dust Emissions

The vast bulk of waste delivered to the facility is handled indoors and therefore the potential for dust emissions during processing is low. The area to the south of the site has been subject to considerable earth moving/reclamation and has been a source of windblown fines.

In order to quantify the level of dust emissions in the vicinity of the site, three dust gauges were installed and dust deposition measured for a one-month period as described below.

2.2.5.1 Methodology

Total dust deposition was measured at the site using the Bergerhoff gauges specified in the German Engineering Institute VDI 2119 document entitled "Measurement of Dustfall Using the Bergerhoff Instrument (Standard Method)". The dust gauges were set up such that the glass containers were approximately 2m above the ground surface. The dust gauges were exposed between 26/06/2003 and 28/07/2003 and were submitted to the Enterprise Ireland Air Quality Laboratory in Glasnevin for analysis. Prior to exposure and in order to inhibit the growth of algae in the dust jars, 20 ml of 5% 2-methoxyethanol was added to each jar.

2.2.5.2 Results

D1 was located on the southeastern boundary wall of the site and was down wind of the waste operations and upwind of earth movement works. The dust jar at location D2 was damaged during exposure rendering the sample unsuitable for analysis. Dust monitoring location D3 was situated along the northern boundary of the site upwind of the waste activities. The locations of the gauges are indicated on Figure 2.2.1

The results from the dust monitoring period of 33 days, between the 26th June 2003 and the 28th July 2003, are presented in Table 2.2.1 below.

Table 2.2.1 Total Dust Levels

Sample Location	Dust Emission (mg/m²/day)
D1	965
D2	* Sample damaged
D3	459

The results indicate that dust deposition levels at monitoring locations D1 and D3, exceed the EPA guideline limit value of 350mg/m²/day. Elevated dust levels at the site may be attributed to dry weather conditions as the sampling round was conducted during the summer period. In addition, high dust levels were observed outside the boundary of the facility within the adjacent Gorey Business Park due to development works. Construction and earth moving works were taking place to the south of the site during the monitoring period. A significantly elevated dust level was determined at sampling location D1. This is a result of the earth moving and construction activities taking place off-site.

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2.3 NOISE

2.3.1 Introduction

Greenstar Ltd. operates a waste transfer and recovery facility, which handles non-hazardous, industrial, commercial and construction/demolition waste. The site is located adjacent to Gorey Business Park, Ramstown, Gorey Co. Wexford. Their opening hours are from 8.00am-5.00pm Monday-Friday and 8.00am-1.00pm on Saturdays.

An assessment of the existing noise environment was carried out at 4 (No.) monitoring locations at the boundary (N2-N4) and at the nearest noise sensitive receptor (N1) on the 8th of December 2003. The noise monitoring locations are presented on Figure 2.3.1.

2.3.2 Noise Sources

At present, there are a number of different noise sources contributing to the ambient noise at the site. The N11 road is located 0.2km to the north west of the site boundary and was audible throughout the measurement and therefore contributed to distant traffic noise.

Noise sources associated with the site itself include:

- 1 (No) Gradear Baler
- 1 (No) Boss Forklift
- 1 (No) JCB Front end Loader
- 1 (No) JCB Rubber Duck
- 1 (No) Untha Shredder (C&D)
- 1 (No) JCB Rubber Loader
- 1 (No) Baughan Screener (Trommel)
- 1 (No) Avery Berkel Weighbridge
- 4 (No) Refuse Trucks Rear End Loaders – Hino
- 4 (No) Skip Lorries (Volvos & Hinos)

Vehicles entering and leaving the site and moving around the yard area also contribute to the on-site noise. The majority of vehicles visiting the site are typical skip lorries.

2.3.3 Data Acquisition

A Type 1, Cirrus Research CR:703A Data Logging Integrating Sound Level Meter (SLM) was used to carry out the survey at all four locations. The SLM was calibrated using a CR:513A acoustic calibrator. A Cirrus windshield microphone was used. Noise levels were measured using the A-weighted filter network and a fast response time of 125 milliseconds.

Equipment calibration information is detailed below.

Laboratory Calibrations:

Date of last Calibration
 SLM = May 2003
 Acoustic calibrator = May 2003

Field Calibrations:

Before = 93.7dB
 After = 93.7dB

At each noise measurement location the Sound Level Meter (SLM) was mounted on a tripod so that the microphone was maintained at 1.5 m above ground level and at least 3.5m from any potential noise reflecting surfaces. At each of the monitoring locations the following data was recorded:

$L(A)_{eq}$: Equivalent Continuous A-weighted Sound Level. The continuous steady noise level, which would have the same total A-weighted acoustic energy as the real fluctuating noise measured over the same period of time.

$L(A)_{10}$: The noise level that is equalled or exceeded for 10% of the measurement period.

$L(A)_{90}$: The noise level that is equalled or exceeded for 90% of the measurement period.

The EPA recommend that ideally, on sites of industrial nature or similar, if the total noise level from all sources is taken into account, the noise level at sensitive locations should be kept below an $L(A)_{eq}$ value of 55dB(A) by daytime (0800 to 2200) and a value of 45 dB(A) by night-time (2200 to 0800). A glossary of noise related terms is included in Appendix 2.3.1.

2.3.4 Ambient Noise Level Measurements

2.3.4.1 Short-term noise measurements

The existing noise environment was monitored at four locations in the vicinity of the site on the 8th of December 2003. Locations N2 and N3 were taken at various points of the site boundary. Location N4 was taken close to the existing site office. Location N1 was taken at the nearest noise sensitive receptor. The measurements were representative daytime 30 minute $L(A)_{eq}$ readings and were carried out in accordance with the following standards;

- ISO1996: Acoustics - Description and Measurement of Environmental Noise
- EPA: Environmental Noise Survey Guidance Document

Noise monitoring location N1

N1 was undertaken close to the north of the site outside the nearest residence at 12.15pm. The survey was carried out on a representative working week day to monitor daytime noise levels. A representative noise level graph of the sound pressure levels throughout some of this measurement is presented on Figure 2.3.2. Weather conditions during the survey at N1 were cloudy, dry, very cold with a slight breeze. The predominant noise sources at the time of recording included constant noise from the Ramstown Development Timber and Joinery site adjacent to N1, traffic movement on the tertiary road adjacent to the Gorey Business Park and distant traffic from the primary route the N11.

Occasional noise sources were audible from 2 (No.) planes passing overhead. Industrial noises such as chainsaws, hammering, reverse alarms, generators, and garage doors banging were also audible during the measurement this noise was mainly attributable to Ramstown Development Timber and Joinery which is located in the vicinity of N1. Contributing noise sources included a dog barking, birds chirping in the background, a radio, and occasional talking in the vicinity of the meter.

The $L(A)_{90}$, which reflects the background noise level, was recorded as 43.9dB(A). The $L(A)_{10}$ noise level was recorded as 64.1 dB(A) during the daytime, and the $L(A)_{eq}$ was recorded as 64.7 dB(A). The noise monitoring results for locations N1 are summarised on Table 2.3.1.

Noise monitoring location N2

N2 is located at the entrance to the Gorey business Park and was recorded at 13.05 hrs. Weather conditions during the survey at N2 were dry, cloudy and cold. The predominant noise source was due to passing traffic on the tertiary road adjacent to the business park and traffic movements in the business park. Contributory noise sources included a dog barking in the background, a tractor idling at 13.40 hrs, talking within the vicinity of the meter and industrial noises such as hammering and a chain saw during the measurement and occasional talking in the vicinity of the meter. Traffic movements included 34 car movements, 5 truck movements and 9 van movements. A representative noise level graph of the sound pressure levels throughout the measurement is presented on Figure 2.3.3.

In summary the daytime $L(A)_{eq}$ 30 minute at N2 was recorded as 55.7 dB(A). The $L(A)_{90}$ noise level was recorded as 40 dB(A) during the daytime. The $L(A)_{10}$ noise level was recorded as 78.2 dB(A) during the daytime. The noise monitoring results for locations N2 are summarised on Table 2.3.1.

Noise monitoring location N3

N3 was located adjacent to the Greenstar site entrance and took place at 14.00 hrs. Weather conditions were cold and cloudy. Predominant noise sources included the loading and unloading of waste vehicles and other activities associated with the site including; a constant hum from a generator on site, a JCB and loader idling in the yard, waste being unloaded on the transfer station floor, and the reversing alarms of site vehicles. A truck idled beside the meter for approximately 5 minutes. Contributory noises include talking in the vicinity of the meter, noise from machinery including a JCB involved in building works outside the site boundary. 6 (no) truck movements were recorded during the measurement, all were associated with the Greenstar site. A representative noise level graph of the sound pressure levels throughout some of this measurement is presented on Figure 2.3.4. *note: Due to interference with the noise meter during the measurement the L10 values were recalculated by Cirrus Research technicians and are therefore not represented in Figure 2.3.4

In summary the daytime $L(A)_{eq}$ 30 minute at N3 was recorded as 66.2 dB(A). The $L(A)_{90}$ noise level ranged was recorded as 58.5 dB(A). The $L(A)_{10}$ noise levels ranged was recorded as 67.5 dB(A). The noise monitoring results for locations N3 are summarised on Table 2.3.1.

Noise monitoring location N4

N4 was located adjacent to the site office in the yard. This measurement commenced at 14.50 hrs. The weather conditions were recorded as cold, dry and slightly overcast. A representative noise level graph of the sound pressure levels throughout some of this measurement is presented on Figure 2.3.5. . *note: Due to interference with the noise meter during the measurement the L10 values were recalculated by Cirrus Research technicians and are therefore not represented in Figure 2.3.4

The predominant noise sources during the measurement comprised the constant hum of a generator on site, site machinery and vehicles in the yard and waste movements in the transfer station. Contributory noise sources included shouting in the vicinity of the meter, a truck horn beeping 3 times, and machinery idling near the meter. Traffic movements during the measurements include 7 (No) truck movements.

In summary the average daytime $L(A)_{eq}$ 30 minute hour measured was 75.2 dB(A). The $L(A)_{90}$ noise level was 67.5dB(A). The $L(A)_{10}$ noise level was recorded as 78.5 dB(A). The noise monitoring results for locations N4 are summarised on Table 2.3.1.

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2.4 SOILS AND GEOLOGY

A hydrogeological investigation of the area was carried out as part of the EIS by White Young Green Ireland. The investigation involved the examination of regional information, which was available from the Geological Survey of Ireland in the form of geology maps and from other projects conducted by White Young Green Ireland in the Gorey area.

2.4.1 Regional Geology

2.4.1.1 Solid Geology

The 1:100,000 Bedrock Geology Map from the Geological Survey of Ireland (Sheet 19, 1995) interprets the regional geology of North County Wexford as a northeast southwest trending belt of Lower Palaeozoic rocks that lies between the Leinster Granite to the west and older Cambrian rocks of the Bray Group to the east (Figure 2.4.1). The Palaeozoic rocks are Ordovician in age and occupy a major synclinal structure known as the Campile Syncline. This major syncline distributes the older Ribband Group along its flanks with the younger Duncannon Group occupying the axis of the structure.

An igneous intrusive complex, probably associated with the emplacement of the Leinster Granite during the Caledonian Orogeny occurs within the Duncannon Group.

The rocks of North County Wexford consist of sediments ranging in age from Cambrian to Middle Ordovician (Caradocian), and were deposited partially by turbidity currents, in a gradually shallowing sea. Pronounced volcanic activity deposited a variety of acid to intermediate volcanoclastic sediments grading into marine sediments of shales and local limestones. They were later subjected to intrusive igneous activity with polyphase deformation and complex folding and faulting.

This Ordovician belt has been highly deformed by the Caledonian Orogeny producing the prevalent northeast southwest trending Campile Syncline within the area. Superimposed upon this major synclinal fold are a series of minor folds giving rise to a pronounced cleavage in the rocks. The dominant features of Caledonian folds are a near vertical axial plane with a fold axis variable plunging from 0 to 90 degrees NNE and SSW. The folding style in the more competent volcanics and tuffs tend to be more open, while the incompetent shales have tight isoclinal folds.

There are a large number of significant faults within the area. The majority of these faults have a general NNW to SSE trend and represent a complex pattern of lateral displacement of the formations. Many of these faults appear to have upthrow to the southeast of more than a thousand metres. The effect of the movements along these faults has produced an overall younging to the northwest.

Within the study area rock outcrops are restricted to parts of the coast, river sections and quarries due to the widespread glacial cover masking the solid geology inland. This is reflected in the geological mapping and interpretation of the area with the definition of the boundaries between various geological units and faults being only poorly defined.

2.4.1.2 Unconsolidated Geology

Thirty-five soil series have been recognised and mapped in County Wexford. Twenty-three soil associations have also been recognised and described in the Soils of County Wexford (An Foras Taluntais, 1964).

Soils of the Clonroache Series are dominant in the locality of the site and form part of the Clonroache Association. The Association is derived from Ordovician shale and drift material, with some granite influence.

2.4.2 Local Geology

2.4.2.1 Solid Geology

Based on the Geological Survey of Ireland the study area is underlain by the Campile Formation, which forms the top of the Duncannon Group, Lower Palaeozoics. It is characterised by pale coloured rhyolites and rhyolitic tuffs or agglomerates with occasional andesites and andesitic tuffs and agglomerates. The volcanics occur within predominant grey and brown slaty mudstones. Olive, green blue, black, purple or red slates and shales rarely occur.

2.4.2.2 Unconsolidated Geology

The Clonroache Series consists of glacial drift predominantly derived from Ordovician shales with some granite influence. The Clonroache Series are Acid Brown Earths, which are mature well-drained mineral soils.

White Young Green records from previous investigations within the Ramstown area recorded deposits of clayey material ranging in thickness from 9.5m to 20.5m. The overburden deposits consisted of sandy, gravelly clays with occasional and predominantly discontinuous sand and gravel lenses.

2.5 GROUNDWATER/HYDROGEOLOGY

The following sources were used to describe the existing hydrogeological conditions within the environs of the Greenstar site.

- Published Geological Survey of Ireland (GSI) data from the Carlow-Wexford area
- Information from previous work conducted by White Young Green Ireland within the Gorey area.

2.5.1 Regional Hydrogeology

The site is situated in the Banoge River catchment, which is a tributary of the Owenavorrach River and would suggest that the predominant regional groundwater flow direction is towards the east.

Two distinct units including the clay overburden and the underlying bedrock control the hydrogeology beneath the site and therefore contribute significantly to the hydrogeological assessment of the site.

2.5.2 Overburden Hydrogeology

Clays and tills are generally not considered to be major aquifers due to their low permeability and there is no evidence to suggest that the overburden at this site is any different. Clays tend to act mainly as protective and confining layers therefore often act as an aquitard to groundwater flow beneath the site. Therefore, these have the effect of limiting the downward percolation of surface water to the underlying bedrock at the site.

2.5.3 Bedrock Hydrogeology

The site is underlain by rocks of the Campile Formation, which is characterised by rhyolites and rhyolitic tuffs or agglomerates in grey and brown slaty mudstones with occasional andesites.

The Campile Formation of the Duncannon Group is considered to be a major aquifer due to extensive faulting of the rhyolites. It has been noted by the Geological Survey of Ireland (GSI) that these rhyolite units thin rapidly and are often confined by the interbedded units.

The Geological Survey of Ireland (GSI) have devised a system for classifying bedrock aquifers based on a number of parameters, including the areal extent (km²), well yield (m³/d), specific capacity (m³/d/m) and throughput (Mm³/d). There are 3 main classifications; Regionally Important, Locally Important and Poor Aquifer. Where an aquifer has been classified as Regionally Important, it is further sub-divided according to the main groundwater flow regime within it. This sub-division includes Regionally Important Fissured Aquifers (Rf) and Regionally Important Karstified Aquifers (Rk). Locally Important and Poor Aquifers are sub-divided according to their productivity. Locally

Important Aquifers are sub-divided into those that are generally moderately productive (Lm) and those that are productive only in local zones (LI). Similarly, Poor Aquifers are classed as either generally unproductive except for local zones (PI) or generally unproductive (Pu).

The Duncannon Group sandstones, shales and interbedded volcanics is classified by the GSI as a Regionally Important Fissured Aquifer (Rf). It is devoid of intergranular permeability, but the degree of fracturing within this unit has been increased as a result of the Caledonian Orogeny that formed the Campile Syncline.

Table 2.5.1 Hydrogeological Characteristics of Ordovician Volcanics in the Carlow-Wexford area.

	Aquifer Present	Distribution	Principle Rock types	Approximate Thickness (m)	Typical Well Yield (m³/day)	Specific Capacity (m³/d/m)
Lower Paleozoic & Leinster Granite	Ordovician Volcanics: Campile & Avoca Formations	Strikes NE-SW through the eastern part of the sheet	Rhyolites, lavas and tuffs interbedded with sediments	1,500 in southwest and 400 at Gorey	400 – 2,000	10-200

Geological Survey of Ireland, 1994 – Geology of Carlow - Wexford

2.5.4 Vulnerability of Aquifers

Vulnerability of groundwater is the term defined by the Geological Survey of Ireland (GSI) to represent "the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities."

The main factors in defining vulnerability are:

- the type and thickness of the subsoil that overlies the groundwater;
- the recharge type - whether point or diffuse;
- in the case of unconfined sand and gravel aquifers, the thickness of the unsaturated zone below the point at which the contaminant is introduced."

The GSI divide vulnerability into four categories - Extreme (E), High (H), Moderate (M) and Low (L) depending on the hydrogeological conditions at a site. Table 2.5.2 provides a summary of the vulnerability classification scheme as compiled by the GSI. The vulnerability of a groundwater body to contamination is determined by the type and thickness of the overburden, the depth to the water table and the nature of the recharge. While these are only guidelines, they provide a useful basis on which to describe the general vulnerability of both the aquifer as a whole and individual abstractions to point and diffuse sources of contamination.

The level of data on which to base a detailed vulnerability map is rarely available except where site specific detailed investigations have been completed, such as a programme of trial pits or drilling. However, a working vulnerability can be tentatively compiled using information collected from historical maps and data which may be reviewed as additional data becomes available.

White Young Green records from previous investigations within the Gorey area recorded deposits of clayey material greater than 5m in thickness which indicates a Moderate vulnerability.

Table 2.5.2 Vulnerability Classification

Vulnerability Rating	Hydrogeological Requirements				
	Subsoil Permeability (Type) and Thickness			Unsaturated Zone	Recharge Type
	high permeability (sand/gravel)	moderate permeability (sandy till)	low permeability (clayey till, clay, peat)	(sand & gravel aquifers <u>only</u>)	
Extreme	0-3.0m	0-3.0 m	0-3.0m	0-3.0m	point (>30 m radius)
High	>3.0	3.0-10.0m	3.0-5.0m	>3.0m	diffuse
Moderate	N/A	>10m	5.0-10.0m	N/A	diffuse
Low	N/A	N/A	>10.0m	N/A	diffuse

Notes: i) N/A = not applicable
 ii) Precise permeability values cannot be given at present
 iii) Release point of contaminants is assumed to be 1-2 m below ground surface

GSI Vulnerability Mapping Guidelines, (from Daly & Warren 1997)

2.6 Surface Water

2.6.1 Surface Water Features

The main surface water feature in the area is the Banoge River. The site is located to the west of this river and to the east of a tributary of a stream feeding into the Banoge. The Banoge flows in a southerly direction for about 2km before joining the Owenavorrhagh River which then flows in an easterly direction before discharging to the sea at Courtown. Figure 2.6.1 shows the drainage in the vicinity of the site.

2.6.2 Surface Water Discharges

2.6.2.1 Nature of Discharges

Existing Situation

Surface water discharges are generated by precipitation falling on the roof of the Recycling Buildings and the hardstanding areas of the site.

None of the precipitation comes into contact with putrescible waste as this material is handled on-site under cover in the recycling building. Precipitation falling onto the existing storage bays in the western section of the yard may be contaminated by minor quantities of timber, soil and metals.

Surface water from the existing roofed area is collected and flows into the surface water drain via a downpipe in the southeastern corner of the recycling building. This drain passes through a manhole just outside the site entrance and into a drain, which, approximately 70 south of the site, joins another surface water drain serving the Business Park. This drain flows in a southerly direction towards a ditch, which then flows in a westerly direction to meet the tributary of the Banoge River.

Surface water from the yard area is currently collected in a surface water drain which runs down the middle of the yard area. The drain then feeds into a three chamber oil interceptor which is fitted with a shut-off valve. Water from this interceptor then passes through another three chamber oil interceptor prior to discharge to the percolation area located outside the western site boundary wall.

Proposed Surface Water Drainage

Under the proposed expansion, it is proposed to construct a building, which will cover the entire yard area. This will mean that the entire surface of the site will be covered-in and no precipitation will fall on yard surfaces. All rainwater will be collected in downpipes and discharged as clean water to the surface water drain to the south of the site.

2.6.2.2 Quantity and Rate of Discharges

Existing Situation

The volume of water discharging to surface drains from the Ramstown site is a percentage of the volume of precipitation falling on the site. The site area is approximately 2,854m² and the annual precipitation in the area is estimated as 877 mm (see Table 2.1.1). The estimated volume of run-off from the site is as follows:

Assuming 100% run-off, which is the worst case scenario, the quantity of precipitation running off into drains is equal to the total rainfall multiplied by the site area. This is equal to 2,531 m³/annum (6.9 m³/day).

Proposed Expansion

The estimated volume of run-off from the site post-expansion is expected to be the same as pre-expansion. However, a major benefit of the expansion will be that all surface water will be in the form of clean run-off from the roofed areas, as the entire site will be covered. This rainwater can be discharged directly into the existing surface water drain to the south of the facility.

2.6.2.3 Composition and Level of Discharges

Surface Water

The site was visited on several occasions during 2003. It was not possible during any of these visits to obtain a surface water sample as all surface water drains, including the manhole at the site entrance, were dry. In addition, all ditches and drains in close proximity to the site and Business Park were dry.

Foul Water

Foul water was sampled at two locations FW1 and FW2 on the 2nd December 2003. The samples were sent to AIControl Laboratories for analysis of baseline parameters. The results are presented in Table 2.6.4.

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Table 2.6.4 Foul Water Emissions

Sample Reference	C002264/MD/6362		
Sample Type	Foul Water		
Sample Date	02/12/03		
Parameters	Units	FW1	FW2
Ammoniacal Nitrogen	N mg/l	8.8	13.9
BOD	mg/l	77	65
COD	mg/l	245	169
Electrical Conductivity	mS/cm	2.638	1.711
Total Organic Carbon	mg/l	77	618
Total Oxidised Nitrogen	mg/l	<0.3	<0.3
Alkalinity	mg/l	600	380
pH Value In Water	PH Units	7.07	6.82
Calcium	mg/l	333.6	376.6
Cadmium	mg/l	<0.0004	<0.0004
Chromium	mg/l	0.003	0.003
Chloride	mg/l	189	133
Copper	mg/l	<0.005	<0.005
Iron	mg/l	0.688	0.090
Lead	mg/l	<0.005	<0.005
Magnesium	mg/l	23.26	12.00
Manganese	mg/l	0.924	0.592
Mercury	mg/l	<0.0005	<0.0005
Nickel	mg/l	<0.01	<0.01
Potassium	mg/l	142.0	62.0
Sodium	mg/l	144.0	104.0
Sulphate	mg/l	418	347
Zinc	mg/l	<0.005	<0.005

2.7 Flora and Fauna

2.7.1 Survey Scope and Methodology

The assessment was conducted in accordance with Environmental Protection Agency guidelines for Waste Licence Applications, (Anon, 2000), *EPA Advice Notes on Current Practice in the Preparation of Environmental Impact Statements* (EPA, 1995) and also in general accordance with the *Guidelines for Baseline Ecological Assessment* issued by the Institute of Environmental Assessment, UK (IEA, 1995).

The assessment comprised a desk study and field surveys. A site visit was made on May 23rd 2003. The desk study involved the following elements:

- A review of relevant Ordnance Survey maps
- A review of relevant literature and reports
- Consultation with The Heritage Division, Dept. Environment, Heritage and Local Government.
- Consultation with the Eastern Regional Fisheries Board
- A review of The Heritage Division, Dept. Environment, Heritage and Local Government, data sets of existing and proposed designations of nature conservation interest

The field surveys comprised of an assessment of the habitats on the site, based on vegetation surveys. The habitat assessment was conducted in general accordance with Phase 1 Habitat Survey Methodology (JNCC, 1993) and reference was made to *A Guide to Habitats in Ireland* (Fossitt, J. 2000). Plants were identified according to Rose, F. 1981 and Webb, D. *et al.*, 1996.

2.7.2 Survey Constraints

There were no constraints to conducting the survey.

2.7.3 Designated Sites Database

A review of The Heritage Division, Dept. Environment, Heritage and Local Government designated sites database (www.heritagedata.ie) indicates that the development is not located on a site of nature conservation interest. There are 3 sites designated for nature conservation interest within 5 km of the proposed development (See Table 2.7.1).

Table 2.7.1: Sites of Nature Conservation Interest within 5km of the proposed site.

Site	Designation	Site Code	Habitat Description	Approx Distance from Site (km)
Slaney River Valley	Candidate SAC	000781	River, estuary, woodlands, mudflats	2.5
Courtown Dunes and Glen	Proposed NHA	000757	Dune, woodland, river	4.7
Leskinfere Church, Clogh	Proposed NHA	000702	Building	3.4

Site descriptions below are taken from The Heritage Division, Dept. Environment, Heritage and Local Government, site synopses at www.heritagedata.ie. Copies of the full site synopsis for each designated site of nature conservation are contained in Appendix 2.7.1.

Slaney River Valley

The candidate Special Area of Conservation comprises the Slaney and associated tributaries including the Bann which flows in a north-south direction approximately 2.8km from the site.

The site sustains populations of several species listed on Annex II of the EU Habitats Directive and habitats listed on Annex I of this directive. Additionally, it supports important numbers of wintering wildfowl including some species listed on Annex I of the EU Birds Directive. Habitats include freshwater habitats, estuarine habitats, alluvial wet woodlands, tidal mudflats, old oak woodlands, marshes and reed swamps.

Courtown Dunes and Glen

This proposed Natural Heritage Area consists mostly of mixed woodland along the Owenavarragh River and a dune ridge which is largely wooded.

The Glen woodlands consist of a mixture of native and introduced deciduous trees, with some under-planting of conifers. The dune ridge is dominated by mixed woodland and scrub with a few open patches of dune grassland.

The site provides good examples of woodland and coastal habitats in close proximity. The mixed woodlands support a wide variety of plants including two rare species.

Leskinfere Church, Clogh

This proposed Natural Heritage Area is located approximately 5km south of Gorey and is confined to the loft of Leskinfere Church. It is a nursery site used by a colony of Natterer's bats (*Myotis nattereri*).

2.7.4 Consultation

The Heritage Division, Dept. Environment, Heritage and Local Government, was consulted (17th July 2003) with respect to the proposed development. To date, no reply has been received from The Heritage Division regarding the proposed development.

The Eastern Regional Fisheries Board (ERFB) was consulted with respect to the proposed development. They submitted electrofishing results collected at Coolnaveagh Bridge which confirm that the water course which flows at the rear of Gorey Business Park and the Banoge to which it flows are important salmonid watercourses. All age classes of eel (*Anguilla anguilla*) and brown trout (*Salmo trutta*) were found in the watercourse at Coolnaveagh Bridge. The Banoge is known to have important populations of sea and brown trout (*Salmo trutta*), and also has populations salmon (*Salmo salar*) and lamprey. A full copy of this correspondence is contained in Appendix 2.7.2.

2.7.5 Site Description

The site, an existing recycling centre, is located adjacent to Gorey Business Park, Ramstown, Gorey. Adjacent land use is composed predominantly of commercial, retail and light industrial units and agricultural land.

2.7.6 Phase 1 Habitat Assessment

An assessment of the habitats on the site was conducted in general accordance with Phase 1 Habitat methodology and with reference to The Heritage Council's *A Guide to Habitats in Ireland* (Fossitt, J. 2000). The Phase 1 Habitat Methodology is a standard method of habitat classification developed by the Joint Nature Conservancy Council, U.K. This classification system is based principally on vegetation, where data from vegetation studies provides an effective means of classifying and surveying habitats. (*Handbook for phase 1 habitat survey*, 1993). *A Guide to Habitats in Ireland* provides a classification system specific to Irish habitats.

The existing site has been developed and is entirely composed of man-made habitats. Only one main habitat type, 'Buildings and Artificial Surfaces' was identified on the site.

Figure 2.7.1 illustrates the extent and locations of the habitats on the site.

2.7.7 Buildings and Artificial Surfaces

The site wholly comprises built up areas including buildings and concreted areas. The site is bounded to the east by a building housing the staff office, recycling and storage areas. The northern, western and southern boundaries consist of corrugated iron fencing approximately 2m in height.

Lines of conifers approximately 10m in height are located off-site, outside the corrugated iron fencing on the western boundary. The main yard is concreted. No vegetation was recorded on the site.

This area is of negligible ecological value.

2.7.8 Adjacent Habitats

The site is located adjacent to a business park and as a result, the adjacent habitats to the south and east consist of built-up areas. Agricultural land lies to the west of the site. This area is improved grassland with substantial gorse (*Ulex europaeus*) encroachment. A tributary of the Banoge River flows in a southwest direction approximately 120m to the west of the site. There is a lot of scrub and small trees around this stream including gorse (*Ulex Europaeus*), willow (*Salix* sp.), birch (*Betula* sp.) and bramble (*Rubus fruticosus*).

In the wider context, the site is located in a predominately agricultural area with improved grassland predominant to the east and south of the park. Grassland together with built-up areas in the form of individual residences and a housing estate form the principal habitats to the north of the business park. Hedgerows are common field boundaries in the area.

Adjacent Boundary

The site is bounded to the west by a galvanized fence, at the other side of which is a line of conifers approximately 10m in height.

Hedgerows

The majority of the agricultural land in the area is bounded by hedgerows. The dominant species include bramble (*Rubus fruticosus*), holly (*Ilex aquifolium*), dog rose (*Rosa canina*), blackthorn (*Prunus spinosa*) and tree species such as sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*) and elder (*Sambuca nigra*).

2.7.9 Fauna

Given the nature of the site and lack of significant habitats, the fauna interest on site is negligible. The common hooded crow (*Corvus cornix*), feral pigeon (*Columba livia*), swallow (*Hirundo rustica*) and pied wagtail (*Motacilla alba*) were recorded at the site.

Other species likely to be present on the site include the brown rat (*Rattus norvegicus*).

Bird species noted in adjacent habitats include the blue tit (*Parus caeruleus*), blackbird (*Turdus merula*) and greenfinch (*Carduelis chloris*).

2.7.10 Water Quality/Fisheries Potential

A tributary of the River Banoge flows in a southwesterly direction approximately 120m to the west of the site. This stream changes direction about 1km downstream and flows in a southeasterly direction, merging with the River Banoge just over 3km downstream of the site. The River Banoge merges with the Owenaverragh River a further 1km (approx.) downstream. The Owenaverragh River flows in an easterly direction for a further 5km before reaching the sea. The 1.5km stretch of river is designated a proposed Natural Heritage Area (Courtown Dunes and Glen), its importance lying in a woodland and dune system.

As mentioned in section 2.7.4, the Eastern Regional Fisheries Board conducted electrofishing at Coolnaveagh Bridge. The results confirmed that the water course which flows at the rear of Gorey Business Park and the Banoge to which it flows are important salmonid watercourses. All age classes of eel (*Anguilla anguilla*) and brown trout (*Salmo trutta*) were found in the watercourse at Coolnaveagh Bridge. The Banoge is known to have important populations of sea and brown trout (*Salmo trutta*), and also has populations salmon (*Salmo salar*) and lamprey.

There are three species of lamprey occurring in Ireland, sea lamprey (*Petromyzon marinus*), river lamprey (*Lampetra fluviatilis*) and brook lamprey (*Lampetra planeri*). These three species are listed in Annex II of the EU Habitats Directive which aims to "maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest".

There is no EPA water quality monitoring data for this stream. However, data is available for the River Banoge and the River Owenaverragh until about 2001. A review of this data for the River Banoge indicates that the river has been moderately polluted (Q value 2/3-3) in recent years approximately 3km upstream of the point where the tributary merges with the River Banoge. The River Banoge also received a "moderately polluted" rating approximately 4km downstream of the site. Monitoring results for a sampling location on the Owenaverragh River approximately 3km after the Banoge-Owenaverragh confluence indicate the river has been predominantly unpolluted over the last ten years.

2.7.11 Evaluation

The site is comprised of built land. There are no terrestrial habitats, flora or fauna of ecological importance on the site or its surrounds.

The proposed site is not covered by any nature conservation designations. The closest conservation designation, the candidate Special Area of Conservation, Slané River Valley is located approximately 2.5km to the west of the site.

A tributary of the River Banoge flows within the vicinity of the site. This tributary together with the River Banoge are important salmonid watercourses. Furthermore, the River Banoge is known to hold populations of lampreys, all of which are listed in Annex II of the EU Habitats Directive.

The River Banoge merges with the Owenaverragh River approximately 4km from the site. The final stretch of river is a proposed Natural Heritage Area (Courtown Dunes and Glen) before it meets the coast. EPA water quality results indicate that the Owenaverragh River has been predominately unpolluted over the last ten years.

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2.8 Human Beings and Local Population

2.8.1 Receiving Environment

The immediate receiving environment is predominantly an industrial one, with sparse residential accommodation and agricultural land located near by. The Greenstar facility is situated in an industrial area adjacent to Gorey Business Park, Ramstown Gorey Co. Wexford on the LS507801 secondary road. Industrial units, warehouses, offices and retail units neighbour the facility. Warehouses containing light industry, for example timber joiners and metal workers constitute approximately 70% of the surrounding units. Retail and services occupy roughly 20%. Services in the area include Interlink Express operating on a 24-hour basis. Offices occupy the remaining 10% of the surrounding business units. The majority of surrounding businesses operate during normal working hours.

There are several residential dwellings within the surrounding area of the business park. The nearest housing estate and 3 (No) single dwellings not within the estate are located within 200m of the site.

The N11 a major commuter route, is located approximately 300m to the west of the facility running in a northeast southwesterly direction.

Gorey town within a 1 kilometer radius of the site includes three churches, a market square, a court house, and a number of schools. Near by tourist attractions include Courtown Harbour, Knockbawn Gardens, Ram House Gardens, Shruloe Deer Farm, Ballymore historic features, and Cranford Mills.

2.8.2 Population Statistics

Co. Wexford experienced the highest % increase in population of the southeast region increasing by 11.7% since 1996, bringing the number of people residing within the county to 116,543, the highest since the 1881 census.

The site is located in the Gorey Rural District Electoral Division (DED). Table 2.8.1 shows the population densities, and trends in the surrounding districts from 1996 to 2002 and shows that there has been a significant increase in population (19.4%) in the Gorey Rural area from 1996 to 2002.

Table 2.8.1 Population Statistics

District Electoral Division	1996 Population	2002 Population	Change in population 1996-2002
Gorey Rural	2,361	2,819	19.4%
Gorey Urban	2,150	3,090	43.7%

2.9 ROADS AND TRAFFIC

2.9.1 Introduction

A traffic survey was conducted at the existing Greenstar site in Ramstown, Gorey Co. Wexford on the 4th of September 2003. This survey was undertaken to advise on the traffic and transportation and access issues relating to the site. Insofar as the current application relates to traffic matters the application can be broadly described as an intensification and modernisation of the existing waste recycling facility.

2.9.2 Road Access

The site at Ramstown is accessed via a third class road (LS507801) exiting off the N11 approximately 1km south of Gorey town. The N11 is the main artery between Dublin and Rosslare. At the junction of the N11 and the third class road to the Greenstar site, the N11 operates as a two way single carriageway road having an approximate width of 8.5m. The junction with the third class road is some 34m wide. Visibility for vehicles emerging from the third class road is approximately 60m to the south, towards Enniscorthy, and approximately 40m to the north, towards Gorey.

The entrance from the third class road to the Business Park has an approximate width of 29m with excellent visibility in both directions onto the third class road. The access road to the business park also serves the recycling centre.

2.9.3 Existing Conditions

2.9.3.1 Quantification of Current Traffic Flows

In general, the capacity and operation of a road network is dependent on the junctions within that network as it is their operation which ultimately determines capacity and vehicle delay on the road network. As discussed above, in establishing the scope of the study it was considered that the influence of the additional traffic generated by the proposed development was not likely to be significant beyond the junctions in the immediate vicinity of the development.

The period of greatest impact will be when the combined development traffic and commuter traffic volumes are greatest. The morning and evening peak commuter traffic periods on the N11 are identified as approximately 07:15-09:45hrs and 16:00-18:30hr respectively. The duration of the classified traffic counts extends over the peak traffic periods on the N11.

The traffic surveys were carried out on Thursday 4th September 2003. Survey Locations are indicated on Figure 2.9.1.

2.9.3.2 Traffic Flows

The National Roads Authority (NRA) *National Roads And Traffic Flows 2002* Report indicates that the Annual Average Daily (AADT) Traffic at the 40 mile per hour sign south of Gorey town is 11,569 vehicles. The AADT refers to the 24-hour 2-way flows on the average day. The percentage of Heavy Commercial Vehicles (HCVs) on this stretch of road was 9%. According to the above report:

"AADt values, which are based on 7-hour counts in the current year, are believed to have a standard error of the estimate of approximately 15 per cent, in other words, the majority (68 per cent) of the estimates should lie within 15 per cent of the true AADT and practically all (95 per cent) should lie within 30 per cent. "

In order to classify whether the N11 Gorey to Enniscorthy and the third class road are capable of accommodating the traffic associated with the application site, traffic surveys were undertaken during the AM and PM periods on 4th September 2003. The traffic count period was from 07:15 to 09:45 and from 16:00 to 18:30. These periods were considered to be representative of the traffic in and out of the facility as it will be open between 7:30am and 6.30pm Monday to Friday and between 8.00am and 2.00pm on Saturdays.

Traffic counts were undertaken at two locations - see Figures 2.9.1, 2.9.2 and 2.9.3. One count was undertaken at the junction of the N11 and the third class road leading to Gorey Business Park (Location 1). The second count was undertaken at Gorey Business Park which includes traffic into and out of the Greenstar facility (Location 2).

The traffic count at Location 1 (at the N11 junction) had a total of 6 possible traffic movements. The six routes are as follows:

- Route A – Enniscorthy to Gorey (N11)
- Route B – Gorey to Enniscorthy (N11)
- Route C – Gorey to third class road
- Route D – From third class road to Gorey
- Route E – From third class road to Enniscorthy
- Route F – Enniscorthy to third class road

The traffic count at location 2 (Gorey Business Park) had a total of 10 possible routes as follows:

- Route 1 – Gorey to Ramstown
- Route 2 – Ramstown to Gorey
- Route 3 – Gorey to Business Park
- Route 4 – Ramstown to Business Park
- Route 5 – Greenstar facility to Gorey
- Route 6 – Greenstar facility to Ramstown
- Route 7 – Gorey to Greenstar facility

Route 8 – Ramstown to Greenstar facility

Route 9 – Business Park to Gorey

Route 10 – Business Park to Ramstown

Tables 2.9.1 and 2.9.2 below provides a summary of the results obtained from the traffic assessment for Location 1 and 2 respectively.

Route	Total No. Movements			HCV		
	AM	PM	Total	AM	PM	Total
A	613	488	1101	72	35	107
B	490	723	1213	71	71	142
C	137	122	259	27	11	38
D	113	106	219	1	-	1
E	19	12	31	10	4	14
F	23	4	27	6	-	6
TOTAL	1395	1,455	2,850	187	121	308

Table 2.9.1 Location 1: Vehicle movements a.m. and p.m.

Route	Total No. Movements			HCV		
	AM	PM	Total	AM	PM	Total
1	35	25	60	4	2	6
2	39	54	93	3	4	7
3	43	39	82	2	4	6
4	11	3	14	-	-	-
5	11	9	20	4	5	9
6	1	-	-	1	-	-
7	7	6	13	6	4	10
8	1	-	-	-	1	-
9	26	38	64	3	3	6
10	6	13	19	-	1	-
TOTAL	180	187	365	23	24	44

Table 2.9.2 Location 2: Vehicle movements a.m. and p.m.

Note: HCV: Heavy Commercial Vehicles
 AM: 07:15 to 09:45hrs
 PM: 16:00 to 18:30hr

Comments on the observed traffic are as follows:

Location 1 (Morning)

The results indicate that a total of 1,395 vehicular movements were observed on the 6 possible routes at this location. The number of HCVs noted during this period was 187 or 13%. The greatest volume

of traffic (613 vehicles representing 44% of the traffic) was traveling northbound on the N11 towards Gorey on Route A.

During this period 137 vehicles, of which 27 or 20%, were HCVs took Route C (from Gorey to Ramstown). During the morning count period a total of 292 vehicle movements were noted either exiting or entering the third class road at the N11 junction. HCV movements accounted for 44 (15%) of the 292 vehicles.

Location 1 (Evening)

The results indicate that a total of 1,455 vehicular movements were observed on the 6 possible routes at this location. The number of HCVs noted during this period was 121 or 8%. The greatest volume of traffic (490 vehicles representing 34% of the traffic) was traveling southbound on the N11 towards Enniscorthy on Route B.

During the morning count period a total of 244 vehicle movements were noted either exiting or entering the third class road at the N11 junction. HCV movements accounted for 14 (15%) of the total vehicles.

Location 2 (Morning)

A total of 180 vehicle movements were recorded during the morning count period on all possible routes at the entrance to Gorey Business Park. The majority of vehicle movements (43 or 54%) were travelling on Route 3 into the Business Park from the Gorey direction. During this period a total of 62 vehicle movements were recorded entering the Business Park from all routes, of which 8 HCVs, accounting for 13% of the traffic flow, entered the Business Park. Six of the HCV movements were attributable to vehicles entering the Greenstar facility.

During the same period, a total of 44 vehicles left the Business Park of which 7 or 16% were HCVs. HCVs associated with the company facility accounted for 4 or 9% of the total movements leaving the Business Park.

Location 2 (Evening)

During the evening period a total of 183 vehicle movements were noted on all possible routes at the count location. The greatest volume of traffic (54 vehicles) was counted travelling along the third class road from Ramstown towards the N11. A total of 48 vehicles entered the Business Park during this period of which 11 were HCVs. Six of these HCVs were associated with the Greenstar facility.

A total of 37 vehicle movements were associated with the Greenstar facility during the two count periods. This represents 10% of the total 361 vehicle movements counted on all the possible routes at this location.

2.10 LANDSCAPE AND VISUAL ASSESSMENT

2.10.1 Introduction

A landscape and visual assessment of the existing Recycling Centre at Ramstown, Gorey, Co. Wexford was undertaken by White Young Green.

2.10.2 Scope and Methodology

The methodology is based on the *EPA Advice Notes on Current Practice in the Preparation of Environmental Impact Statements* (EPA, 1995) and *EPA Waste Licensing Guidance Notes* (EPA, 2000).

The assessment involves a description of the visibility of the development and an assessment of the development on the landscape character of the area.

The visibility of the site is assessed in terms of its visibility from a number of features including roads, residences, designated tourism routes and viewing points.

The landscape character of the area is defined by a number of both natural and man-made features including topography and drainage, landform, land use, habitats, enclosures, built environment and traffic.

The assessment involved a desk study comprising the following elements:

- A review of the Wexford County Development Plan 2000.
- A review of *Gorey Development Plan*
- A review of relevant Ordnance Survey maps
- A review of relevant literature and reports

A field study was conducted on 23rd May 2003 to assess land use, landscape character, and visibility.

A photographic record was also undertaken. Photoplates are contained in Appendix 2.10.1.

2.10.3 Landscape Character

The site is located adjacent to Gorey Business Park. Adjacent land use is composed predominantly of commercial, retail and light industrial units and agricultural land. The general topography in the immediate vicinity of the site is low-lying and generally flat. The elevation is approximately 60m O.D. There is a rise in elevation approximately 1.5km west of the site, at Moneylawn, reaching a peak of 175m. Additionally, Ballyminaun Hill reaches a height of approximately 120m approximately 2km south of the site.

The site is located on a minor road which runs in a north south direction to the east of the site. The N11 to Wexford is located approximately 200m to the west of the site. The Dublin-Wexford rail line runs approximately 600m east of the site. See Figure 2.10.1.

There are no ESB transmission lines in the vicinity of the site. However, an electricity station is located approximately 350m northeast of the site.

A tributary of the Banoge River runs in a southwest direction approximately 120m to the west of the site.

The visual character in the direct vicinity of the development is a combination of agricultural and industrial/commercial. The Gorey Business Park near which the site is located comprises a mix of commercial, retail and light industrial units. The site is bounded to the east and south by such units. However, the site is bounded by agricultural land to the west and north. See Figure 2.10.1.

There is a football pitch with associated parking adjacent to the business park to the south.

There are a number of individual residential properties within the vicinity of the site. Additionally, a housing estate is located approximately 200m north of the site. Some of the housing estate is still under construction. See Figure 2.10.1.

There is a lack of unifying boundary treatments amongst the properties in the area.

2.10.4 The Site

The site is an existing recycling centre. It is 2,854m² in extent. There is one main building on the site, forming the eastern boundary. The yard includes a skip storage area, a metal storage area, baled cardboard storage area and rubble and timber bays. Additionally, a toilet and a fuel storage container are located in the southwestern corner of the site (See Figure 2.10.2).

The main building comprises site offices, locker room, canteen, and recycling and storage areas. It has a single apex roof and reaches a maximum height of approximately 9.7m. The front (west) face of the building is open. The roof, back and side walls consist of white corrugated iron. A trommel is located to the front of this building.

The main building opens out onto a yard to the west of the site. The surface treatment is concrete. A skip storage area is located along the northern boundary fence of the site and immediately adjacent to it to the west is a waste sorting area.

This single access entrance to the site is from Gorey Business Park. Access into the main yard and processing buildings is via a green corrugated iron gate to the south of the main building. See Figure 2.10.2.

2.10.4.1 Site Boundaries

Fencing comprising corrugated iron and concrete blocks is the predominant boundary treatment on the site, bounding the southern and western, and the majority of the northern boundary. This fencing is approximately 2m in height. A small portion of the northern boundary adjacent to the main building comprises a concrete wall approximately 1.5m in height. See Figure 2.10.2.

2.10.5 Visibility

There are limited views of the site from the minor road on which Gorey Business Park is situated, from within the business park itself and from the N11 to the west of the site.

There are limited views of the site from the minor road on which Gorey Business Park is located. These views are confined to the entrance of the business park and consist predominantly of a portion of the yard. The site is largely screened by other premises to the fore of the business park.

There are limited views of the site from within Gorey Business Park. The premises to the south of site have limited views of the waste sorting and skip storage areas, as well as the main building. The premises to the west of the site have views of the rear of the main building.

There are limited views of the site from the N11 which runs approximately 200m to the west of the site. A line of dense conifers along the N11 provides substantial screening to the site. Furthermore, the conifers immediately behind the western boundary fence provide additional screening. Consequently, views of the site from the N11 are principally limited to northbound traffic. Part of the main building is visible as a component of the business park as a whole.

There are no views from the residential dwellings on the minor road north or south of the site. There are potential views from three dwellings on the N11, located due west of the site. The conifers on the western boundary of the site screen the site substantially from these dwellings.

2.10.6 Site vegetation

There are no natural or semi-natural habitats on the site. A line of conifers is located on the adjacent property at the western boundary of the site. See Section 2.7 of this report.

2.10.7 Landscape Planning

Wexford County Development Plan 2000

A review of the Wexford County Development Plan 2000 was undertaken with respect to visual/landscape designations.

A Landscape Protection Policy Area listed as Vulnerable is located approximately 1.5km from the site. It runs along a ridge from Coolishal Upper south to Moneylawn Upper and continues southwest to Ballaghboy. The development plan states that "*development in the vicinity of these vulnerable areas must be shown not to impinge in any significant way upon their character, integrity or uniformity when viewed from the surroundings*" and particular attention must be given to the preservation of the character and distinctiveness of "*areas as viewed from scenic routes and the environs of archaeological and historic sites*".

Additionally, a Landscape Protection Policy Area listed as Sensitive is located within 1km of the site. This area includes part of Coolishal Lower. The development plan states that "*development in these areas has the potential to impact on the appearance and character of an extensive part of the landscape*".

The N11 and R725 are designated as scenic routes in the Wexford Development Plan. The development plan states that development "*will not give rise to the destruction or degradation of views towards visually vulnerable features nor significant alterations to the appearance or character of sensitive landscapes.*"

The protected structure, Master's house of former workhouse, at Ramstown Lower is located approximately 100m from the site.

Gorey Local Area Plan 2002

Gorey Local Area Plan 2002 identifies a number of other designated landscape components.

The site is within an area zoned for Industry in the Gorey Local Area Plan 2002. The zoning provision for this category is "*To provide for Industrial Uses*".

There are a number of tree preservation orders identified in the general vicinity of the site. These will not be impacted by the development. The nearest occurs at Ramsgate House, and also at Goreyhill.

2.10.8 Photographic Record

The attached photoplates (Appendix 2.10.1) provide a photographic record of the proposed site, surrounding areas, landscape character, views and features. The photographs were taken using a single lens reflex camera and 35mm film. No zoom or wide-angle lens was used. The points from which each of the photographs was taken have been recorded. Photopoint locations are illustrated in Figure 2.10.2.

2.11 CULTURAL HERITAGE

2.11.1 Introduction

2.11.1.1 Site location

The proposed development is located in the townland of Ramstown Upper, near Gorey, Co. Wexford.

2.11.1.2 Characteristics of the proposed development

The site is an existing waste recycling facility processing approximately 16,500 tonnes of non-hazardous waste per annum. The developers Greenstar Ltd. plan to increase the tonnage of the current facility to 30,000 tonnes per annum. This will include the provision of extra machinery for that purpose, which will be contained within the existing site wall boundaries and will not include any ground disturbance or visual impact in the area.

2.11.2 Baseline Survey

For the purpose of setting the proposed development within its wider archaeological and cultural heritage landscape, and to assess the archaeological potential of the site, a comprehensive paper survey of all available archaeological, historical and cartographic sources was undertaken.

2.11.2.1 Recorded archaeological sites and monuments

The Record of Historic Sites and Monuments were consulted for the relevant parts of county Wexford. This is a list of archaeological sites known to the National Monuments Service. The relevant files for these sites contain details of documentary sources and aerial photographs, early maps, OS memoirs, OPW Archaeological Survey notes and other relevant publications. These were studied in the Sites and Monuments Records Office. All sites within a radius of c. 1.5km of the proposed development were identified. These monuments are listed in Appendix 2.11.1.

2.11.2.2 Recorded archaeological finds

The topographical files in the National Museum of Ireland were consulted to determine if any archaeological artefacts had been recorded from the area. This is the National archive of all known finds recorded by the National Museum. It relates primarily to artefacts but also includes references to monuments and has a unique archive of records of previous excavations. Other published catalogues of prehistoric material were also studied: Raftery (1983 - Iron Age antiquities), Eogan (1965; 1993; 1994 - bronze swords, Bronze Age hoards and goldwork), Harbison (1968; 1969a; 1969b - bronze axes, halberds and daggers) and the Irish Stone Axe Project Database (Archaeology Dept., U.C.D.). All townlands within the study area were assessed. A list of recorded finds from the area is given in Appendix 2.11.2.

2.11.2.3 Cartographic sources

Reference to cartographic sources is important in tracing land use development within the development area as well as providing important topographical information on sites and areas of archaeological potential. Primary cartographic sources consulted consisted of the Ordnance Survey

6" maps, first and later editions (T.C.D. Map Library). Earlier cartographic sources consisted of the 1st edition 1837 map sheet 6,7,11, and 12.

2.11.2.4 Previous Excavations

The excavation bulletin website (www.excavations.ie) was consulted to identify any previous excavations that may have been carried out within the study area. This database contains summary accounts of all the excavations carried out in Ireland from 1985 to 2001. Details of previous excavations are listed in Appendix 2.11.3.

2.11.2.5 Historical research

Primary historical sources consulted included the Hayes index of subjects and places.

2.11.3 Archaeological and Historical Background

2.11.3.1 Prehistory (c. 7000 BC - AD 500)

Evidence for the settlement of Co. Wexford dates from the Mesolithic (7000- 4500BC) in the form of stone tools found along the east coast between Kilmichael point and Carnsore and also in Camolin townland. They indicate that the first people arrived in the area sometime between c. 5000 - 3000 BC and were involved in the exploitation of the land and coastline by fishing, hunting and gathering. Examples of Larnian flints were found at the above coastal sites by Professor Frank Mitchell and Edward Culleton in 1982 (Culleton 1984, 3). Two stone implements which may be Larnian were also collected during field walking by Culleton in 1983 near Camolin Co. Wexford.

Around 2500 BC the first farmers in Co. Wexford began to settle. Polished stone axes from Doononey in Adamstown were used for the clearance of trees in the then, heavily forested land for agriculture and settlement (Culleton 1984, 7). The pollen evidence gathered by Scribbins in 1980 (Culleton 1984, 7) also supports the evidence for the initiation of farming at this time in Co. Wexford. The Pollen record showed that about 4,400 B.C oak elm and hazel were dominant in Wexford, with lesser amounts of pine alder and birch. Subsequently, a dramatic rise in plants plantain and grass coinciding with a drop in the tree pollen of the above trees indicates forest clearance was occurring at this stage.

The Neolithic farmers also erected the Megaliths - upstanding monuments still in existence in the Irish landscape. A number of Dolmens have been identified in Co. Wexford: Ballybrittas, Newbawn, Adamstown and Ballymotabeg, but very few of them have been excavated (Culleton 1984, 11). Dolmens or Portal tomb are defined as comprising a large roof stone resting on two portal stones marking an entrance, sometimes with a siltstone present, two side-stones and a backstone (Moore, 1996, 1). There are also examples of individual burial in the form of a cist burial dating to the late Neolithic at Norrismount near Camolin.

The Bronze Age in Wexford began around 1500 BC and stands as a period of intense activity in the Gorey and wider Wexford county area. The Bronze Age cemetery at Scarawalsh is an attestation of the ritual activity that existed in the Gorey area during this period. A flat cemetery found in this

townland contained six cremation burials one in a short cist with five cinerary urns and a vase food vessel (PRIA 1973, C 567-8; PRIA 1976, C, 352-3; JRSAI 1966, 39-46; Waddell 1990, 158; Moore 1996, 11)

There is also the evidence for feasting and gathering in the Bronze Age in Wexford. Fulacht Fiadh sites at areas like Ballyedmond and Oulartard for example. The Fulacht Fiadh is generally classified as a horseshoe shaped mound of burnt stone and clay with a central trough, which may be lined. *Fulacht Fiadhs* have been interpreted in a number of different ways, mainly as cooking troughs but secondary interpretations include places for washing, ritual initiations and bathing (Burnt offerings 2001, Glasnevin; Buckley V.M, 1990; O' Drisceoil, D.A. (1988).

2.11.3.2 Early medieval period (c. AD 500 - 1170)

The ringfort is the definitive settlement type in the early Christian period. They range in size from between twenty to thirty metres in diameter to fifty one to sixty metres in diameter. The status of the site has been linked to the number of earthen banks that surrounded it e.g. bivallate and trivallate sites were seen as the homesteads of kings and tribal leaders whereas single banked ringforts signified the farming classes (Culleton 1999, 59). The promontory forts of Wexford such as Dundonnell in Ramstown Gorey are also attributed to the Early Christian period but may perhaps be Iron Age in date (ibid, 1999, 61).

Holy wells are also in abundance in Co. Wexford and the traditions associated with their use are still held in local belief. The significance in something seemingly as simple as a holy well may hold links to an earlier religion of a pagan/Iron Age kind. The association with springs and watery places echoes back to the wetland associated rituals in the Bronze Age. Beliefs that such wells held the powers to cure ailments such as blindness and deafness (Culleton 1999, 69) are not surprising and perhaps were an obvious ploy to convert the pagan populations to the then new Christian religion.

The wetlands were not void of settlement either and crannógs were also present in Wexford during the early centuries. A millstone from Clonsillagh crannóg and timbers from the same site were discovered in the late 1800s (Esmonde, 1899, 404-406).

2.11.3.3 Late medieval and post medieval period (c. AD 1170 - 1900)

No county in Ireland has more evidence of Anglo-Norman influence than Co. Wexford. The County is rich in earthwork castles, stone castles, moated sites and medieval towns that date from the 12th century late into the 19th century and were occupied by the descendants of the original Anglo-Norman invaders who allegedly first stepped on Ireland's shores at Bannow Bay Co. Wexford.

'There appears to have been a settlement at Gorey, which may have been granted borough status'
(Colfer 2002, 139).

The evidence for the above suggestion derives from tax returns for the year 1297 which state that the *'commonalty of the town of the vill of Gory paid 13s'* (Hore, Wexford ,v, p.97). It may be more fitting to refer to Gorey as one of the Manorial villages that evolved in Ireland from the 12th century onwards.

Colfer (2002) defines a manorial village as the 'social, economic and administrative centre' of the Manor containing at their core a mill, church and castle.

Gorey is also mentioned as a planned town of the early 17th century and received its first charter in 1620 as Newtown. Laid out on a grid pattern of c. 14 acres it might never have been defended with a wall (Moore 1996, 157). The early 17th century graveyard (WX007:032) with the surviving Rams tomb lies to the east of the town (Appendix 2.11.1)

The difficult years of the famine are marked in the town of Gorey also. The restored Gorey Union Workhouse 50m north of the proposed site was erected in 1840-1841 on a seven acre site to the south west of Gorey town. It was designed by George Wilkinson to accommodate 500 people. The main accommodation block of the building segregated women and men into separate dorms. The burial ground associated with the workhouse is found to the north (Fitzpatrick 1995, O'Connor 1995)

2.11.3.4 Archaeological significance of the site

The proposed development area is situated 1km to the south of the medieval town of Gorey and 50m south of the old Gorey Union Workhouse built in the 1800s. Therefore the site merited archaeological assessment.

2.11.4 Field Assessment

The field assessment of the proposed development was carried out by Bairbre Mullee and Vera Power on the 15th of July 2003. The existing premises are a galvanised shed and a walled, concreted yard containing skips and material to be recycled and the associated machinery. The site is bounded by a new building development at the east and the exterior wall of the shed at the north. It is sheltered visibly by tall conifers and breeze block wall bounds from southwest to west to northwest. There was nothing of archaeological interest noted or expected in this already developed area.

2.12 MATERIAL ASSETS

2.12.1 Introduction

The Greenstar Limited site is located at Ramstown, Gorey Co. Wexford on the LS507801. This is a small industrial area located to the south west of Gorey town approximately 300m from the N11. Material Assets in the area consist of infrastructure, industry, and tourism. Housing in the immediate area is minimal, the nearest residential dwelling is located approximately 120m to the north east of the site. A housing estate and 3 (No) single dwellings are also located within 200m of the site.

2.12.2 Industry

The local industry is predominantly based in the Gorey Business Park. A survey of the immediate vicinity shows that the industrial estate consists of 70% light industrial warehouses, 15% office units, and 15% retail units. The site is linked to one of Ireland's busiest routes the N11. The surrounding environment is dominated by farm land with passing heavy commercial traffic.

2.12.3 Infrastructure

Infrastructure includes the N11 which is located approximately 300m to the north of the site. The main Dublin and South East railway which branches off approximately 2km to the north east of the site. One branch runs a north easterly – south westerly direction approximately 600m to the east of the site, and the other branch runs in an east-westerly direction approximately 900m to the north of the site. The Banoge river lies approximately 1.4km to the south east of the site and branches off in to tributaries to the east of the site. Gorey town is located approximately 1km to the north east of the site.

2.12.4 Tourism

The site is located adjacent to Gorey Business Park, which is an industrial area of little or no interest to tourists.

On a local scale there are several tourism and leisure amenities located within a few kilometers of the development. Gorey town is located approximately 1km to the north east of the site and contains three churches, a market square, a court house, and a number of schools. Near by tourist attractions also include Courtown Harbour, Knockbawn Gardnes, Ram House Gardens, Shrule Deer Farm, Ballymore historic features, and Cranford Mills.