ENVIRONMENTAL IMPACT STATEMENT

MATERIALS RECOVERY AND TRANSFER FACILITY

AT

CLAVASS,

ENNISCORTHY

COUNTY WEXFORD

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1. INTRODUCTION

Greenstar is Ireland's leading integrated waste management company. It operates waste recovery, recycling and disposal facilities in counties Cork, Dublin, Galway, Kilkenny, Limerick, Meath, Sligo, Waterford, Wexford and Wicklow.

Greenstar is expanding its non-hazardous Household, Commercial and Industrial (C & I) and Construction & Demolition (C & D) waste collection, recovery and recycling business in the South East Region (Kilkenny, Carlow, Wexford, Waterford and South Tipperary). Greenstar currently operates four Material Recovery and Transfer Facilities (MRTF) in the South East Region, including two in County Wexford, at Gorey and Wexford Town that have a combined processing capacity of 60,000 tonnes per annum.

Based on a review of existing and projected market conditions in the South East Region, Greenstar considers an annual capacity of 90,000 tonnes is required to meet future customer needs in the Wexford Area. The location and layout of Greenstar's existing Wexford MRTFs cannot accommodate the projected increased waste volumes. Therefore Greenstar has decided to close these facilities and replace them with one, purpose built MRTF.

This EIS is part of the application by Greenstar to Wexford County Council for planning permission to develop the MRTF. An EIS was submitted with the original planning application in November 2007. Following a request for further information from the Council the EIS was updated to take account of changes to the site layout and design. The EIS examines the potential impacts and significant effects on the environment associated with the development and operation of the facility. Where the potential for a significant impact is identified, measures to either prevent, or mitigate that impact are presented.

1.1 Waste Activities

The facility will accept and process source separated and mixed non-hazardous solid wastes. The waste types will include Household, C & I and C & D waste. Facility operations will involve on-site waste mechanical and manual sorting, compacting, baling and transfer to off-site to recycling/treatment facilities and residual landfill.

The facility will form a very important part of the waste management infrastructure required in the South East Region, and is crucial to the achievement of European Union (EU), national and regional objectives for waste treatment, recovery and recycling and the diversion of waste from landfill.

2. PLANNING POLICY AND CONTEXT

2.1 Introduction

This Section describes the main planning policy statements that affect the facility, and describes how the proposed MRTF is consistent with national and regional waste management policy objectives. It is based on EU waste policy objectives; national legislation and policy; the Joint Waste Management Plan for the South East Region 2006 – 2011; the Wexford County Council Development Plan 2007 – 2013, and the Enniscorthy & Environs Development Plan 2001.

2.2 Site Location and Planning History

The site is located at Clavass, Enniscorthy. There is no record of any previous development on the site, and the available information indicates that previous landuse has been confined to agricultural purposes.

2.3 National Waste Management Policy

Waste Management Policy

National waste management policy is based 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 is supported by, EU legislation that requires the reduction in the volume of biodegradable waste disposed to landfill.

EU Landfill Directive 99/31/EC sets out the following reduction targets, which are based on 1995 figures:-

- Minimum 25% reduction by 2006;
- Minimum 50% reduction by 2009;
- Minimum 65% reduction by 2016.

"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 need for co-operation between neighbouring local authorities and 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 the most recent policy statement 'Waste *Management – Taking Stock and Moving Forward' 2004*, the significant improvement in recycling rates achieved since 1998 are 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'.*

The proposed facility is consistent with national waste policy objectives, as it will enhance the opportunities to recover/recycle wastes and significantly reduce the volume of waste going to residual landfill.

2.4 Regional Waste Management Policy

2.4.1 Joint Waste Management Plan for the South East Region 2006-2011.

Section 11.4 of the Plan addresses Waste Recovery and Recycling. The relevant policies that will be pursued by the Local Authorities are:

- The Region will encourage the provision of dry materials recovery facilities for source segregated Municipal Solid Waste;

- The Region will encourage the provision of an adequate range of recycling and recovery infrastructure and will have due regard to the scale of economic viability.

Section 11.5 recognises the need to treat source segregated waste in the most appropriate manner to optimise recovery, recycling and reuse. In relation to Dry Recyclables it is a specific policy:-

- To support the existing facility in Dungarvan operated by Waterford County Council and to promote the provision, by the private sector, of major materials recovery facilities for dry recyclables elsewhere in the Region.

Greenstar is already assisting Wexford County Council in meeting its objectives in relation to Dry Recyclables by processing the Council's Kerb Side collection at its Wexford Town facility.

Section 11.7, which deals with Priority Waste Streams, sets out the policy objective in relation to C&D waste, which is to:-

- Promote the provision, by the private sector, of the necessary infrastructure for the recovery and recycling of C & D Waste.

Section 11.13 of the Plan sets the following guidance for the location of Waste Management Facilities.

'It is the policy of the Region to provide adequately for waste management facilities, not withstanding the zoning of land for the use solely or primarily of particular areas for particular purposes in development plans, or the absence of zoning provisions, approval for waste management facilities necessary for the proper implementation of the Plan shall be considered open for consideration in all areas. In the siting of future waste facilities, consideration will be given to the following environmental protection areas:

Special Areas of Conservation	Refuge for Fauna
Special Protection Areas	Ramsar Site
Statutory Nature Reserve	Biogenetic Reserve
National Park	UNESCO Biosphere Reserve
Wildfowl Sanctuary	Salmonid Water
Sensitive Areas for Urban Wastewater Forestry	Sensitive Areas for Fisheries and
Areas of Special Control in County	Protected Areas, as listed in Annex IV of Development Plans the Water Framework Directive

The proposed facility is not located in any of the listed environmental protection areas.

2.4.2 Wexford County Council Development Plan 2007 – 2011

The 2007 – 2011 Development Plan acknowledges that *'efficient waste management infrastructure is vital for reasons of environmental protection and in support of economic development…. Properly segregated and managed waste is a potential material resource that can generate economic activity and employment. It can also protect the environment from the pollution caused by illegal dumping and backyard incineration'* (Section 6.9.1). It is a policy objective (Policy Inf. 37) to: -

- 'Implement the provisions of the Joint Waste Management Plan for the South East Region, 2006.

2.4.3 Enniscorthy & Environs Development Plan 2001

The application site is located in an area designated in the Development Plan as 'I-To Provide for Industrial and Related Use.' The proposed facility is compatible with this zoning.

2.5 Need for the Development

The MRTF, which is designed to maximise the reuse and recycling of wastes, is consistent with the need to expand the existing waste recycling capacity. The Joint Waste Management Plan for the South East Region recognises that the expansion the existing recycling infrastructure in the Region is required to allow the progressive roll-out of source separated waste collection services, to both the domestic and commercial sectors.

The proposed facility will assist in addressing the infrastructural deficit that currently limits the recycling of Household, C&D and C&I waste in the Region, and thereby contribute to achieving regional recycling targets and the reduction of waste disposed to landfill.

3. ALTERNATIVES

3.1 Introduction

This Section describes the alternative development options open to Greenstar to expand its materials recovery and recycling capacity. A 'do nothing' scenario is presented in the context of the need for the immediate expansion of the waste management infrastructure at a local and regional level.

3.2 Alternatives Examined

3.2.1 Alternative Locations

The proposed facility is intended to replace the existing Greenstar Wexford and Gorey MRTFs, and allow Greenstar to expand its waste recycling and recovery capacity to meet market demands. The other Greenstar MRTFs in the South East Region (Kilkenny and Waterford) are too remote from Greenstar's significant local customer base to allow efficient and cost effective operation.

Greenstar carried out a review of available lands in Wexford to identify potentially suitable sites. The selection criteria included proximity to the source of the waste, a developed road network, appropriate land zoning and compatible surrounding land use, suitable ground conditions and availability.

Given the distribution of its existing and target customer base Enniscorthy was, due to accessibility via the National Primary and Secondary Routes, identified as the preferred location within the county. Greenstar carried out a survey of commercially available sites and established a short list of three in the Enniscorthy area. The site at Clavass is the most suitable of the three for the development of the MRTF.

The site is in an area readily accessible by the N11 National Primary Route. It is zoned for industrial and related use, and the commercial character of the lands to the north and south is well established and accommodates a range of light industrial, and warehouse uses. It is not located in, or adjacent to any of the sensitive areas identified in the Joint Waste Management Plan for the South East Region (Ref. Section 2.4.1).

The application area (1.5 ha) can readily accommodate the size of the building required to handle the proposed waste volumes, and comply with the guidance on site layout presented out in the Enniscorthy & Environs Development Plan. It allows all of the waste acceptance, processing and storage operations to be carried out indoors. It also provides a minimum 80m buffer between the MRTF Building, where all waste activities will be carried out, and the nearest private residence. This buffer reduces the risk of potential nuisances such as noise, odours and dust, and also facilitates the provision of effective mitigation measures.

3.2.2 Alternative Site Layout & Processes

Greenstar used its extensive experience in the design and operation of MRTFs to design the site layout to achieve maximum flexibility in the daily site operations, while ensuring proper control and effective mitigation of potential environmental impacts. Following the receipt of the planning application, the planning authority requested amendments to the site layout to accommodate parking, enhance sight lines and ensure that appropriate landscaping measures were implemented.

The planning application site was originally one half of a 3 ha lot owned by Greenstar. The MRTF will be located in the northern part of the lot as this area will allow the use of the existing entrance and establish the maximum buffer for between the facility and the private residence to the south.

Following discussions with the planning authority relating to improved sight lines and landscaping outside the application area, it was agreed to change the site layout to amend the planning application area to encompass the entire 3 ha landbank. This is solely to allay the planning authority's concerns about the enforcement of conditions relating to the sight lines, surface water and foul water drainage and landscaping.

The proposed plant, equipment and handling procedures are designed to maximise the recovery of materials and minimise the amount of residual waste. The proposed design ensures that all waste off-loading, processing, and transfer operations will be carried out inside the MRTF Building and provides for the effective collection and appropriate treatment of odour emissions.

Greenstar considers that at the site layout, design and proposed processes are consistent with Best Available Techniques (BAT), and that no other practical alternative measures provide a higher level of environmental performance.

3.3 "Do Nothing" Scenario

The primary objective of the facility is the treatment and recovery of waste so as to increase overall waste recycling rates in the South East Region and minimise the volumes of waste disposed to landfill. A 'do-nothing' alternative would restrict the growth in recycling rates and result in ongoing landfilling of recyclable wastes, which is contrary to national and local waste policy objectives.

4. SITE DESCRIPTION

4.1 Introduction

This Section presents an overview of the site and the surrounding area. More detailed descriptions of the various aspects of the site are presented in the following Sections.

4.2 Site Location

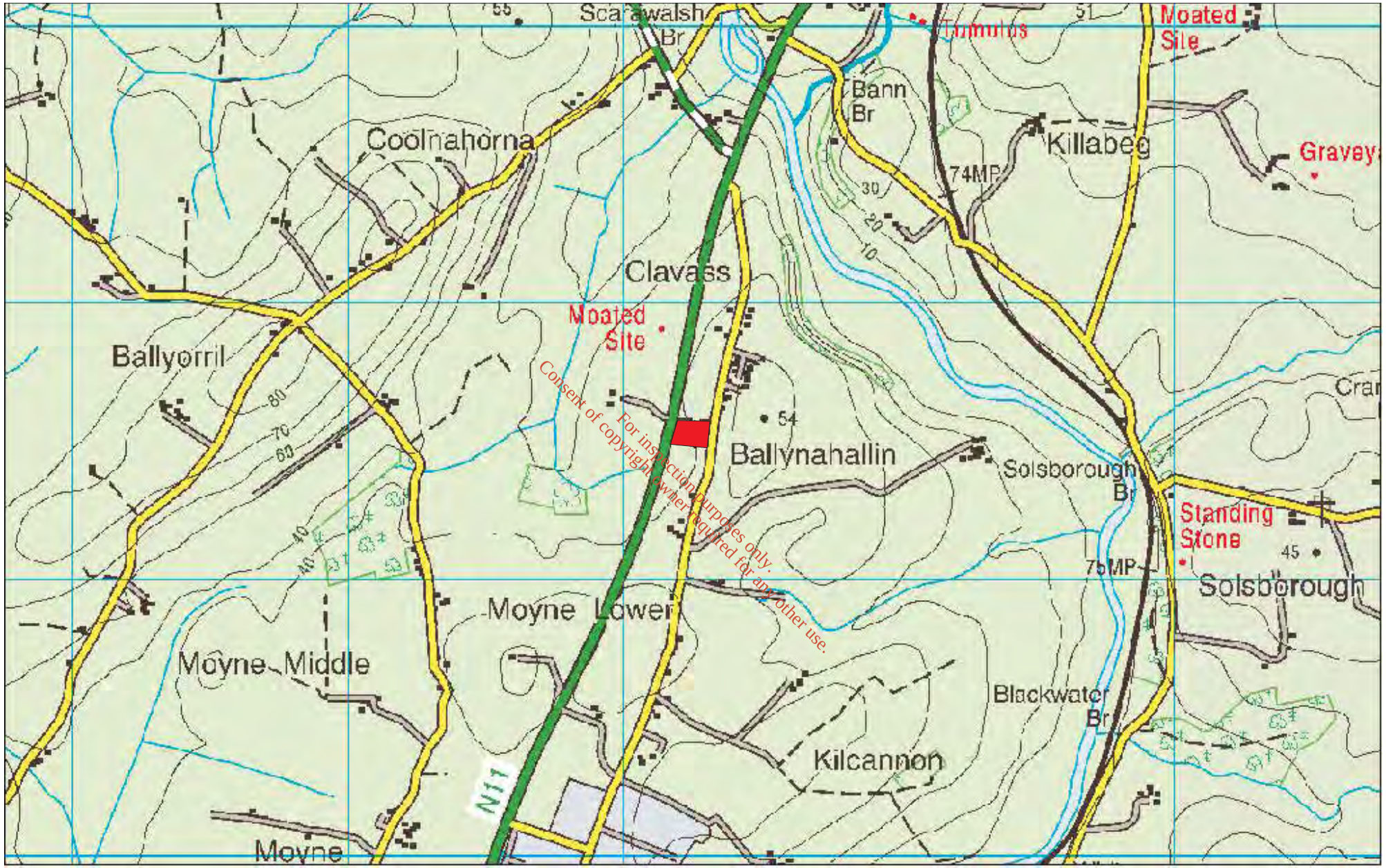
The site, which encompasses an area of c. 1.5 ha, is located in the townland of Clavass, approximately 4 km north of Enniscorthy at National Grid Reference E 298250 N 143520 (Figure No.4.1). The site is bounded to the west by the N 11 National primary route, to the east by the 'Old Dublin Road', to the north by a Commercial Park and to the south by an open field. Enniscorthy is the closest settlement to the site. The village of Ferns is approximately 7 km to the north of the site on the N11.

4.3 Site Layout

The site layout is shown Drawing No. 4977 Topographical Survey. It is currently grassed and was formerly used for agricultural purposes. The ground, which will be occupied by the MRTF, slopes to the west, towards the N11 from an elevation of 42 m Ordnance Datum (OD) to 36 m OD. There are no surface water drains on the site. A foul sewer, which serves the Commercial Park on the adjoining northern lot, runs through the west of the site, to a pumping station in the south west corner. A surface water sewer serving the Commercial Park runs through the centre of the site.

4.4 Site History

The lands have always been used for agricultural purposes and there is no record of any previous development at the site.



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CLIENT

Greenstar

TITLE

Site Location - Enniscorthy

Legend

Site Location

FIGURE NUMBER

4.1

Scale

Not to Scale

Revision

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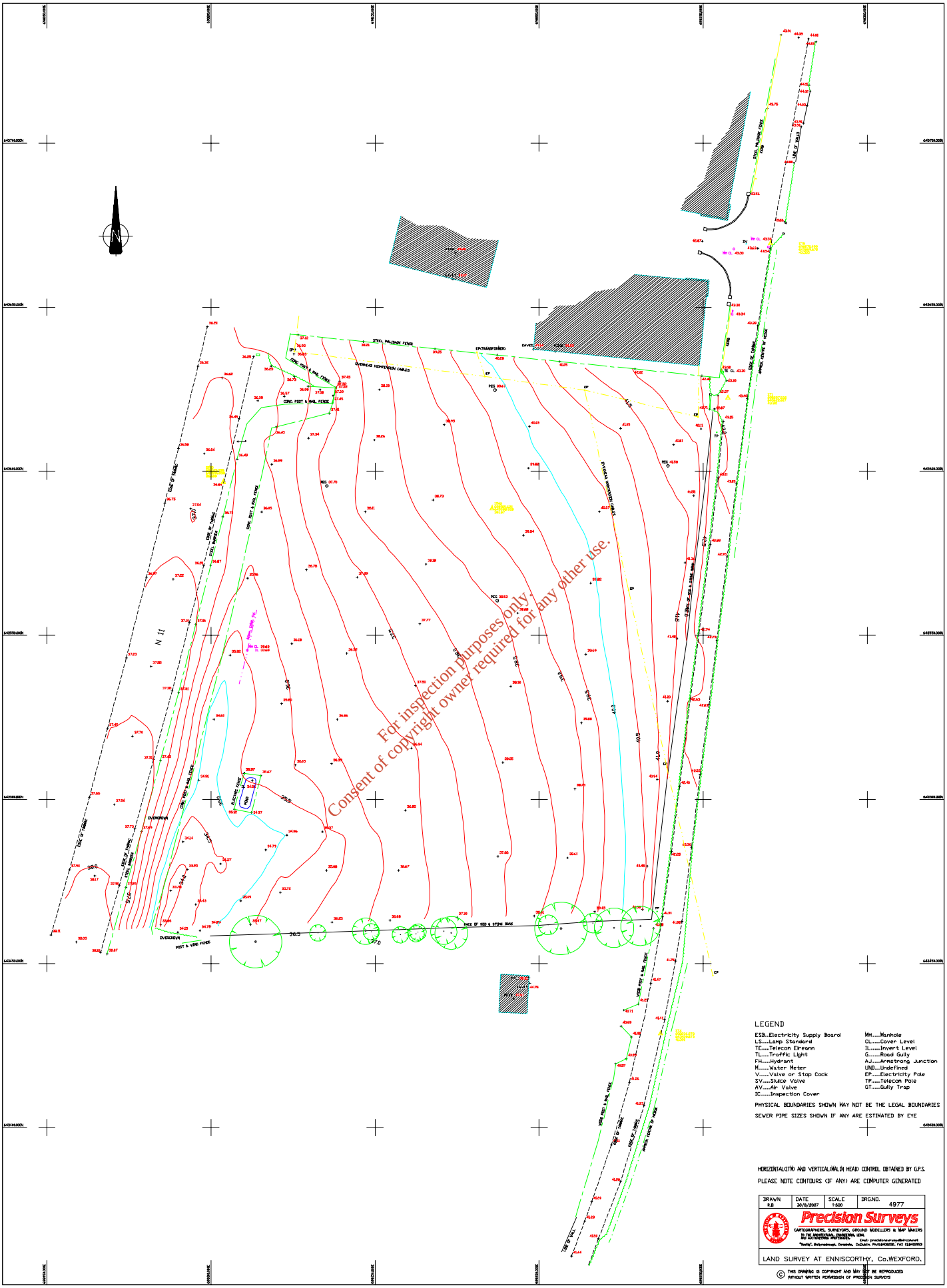
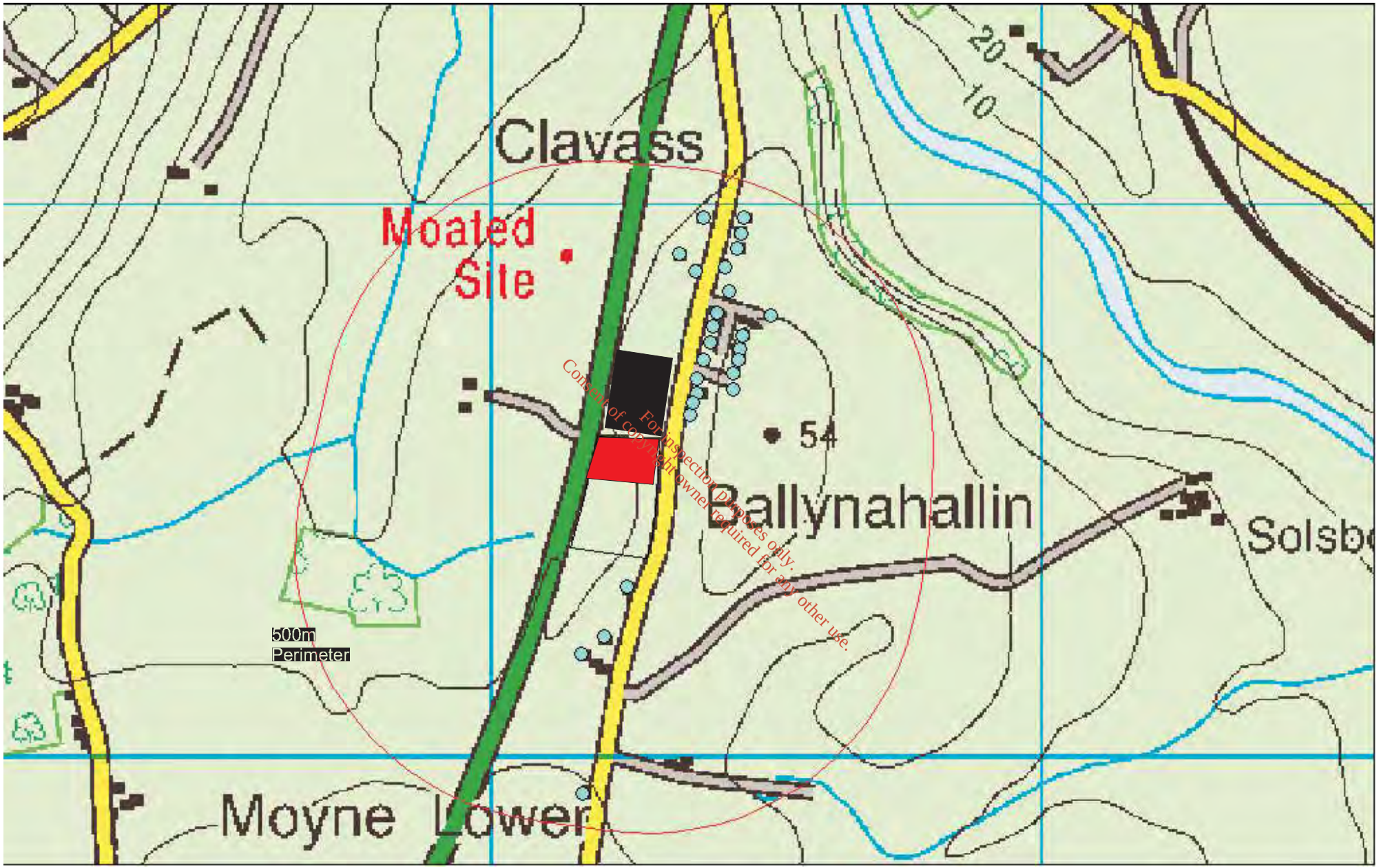


4.5 Surrounding Land Use

The surrounding land uses consist of a mix of industrial and agricultural activities, with residential dwellings on the Old Dublin Road to the north and south of the site.

The site is in an area zoned for industrial use. The adjoining lot to the north has recently been developed as a Commercial Park. The Park is occupied by three main buildings, subdivided into units, which house shop fitters, electrical wholesale suppliers, plumbing wholesalers and communications companies. To the east the land is used for agricultural purposes, mainly tillage. To the west of the N11 the lands are also used for agricultural purposes.

As previously stated, it is not proposed to develop the southern portion of the site for waste activities. There are 25 private residences within 500m of the site boundary (Figure No. 4.2). The nearest residence is approximately 50m from the north eastern site boundary. An assessment of the impact of the proposed development on residents in the local area is presented in Sections 7, 13 and 15.



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TITLE
Surrounding Landuse

- Residential Dwelling
- Site Location
- Commercial & Industrial Park

FIGURE NUMBER
4.2

Scale
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5. PROJECT DESCRIPTION

5.1 Introduction

This Section describes the facility layout and operations, including the proposed waste handling, treatment and support activities. It discusses the environmental control measures incorporated in to the facility design and those that will be applied during site operations to eliminate and/or mitigate environmental impacts. Where relevant, reference is made to more detailed evaluations in other Sections of the EIS.

5.2 Site Development

The proposed development area is shown in red, on Drawing No. P003. The completed MRTF layout is shown on Drawing No. P004. The completed development will comprise the construction of a 3,008m^2 MRTF Building, 270m^2 Administration Building, double weighbridge, vehicle wash area, plant refuelling area, ESB Substation, 1420m^2 of concrete hardstand, an odour treatment plant, a site security fence and landscaping measures.

5.2.1 Construction

The development will involve stripping of topsoils and subsoils, grading the subsoil to formation level, placement of approximately 300 mm of hardcore and the installation of a reinforced concrete slab 200 mm thick across the entire site. The formation level for the MRTF Building and the Administration Building will be 37.75m OD and 42.25m respectively.

5.2.2 Duration and Phasing

The facility will be constructed in one stage, as shown on Drawing No. P004. It is expected that the construction, once started, will be completed in approximately six months.

revisions	description	date	issue
	Issued for Planning Permission	23 Nov 07	RL
rev. C	General changes for RFI information	07 May 08	RF

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date | issue

eramus

job no. 1375 | drwg no. P 003 | rev. Rev. 1

job title: Macanals Recovery and Transfer Facility at Cavass, Enniscorthy, County Wexford for Greenstar ltd. (Greenstar)

drwg title: Site Plan in context of O/A Greenstar Landholding

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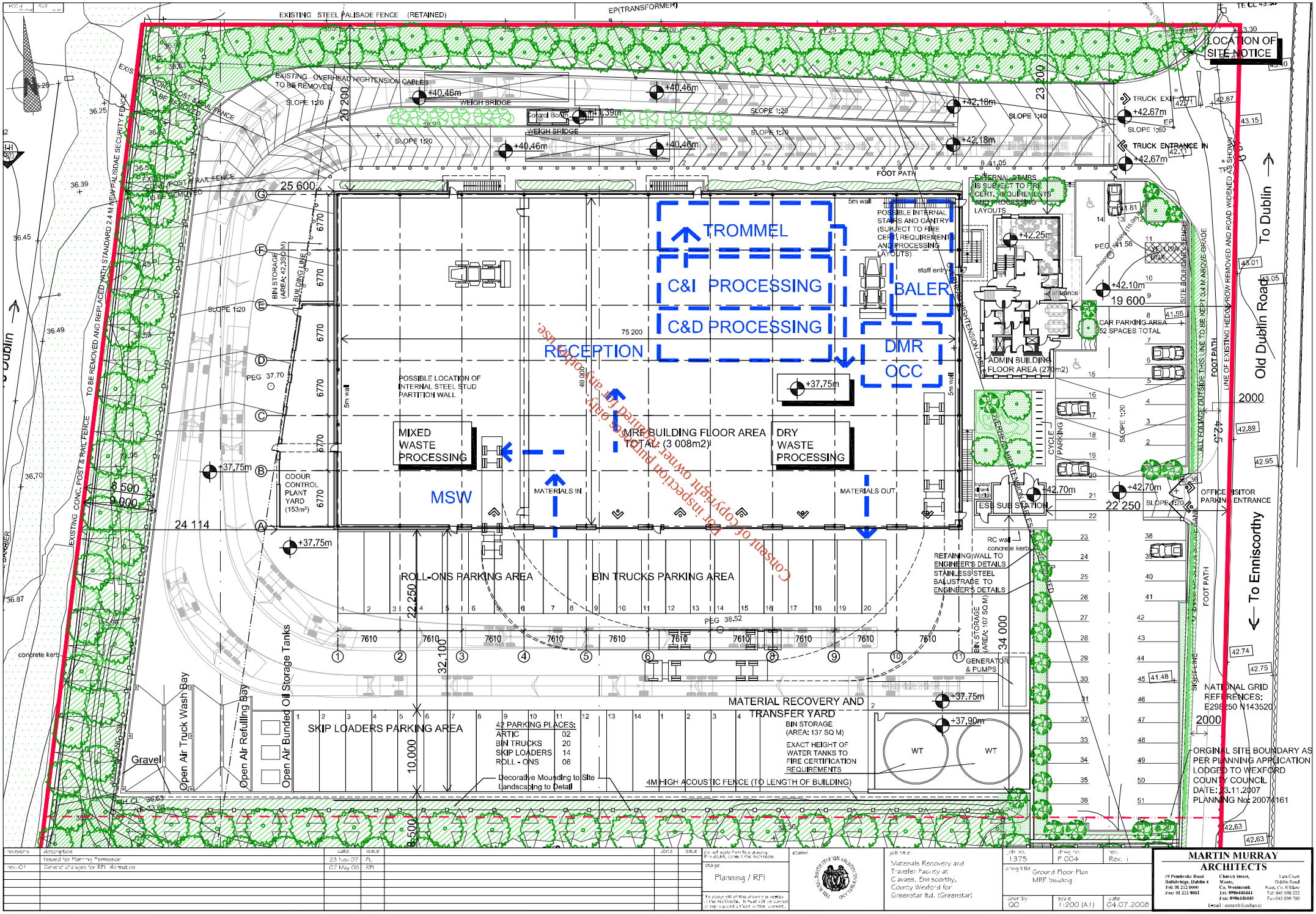

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revisions	description	date	issue
	Issued for Planning Permission	23 Nov 07	PL
rev.-01	General changes for RFI information	07 May 08	RFI

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job title: Macanalls Recovery and Transfer Facility at Cavaes, Enniscorthy, County Wexford for Greenstar ltd. (Greenstar)

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dwg title: Ground Floor Plan MRF Building

drawn by	scale	date
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5.2.3 Machinery and Plant

Plant and machinery used during construction may include tracked excavators, dumpers and crane hoists.

5.3 Site Operations

5.3.1 Hours of Operation

The proposed normal waste acceptance hours are 06:00 to 20:00 Monday to Saturday inclusive. The facility will not normally open on Sundays. The proposed operational hours are 06:00 to 22:00 Monday to Saturday. Due to the nature of the waste recycling business it may, on occasion, be necessary for vehicles delivering wastes and removing recycled materials to operate outside these hours, for example to meet customer demands in relation to the collection of wastes in urban areas. Therefore the flexibility to operate 24 hours a day is required.

5.4 Site Access

There will be two entrances to the site, as shown on Drawing No. P004. All heavy goods vehicles (HGV) will enter the site via the northernmost entrance, which has been designed to accommodate an FTA Design Articulated Vehicle. A second entrance, 45m to the south, will be used by staff and visitors. The separation of the commercial and private vehicle entrances is based on safety considerations. A visibility sightline appraisal is included in Section 7.

5.5 Waste Types & Volumes

The waste types and maximum volumes that will be accepted at the facility are shown on Table 5.1. It is estimated that, in the initial year of operation, approximately 60,000 tonnes will be accepted and that this will increase to 90,000 tonnes over the following 6-8 years. The actual rate of increase will depend on market conditions.

Table 5.1 Total Annual Waste Inputs

Waste Type	Maximum Capacity*
C & I	30,000
Household	30,000
C & D	30,000
Total	**90,000**

*Subject to Market Conditions

5.6 Waste Acceptance Procedures

Only non-hazardous, Household, C & I and C & D waste will be accepted at the facility. All wastes will be subject to waste inspection procedures, which are similar to those already successfully applied at other Greenstar facilities, to minimise the risk of acceptance of unsuitable materials.

The waste will be delivered to the facility in enclosed rear end loaders, curtain sided trailers and covered open top trailers and skips. All waste delivery vehicles will be obliged to enter onto the in weighbridge, where they will be weighed, any accompanying documentation checked and the contents of the vehicle inspected by Greenstar personnel to confirm its suitability. The vehicle will then drive from the weighbridge to a designated off-loading area inside the MRTF Building, where it will be off-loaded.

Any waste load, which upon inspection at the weighbridge is deemed not to be suitable, will not be accepted. In such event Greenstar personnel will record the name of the delivery contractor, the driver, the registration number of the vehicle and the nature and origin of the waste. The vehicle driver will be instructed to return the waste to the producer. Records of any such incidents will be maintained on site and reported to Wexford County Council and the EPA.

Any materials identified as not being suitable following off loading will, where practical, be loaded back onto the delivery vehicle for immediate removal off-site. If this is not possible, the material will be removed to a designated quarantine area inside the MRTF Building, where it will be stored in suitable container (e.g. skips) pending its removal off site by either the waste producer, or the waste contractor. Should the producer and/or contractor refuses to remove the waste Greenstar will ensure that it is removed off-site and disposed of at an appropriate facility as soon as possible. Greenstar will maintain records of the waste type, quantity, and ultimate disposal/treatment facility.

5.7 Waste Handling

All waste handling and processing will be carried out inside the MRTF building. The majority of the waste will be dry recyclable materials, although waste containing foodstuffs and putrescibles will be processed.

5.7.1 Household Waste

Household waste will comprise source separated dry recyclables and mixed residual wastes. It will be delivered to the facility in enclosed refuse freighters and will be off-loaded in a designated area inside the MRTF Building, where it will be inspected to ensure it is suitable for processing i.e. it does not contain any hazardous or other unsuitable material.

The MRTF Building will be divided into Dry Waste and Mixed Waste processing areas by an internal steel stud partition wall. This will facilitate the operation of an effective odour control system in the Mixed Waste area. The proposed system is described in more detail in Section 11.

The source separated dry recyclables will be off-loaded in the Dry Waste area and then moved to the baling units or loading bays where, depending on its nature, it will be baled, or compacted before being stored on site pending removal to off site recycling facilities.

The residual mixed waste containing putrescibles may be mechanically treated to remove potential recyclable materials including metals, paper, plastics, compostables and materials that are suitable for energy recovery. The recovered metals, paper and plastic will be stored on-site pending removal to off-site recovery/recycling facilities. The compostables will be removed off-site for biological treatment at a permitted/licensed facility.

5.7.2 C & I Waste

The C & I waste will comprise source separated and mixed residual waste. The source separated materials will contain a larger fraction of cardboard, plastic and cans than the household dry recyclables. Any waste containing putrescible material will be handled with the mixed household waste in the Mixed Waste area.

The source separated material will be off-loaded in the Dry Waste area and then moved to the baling units or loading bays where, depending on its nature, it will be baled, or compacted and stored before being loaded onto trailers for removal off-site.

Mixed waste, containing putrescible materials, will be off-loaded in the Mixed Waste area where it may be mechanically treated to remove potential recyclable materials including metals, paper, plastics, compostables, and materials that are suitable for energy recovery. The recovered metals, paper and plastic will be stored on-site pending removal to off-site recovery/recycling facilities. The compostables will be removed off-site for biological treatment a permitted/licensed facility.

5.7.3 C & D Waste

C & D Waste will be off-loaded in a designated part of the Dry Waste area for inspection. Any unsuitable (contaminated) materials will be removed to the waste quarantine area. Large items of wood, metal or plastic will be removed using a mechanical grab or trommel and bought to the appropriate on-site handling/storage area. The remaining material will be screened. The oversize (>150 mm) will be stored on-site pending removal for further processing off-site. The undersize (<150 mm) will be stored on-site pending removal for use in off-site recovery operations.

5.8 Staffing Levels

The facility will be staffed by trained personnel. When operating at maximum capacity there will be approximately 15 full time site staff, who will include a Facility Manager, Site Foreman, Weighbridge Clerk, and machine operators. In addition up to 40 drivers may be based at the site.

The Facility Manager, who will have appropriate training and experience, will be responsible for day-to-day operations. Staff will be present at all times during the opening hours to supervise waste acceptance, processing and transfer and to deal with any emergency that may arise.

5.9 Facility Equipment

Facility operations will require the use of a range of fixed and mobile plant, as shown in Table 5.2.

Table 5.2 Plant and Equipment

Type of Plant	MRTF Building
Front Loading Shovel	2
Trommel or similar mechanical process	1/2
Baler	1
Air Compressor	1
Grabs	1
Shredder	1
Conveyor	2
Bag Opener	1
Forklift	1
Yardsweeper	1
Odour abatement system	1

The final layout of the fixed plant has not yet been determined. All key plant items will have100% duty and 50% standby capacity. Additional supporting plant items may be hired in for use for short periods, if required to ensure continued site operations. Critical spares will be maintained on-site and a preventative maintenance programme will be implemented. The Facility Manager will maintain records of the preventative maintenance programme.

5.10 Safety and Hazard Control

All facility personnel and visitors, including the waste contractors, will be obliged to comply with Greenstar's safety guidelines. These will regulate access to and from the facility and on-site traffic movement. All site personnel will be provided with, and will be obliged to wear, the appropriate personal protective equipment (PPE). PPE will include facemasks, gloves, safety glasses, steel-toed footwear, overalls, reflective jackets and helmets.

5.11 Oil / Chemical Storage

Facility operations will involve the storage and handling of fuel for the site plant, engine hydraulic and lubricating oils, anti-freeze, detergents and disinfectants. Waste transport vehicles will not be refuelled on-site.

A dedicated, bunded oil storage area will be provided in the south west of the site, as shown on Drawing No.P-004. The fuel storage tanks, which will be used to refuel the mobile and fixed plant, will be bunded to 110% capacity and provided with a sump to remove accumulated rainwater. The bund will be designed and constructed in accordance with the EPA's Guidance Note on the Storage and Transfer of Materials at Scheduled Activities. Lubricating, hydraulic oils and detergents for floor and vehicle washing and will be stored in designated and contained storage areas and units inside the MRTF Building.

5.12 Water Supply

The facility will obtain its water supply from the existing municipal supply.

5.13 Surface Water Management

The proposed surface water drainage system is shown on Drawing No. D1080D2. Surface water run-off from the paved yard areas will be collected in the on-site surface water drainage system and discharged to an on-site percolation area. A silt trap, oil interceptor and an attenuation tank will be provided as shown, on Drawing No. D1080D2. More details on the proposed drainage system are presented in Section 9.

5.14 Wastewater

Sanitary and sink wastewater from the site offices will be discharged to the facility's foul drainage system, as shown on Drawing No. D1080D2. Storm water run-off from the refuelling area will be directed to the foul sewer, via a Class 2 Klargester Full Retention Separator.

Washwater from the vehicle wash located in the south west of the site will be directed to the foul sewer also via this separator, as shown on Drawing No. D1080D2. Given the nature of the materials that will be handled in the Dry Waste area, floor wash down will not be required here. The floor of the Mixed Waste area will be washed down as required. The wash water will be collected in a gully provided in the floor and will be piped to the foul sewer system, as shown on Drawing No. D1080D2.

The foul sewer system will connect to an existing foul water pumping station, located to the south of the site. There is a rising main from the pumping station, which connects to the municipal foul sewer serving the area.

The design for the pump-station pumps storage tank and rising main is on the basis of 450 people at 65litres/person/day. The storage tanks are sized at 32,000l which equates to 24 hour storage for 450 people of 29.25m³/day. The estimated number of car spaces on the existing site north of the applicant site is 215. The proposed Greenstar site has 52 spaces giving a total population of 267. Even allowing for a factor of growth of 1.5, there is more than adequate capacity in the storage tanks and pumps.

5.14.1 Wastewater Volumes

The volume of wash water is estimated at 500 litres per 500 m^2 floor area per wash event. The only area of the floor that will actually be washed is where mixed waste is handled (ca 1600m^2). It is likely that the washdowns will be carried out weekly and the total volume of wastewater generated will be approximately 82m^3/year. It is

estimated that the vehicle wash will generate approximately 120m^3 of wash water annually.

5.14.2 Wastewater Quality

Table 5.3 shows the likely quality of the combined wastewater discharged to sewer from the vehicle wash, floor washdown and runoff from the refuelling area.

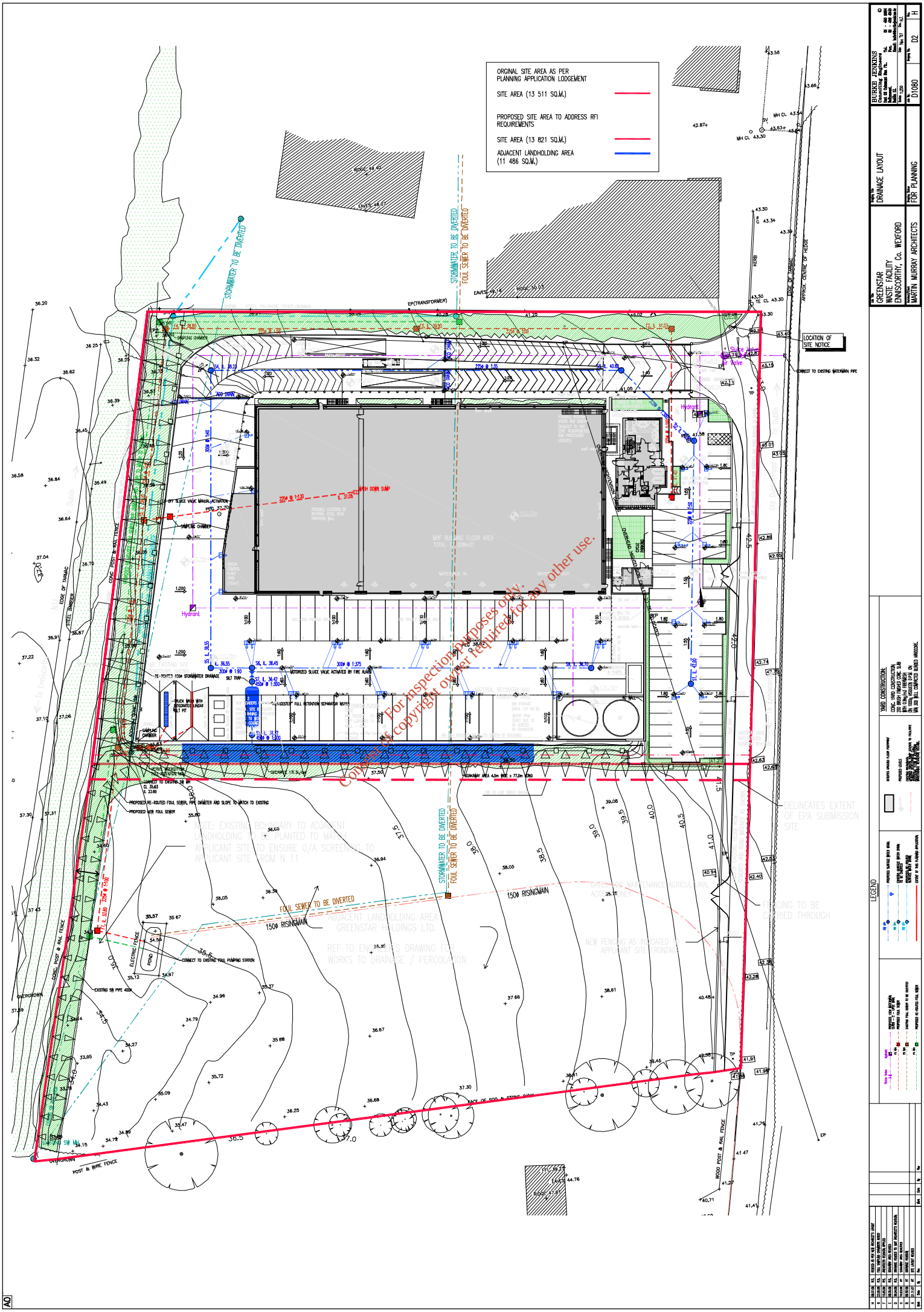


Table 5.3 Wastewater Quality

Parameter	Concentration
Temperature	20 °C
BOD	3,500 mg/l
COD	7,000 mg/l
pH	6 – 10
Ammoniacal Nitrogen	100 mg/l
Suspended Solids	2000 mg/l
Sulphates (as SO_4)	1000 mg/l
Detergents (as MBAS)	100 mg/l
Fats, Oils, Grease	100 mg/l

5.15 Waste Generation

The facility will generate small volumes of office type wastes. Greenstar will operate a source segregation policy to maximise the recovery of potential recyclable materials from these waste streams. All recovered materials will be transferred off-site to recovery/recycling facilities.

Unsuitable materials, e.g. batteries, gas cylinders, miscellaneous plastics, bricks and mortar etc. removed from the wastes delivered to the site and which cannot be removed by the delivery vehicle, will be stored on-site on suitable storage units (cages, skips, bins) pending removal off-site for disposal at appropriately licensed facilities.

The mobile plant will be subject to on-site maintenance by a contract mechanic company. Waste oils and batteries will be removed off-site for disposal/recovery at licensed treatment/recovery facilities.

The oil interceptors and silt trap on the surface water drainage system will be routinely cleaned and emptied, and the contents removed off-site for disposal/treatment at an appropriately licensed facility.

Greenstar will identify appropriately licensed or permitted waste disposal/treatment facilities for all wastes generated at the facility. Greenstar will obtain details of the proposed disposal/treatment facilities, including the relevant permit and/or licence registration numbers, before any waste is moved off-site. All wastes leaving the facility will be weighed at the on-site weighbridge and Greenstar will retain records of the waste types (EWC codes), volumes (tonnes) and the destination.

5.16 Nuisance Control

The mixed Household and C & I waste will contain foodstuffs and other putrescible materials, which have the potential to give rise to nuisance.

5.16.1 Litter

Site activities will not be a significant source of litter. All waste delivered to and transferred from the facility will be in fully enclosed or covered vehicles. All waste handling operations, including waste off-loading and processing, will only be carried out inside the MRTF Building. In the unlikely event of an incident that results in windblown litter facility personnel will ensure its immediate collection.

5.16.2 Birds

Birds can be attracted to waste management facilities where there is available foodstuff. The mixed household and C & I waste will include some foodstuff. However, such waste will be delivered in fully enclosed vehicles. All of the waste processing and storage will be carried out internally and all wastes will be removed from the facility in fully enclosed vehicles. These practices are proven to eliminate bird attraction.

5.16.3 Vermin/Pests

Vermin and insects are a potential problem at facilities where waste containing foodstuff and other putrescibles is not handled properly. However, this usually arises where waste is either being disposed of (landfill) or stored for long periods of time. Waste containing foodstuffs and putrescible matter will generally be processed and the organic components transported off-site the same day.

Where mixed waste containing putrescible matter has to be retained on-site overnight, it will be stored inside the MRTF Building. This minimises the potential to attract vermin. The floor of Mixed Waste area will be swept and washed down at regular intervals.

The facility will be inspected daily for the presence of insects or vermin and de-infestation measures will be implemented as necessary. Greenstar will, as a preventative measure, engage a pest control contractor to implement vermin control measures on a routine basis.

5.16.4 Odours

The facility will accept wastes that have the potential to be a source of odours: e.g. food stuffs and other putrescibles in the mixed household and C & I. Such wastes will generally be processed and the organic components transported off-site the same day. Where mixed waste containing putrescible matter has to be retained on-site overnight it will be stored inside the MRTF Building.

The Mixed Waste area will be maintained under negative air pressure. All odorous air removed from the area will be treated in an odour abatement system before discharge to atmosphere. Further details of the proposed odour management system and the impacts are presented in Section 12.

5.16.5 Dust

It is not anticipated that dust will be a significant issue at the facility. There will be no open storage of waste and all waste processing will be carried out inside the MRTF Building. The facility access roads, vehicle manoeuvring and parking areas will all be paved.

5.16.6 Noise

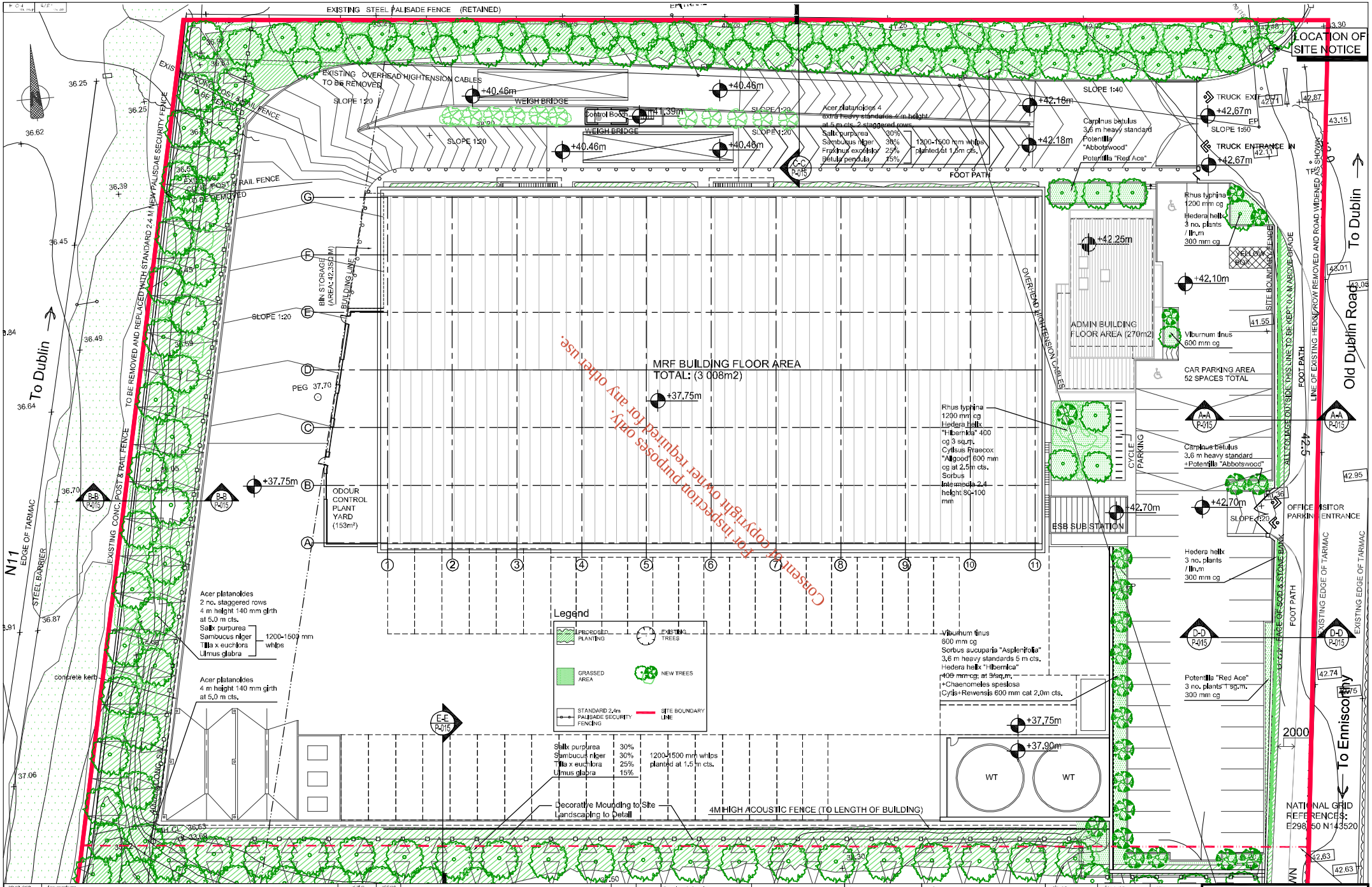
Noise will be generated by the waste processing plant and vehicles during operational hours. An assessment of baseline noise levels in the vicinity of the site, the predicted noise impacts and mitigation measures is presented in Section 13.

5.17 Site Security

The site will be provided with a 2.4 m high perimeter fence. 24 hour security will be provided by a contract security company. In addition, CCTV cameras will be strategically located throughout the site to prevent unauthorized entry or fly-tipping.

5.18 Landscape Measures

The existing hedgerows along the western and eastern site boundaries are fully mature. The hedgerow along the western boundary will be retained, however it will be necessary to remove a section of hedgerow along the eastern boundary to improve sight lines at the entrances. Additional planting will be carried out around the boundaries as shown on Drawing No. P014.



revisions	description	date	issue
	Issued for Planning Permission	25 Nov 07	A
rev. 0	General changes for RFI information	10 July 08	B

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stage: Planning / RFI

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In association with Martin Murray & Associates Landscape Architects

job title: Macanals Recovery and Transfer Facility at Cavaes, Enniscorthy, County Wexford for Greenstar ltd. (Greenstar)

job no.	drawing no.	rev.
1375	P 014	Rev. 1 (RFI)

drawing title: Landscape Site Layout

drawn by	scale	date
QO	1:200 (A1)	10.07.2008

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5.19 Natural Resource Consumption

Facility operations will involve the consumption of water, oil and electricity. The estimated quantities that will be used annually are given in Table 5.4: -

Table 5.4 Annual Raw Material Consumption

Resource	Quantities
Diesel Oil	100,000 litres
Hydraulic Oil	100 litres
Disinfectant	80 litres
Engine Oil	200 litres
Water	3500m^3
Electricity*	100,000 kW

*Subject to variation depending on the processing plant layout

5.20 Environmental Monitoring Programme

An environmental monitoring programme will be implemented at the facility in accordance with the conditions set in the Waste Licence, which will be issued by the EPA.

5.21 Contingency Arrangements

Greenstar will prepare an Emergency Response Plan before the start of waste activities. The Plan will be based on those currently in place at its other licensed facilities. The Plan will ensure a rapid response to any incident by trained staff and minimise the impact on the environment of any associated emissions. The Plan will also specify the post emergency environmental monitoring that will be carried out to assess the impact of the incident and establish the need for and extent of any remedial actions.

5.22 Changes to the Project

The facility is designed to process a maximum of 90,000 tonnes per annum. It is not envisaged that there will be any significant changes to the facility operations over its lifetime. In the unlikely event that the facility closes down, the closure will be managed in accordance with the conditions set in the Waste Licence.

5.23 Associated Developments

The facility is designed to meet national and regional waste management policy objectives on waste recovery. It is expected that the processed materials will be transferred off-site to existing and new recycling/recovery operations.

While Greenstar will, depending on market conditions, avail of any future waste recovery/recycling facilities developed in the region, it is not envisaged that the proposed development will be directly or indirectly responsible for any associated developments.

6. CLIMATE

6.1 Introduction

This Section describes the climate at the facility and is based on meteorological data obtained from the Kilkenny Meteorological Station.

6.2 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 Kilkenny is presented in Table 6.1 and more detailed information is contained in Appendix 2.

Table 6.1 Meteorological Data: Kilkenny

Rainfall	
Annual average	822.8 mm
Average maximum month (Dec)	88.6 mm
Average minimum month (June)	50.5 mm
Temperature	
Mean Daily	9.3°C
Mean Daily Maximum (July)	19.9°C
Mean Daily Minimum (Jan)	1.4°C
Relative Humidity	
Mean at 0900UTC	84%
Mean at 1500UTC	71%
Wind (Knots)	
Frequency of calms	2.2%
Prevailing direction	South West
Prevailing sector	South West

The average annual rainfall at the site is 822.8 mm. The winds are predominantly from the south west sector.

6.3 Impact Assessment

The development will not result in any impacts on the climate or microclimate at the site. By diverting biodegradable material from landfill the development will assist in the reduction of greenhouse gases (carbon dioxide, methane) generated at landfills.

7. TRAFFIC

7.1 Introduction

This Section describes existing traffic conditions and includes an assessment, carried out by Trafficwise Ltd., of the impact of the traffic associated with the development on the local road network. A copy of the Trafficwise report, which describes the methodologies applied and the full appraisal analyses, is included in Appendix 3 and the findings are summarised herein.

7.2 Existing Conditions

The site is greenfield and is located in an established industrial area on the northern outskirts of Enniscorthy. It is on the Old Dublin Road, approximately 600 metres south of the N11/N80/Old Dublin Road staggered crossroads. It is bounded to the west by the N11 National Primary Road and to the east by the Old Dublin Road, to which there is an existing gated access.

7.2.1 Traffic Flows on Local Roads Network

Following discussions with the Council's Area Engineer the following junctions were identified by Trafficwise for inclusion in the assessment:-

- The N11/N80 Staggered Crossroads Junction;
- The N11/R702 Roundabout Junction;
- The N11/IDA Link Road.

Trafficwise commissioned Abacus Transportation Surveys to carry out 12-hour classified traffic turning count surveys at the N11/N80 staggered crossroad and the N11/R702 roundabout junction, which is to the south of the site. The surveys were carried out on Tuesday 4th September 2007 over the period 07:00 – 19:00 hrs using video surveillance. Trafficwise carried out counts at the N11/IDA Link Road on the 3rd October 2007 during the network peak hours.

7.2.1.1 Traffic Flow on the Old Dublin Road

The survey indicated that the Old Dublin Road is not very heavily trafficked throughout the day, with a daily two-way vehicular flow never greater than 120 vehicles. The predominant direction of flow in the morning is southbound, while in the evening there is a relatively equal distribution of traffic.

The morning peak hour (09:00 – 11:00 hrs) recorded 113 two-way vehicular movements. Of these, 69 travelled southbound and 44 travelled northbound. In the evening peak hour (15:00 – 16:00 hrs) the two-way flow was 105 vehicle movements. Of these, 63 vehicles travelled southbound and 42 travelled northbound. During off peak periods, traffic flow was relatively constant, with an average two-way flow of 66 vehicles.

Over the survey period the Old Dublin Road carried 547 vehicles southbound and 415 vehicles northbound. Of the total volume of traffic in each direction, approximately 8% were Heavy Goods Vehicles (HGV).

7.2.1.2 Traffic Flow on the N11

There is a relatively consistent volume of traffic in both directions throughout the day. During the morning peak hour (08:00 – 09:00 hrs), the combined two-way vehicular flow of 1,504 vehicles, of which 798 travelled southbound and 706 travelled northbound. During the evening peak hour (17:00 – 18:00 hrs) a two-way flow of 1,683 vehicles were recorded, 876 vehicles travelled northbound and 807 travelled southbound.

Over the survey period the N11 carried 8,144 vehicles southbound, of which 12% were HGV and 7,631 vehicles travelled northbound, of which 13% were HGV.

7.2.1.3 Traffic Flow at the N11/IDA Link Road junction

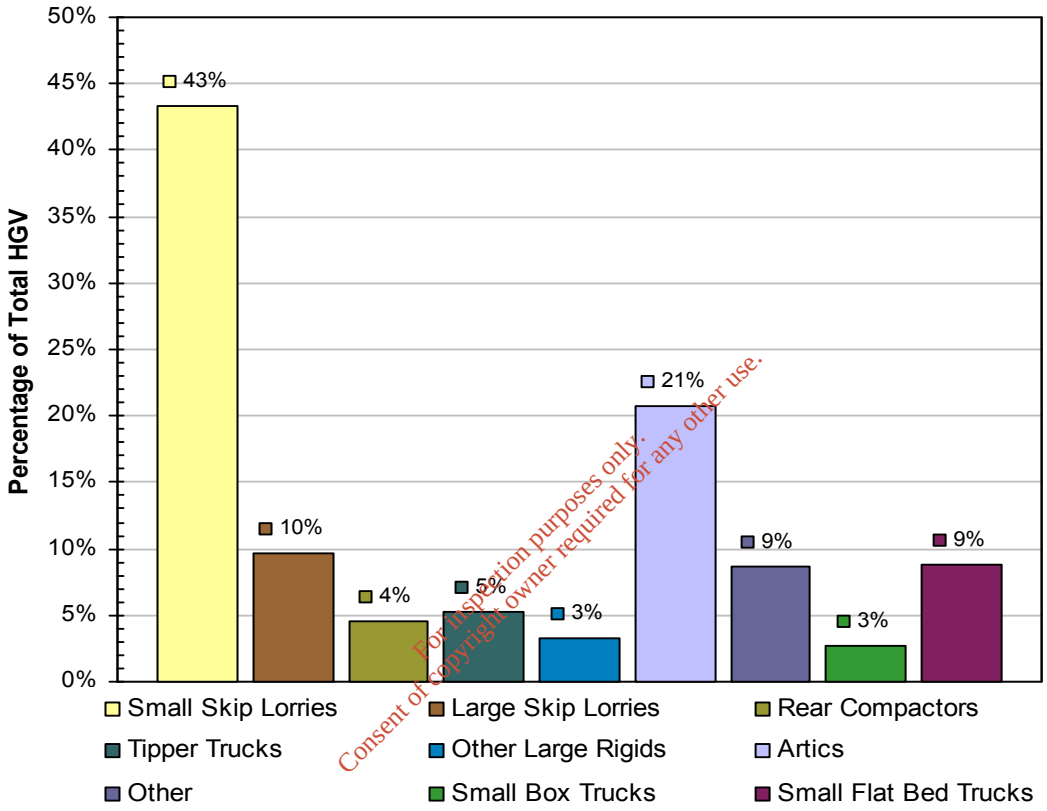
100 vehicles travelled on the IDA Link road in the morning peak hour (08:00 – 09:00hrs). Of these 71 vehicles travelled westbound (to N11) and 29 travelled eastbound. In the evening peak hour (17:00 – 18:00 hrs) 122 vehicles were recorded, of which 102 travelled eastbound and 20 travelled westbound.

7.3 Traffic Generation

7.3.1 Forecast Traffic Generation: Heavy Goods Vehicles

The estimates of the types of waste vehicles and number of movements associated with the development are based on data from other similar Greenstar MRTFs. These are shown on Figure 7.1.

Figure 7.1 Typical Waste Transport Vehicles Serving a MRTF



Small skip trucks comprise approximately 43% of all HGV movements and articulated trucks generally make up 20%. The typical weights for the different waste types that will be accepted at the site are given in Table 7.1.

Table 7.1 Typical Average Weight Delivered

Waste Stream	Average Tonnes/Load
C & I and C & D	6.3
Dry Recyclables	8.0
Municipal Solid Waste	7.9
Other	5.5

Following processing all of the materials will be transferred to off-site recycling/recovery/disposal facilities, generally in large articulated vehicles that can carry loads of approximately 20 tonnes. The predicted waste transport vehicle movements associated with the development upon opening and when operating at maximum capacity are given in Tables 7.2 and 7.3.

Table 7.2 HGV Movements at Opening (60,000 tonnes per annum)

Waste Stream	Tonne Expected in Peak Month	Loading		Daily Traffic Generation (Trips)		
		Waste In (Tonnes)	Waste Out (Tonnes)	Delivery	Removal	Total
C & I and C & D	2,550	6.3	20	21	7	28
Dry Recyclables	1,210	8.0	20	8	3	11
Municipal Solid Waste	2,000	7.9	20	13	5	18
Other	300	5.5	20	3	1	4
Removal of Empty Skips					10	10
TOTAL	**6,060**			**45**	**26**	**71**

Table 7.3 HGV Movements at Maximum Capacity (90,000 tonnes per annum)

Waste Stream	Tonne Expected in Peak Month	Loading		Daily Traffic Generation (Trips)		
		Waste In (Tonnes)	Waste Out (Tonnes)	Delivery	Removal	Total
C & I and C & D	3,820	6.3	20	31	10	41
Dry Recyclables	1,820	8.0	20	12	5	17
Municipal Solid Waste	3,000	7.9	20	19	8	27
Other	450	5.5	20	4	1	5
Removal of Empty Skips					15	15
TOTAL	**9,090**			**66**	**39**	**105**

The proposed facility will generate 71 HGV trips daily on opening (60,000 tonnes per annum). This is expected to increase annually, as waste volumes increases, to approximately 105 HGV trips per day (90,000 tonnes per annum).

7.3.2 Forecast Traffic Generation: Staff and Sundry Traffic

In addition to the HGV traffic, other types of traffic will arise linked to staff, customers and other visitors. It is expected that a maximum of 10 full time on-site staff and 35 drivers will be based at the facility upon opening. It is assumed that at maximum capacity there will be 15 full time staff and 40 drivers. Upon opening the facility will generate in the region of 45 outbound private vehicle movements, which will increase to approximately 55 movements at full capacity.

7.3.3 Forecast Traffic Generation: Construction

It is not possible to provide a definitive programme for the construction of the facility. However, based on the experience of infrastructural projects of a similar scale an estimate has been made of the likely traffic movements. It is expected that there will be an average 7 deliveries of construction materials per day to the site. It is expected that not more than one or two of these deliveries would occur in the network peak hour period.

In addition to the forecast number of deliveries there will be construction staff related trips. It is expected that these trips are likely to occur outside the network peak hours, as contractors working hours are generally 08:00 – 18:00 hrs. Since traffic generation during the construction period is forecast to be lower than when the facility is fully operational, it was not considered worthwhile to undertake a separate assessment of the "short term" traffic impact during construction.

7.4 Capacity Assessment

The assessment scope (links and junctions to be modelled for future year traffic levels) is largely dependent on the emerging road network in the vicinity of the site. The final alignments of the proposed N11 Enniscorthy Bypass have not yet been approved and therefore the precise layout of key links and junctions in the vicinity of the site is not known.

It is expected that the existing N11/N80 staggered junction will be upgraded to a roundabout junction providing links between the N11 eastern Bypass, N11 western Bypass and the N80.

It is also assumed that a separate link will be provided between the N11 western Bypass and the existing N11 alignment that runs into Enniscorthy. However it is not known whether the junction of the northern part of the Old Dublin Road with the N11 will be retained. Therefore capacity assessments have been carried out based on two potential scenarios.

Scenario No.1 assumes the proposed roundabout junction of the N11 eastern Bypass/N11 western Bypass/N80 is built; so as to preserve the existing junction of the N11 with the northern end of the Old Dublin Road; pending the opening of the Bypass. The traffic implications are that practically all HGV traffic generated by the proposed development would use the junction of the N11 with the Old Dublin Road.

Scenario No.2 assumes the closure of the existing junction of the Old Dublin Road and the N11, when the existing N11/N80 staggered crossroads is upgraded to a roundabout. This would result in practically all site generated HGV traffic using the junction of the N11 with the IDA Link Road.

The capacity assessments examined future performance of the road network during the network peak hour of traffic activity identified from the traffic surveys (1700-1800hrs). The assessments combined the peak hour for development generated traffic (mid morning or mid afternoon), with that of the network peak. This represents an extreme 'worst case' scenario, and provides the Local Authority with sufficiently robust traffic data upon which to determine the traffic implications of the proposed facility with high degree of confidence.

The assessments are described in detail in Section 8 of the Trafficwise report in Appendix 3. They conclude that, taking the proposed infrastructural improvements into account, the local road network should function satisfactorily up to 2013 and beyond. The capacity of the existing N11/R702/Old Dublin Road Roundabout may eventually, and perhaps inevitably, be reached in the year of 2023. This is not as a result of the proposed development, but rather due to the realisation of other potential future developments in the local vicinity.

7.5 Impact Assessment

The Old Dublin Road has an existing Annual Average Daily Traffic (AADT) in the region of 1,100 to 1,400 vehicles in the vicinity of the site. The proposed development will increase traffic volumes by approximately 10% along the northern section of the road in the vicinity of the site. The N11 has an existing AADT in the region of 13,000 to 19,500 in the vicinity of the N11/N80 staggered cross roads. When the MRTF opens it will increase daily traffic volumes on the N11 by between 0.5 – 1.0%.

It is considered that the predominant development impact will be upon the Old Dublin Road. It should be noted that at least half of the traffic, which is likely to be generated by the facility, already travels on the N11 to access Greenstar's existing facilities at Gorey and Wexford.

If the traffic generated by the proposed facility remains relatively constant after it reaches its operating capacity, it is not likely to have an adverse impact upon the capacity and operation of the receiving roads. The proposed N11 Enniscorthy Bypasses should offer an improved level of service to the site with respect to capacity, accessibility and traffic safety.

8. GEOLOGY & HYDROGEOLOGY

8.1 Introduction

This Section describes the soils and bedrock conditions and the groundwater regime beneath the application site. It includes an assessment of the significance of the impacts of the facility construction and operation.

8.2 Geology

Information on the geology and hydrogeology was derived from a review of information maintained by the Geological Survey of Ireland (GSI). This includes maps showing the type and extent of the subsoils and the underlying bedrock, the Aquifer Protection Plan for County Wexford, and an intrusive site investigation carried out as part of a suitability assessment for a surface water percolation area.

8.2.1 Subsoils

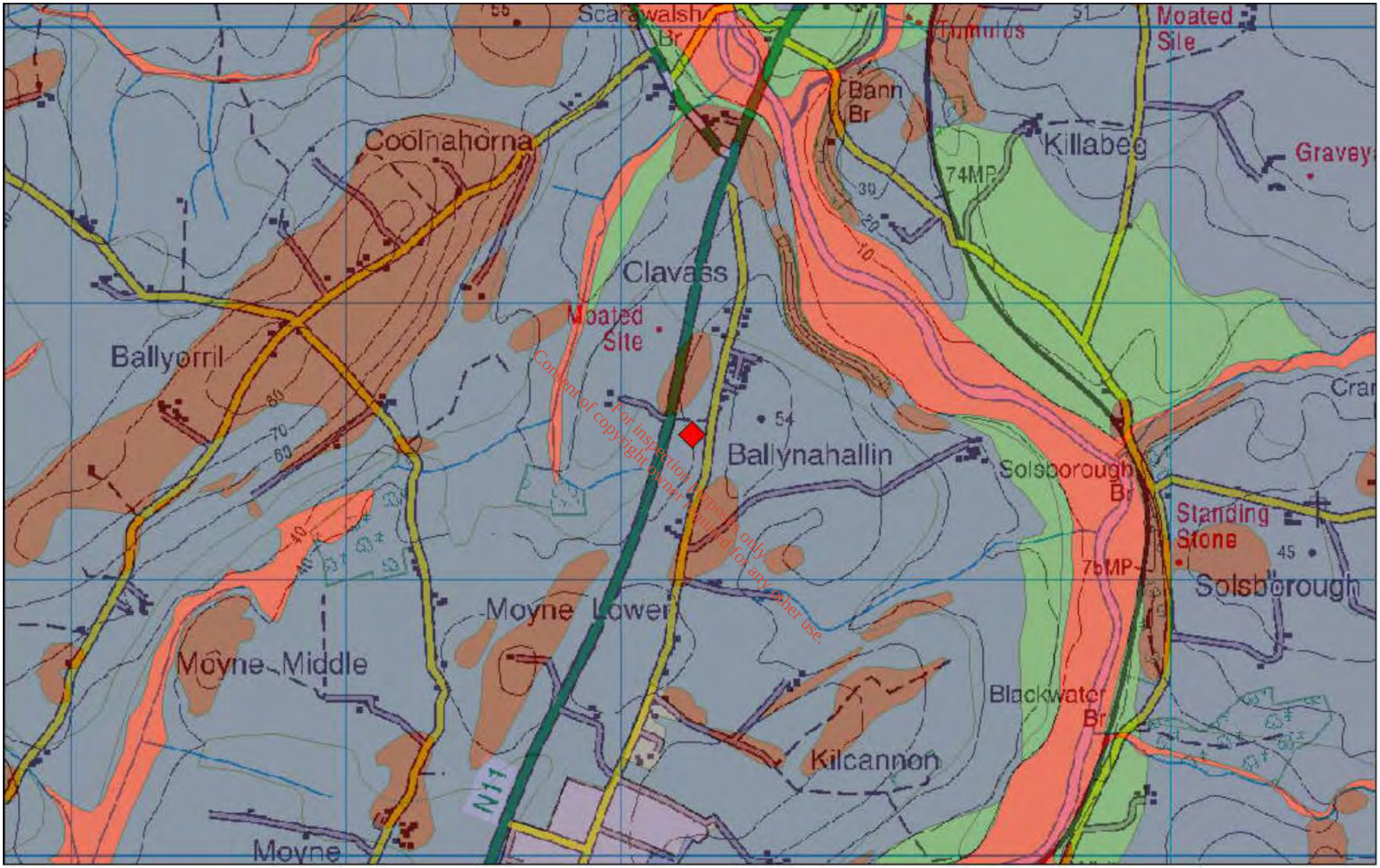
The subsoil map indicates that the area beneath the site consists of Lower Palaeozoic shale till, ranging from 3 to 10 m in thickness, as illustrated on Figure 8.1. The site investigation, which included the excavation of trial pits across the site, confirmed that the subsoils comprised stiff clays that were more than 3.5 m thick. Trial pit logs and infiltration test results from the site investigation are included in Appendix 4.

8.2.2 Bedrock

The site is underlain by bedrock from the Campile Formation, which consists of rhyloitic volcanics and grey and brown slates. The bedrock geology is illustrated on Figure 8.2.

8.3 Hydrogeology

The facility is located in the catchment of the River Slaney, which is to the north and east of the site and approximately 1.5 km from the site boundary. There are no surface water drains on the site.



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CLIENT
Greenstar

TITLE
Subsoil - Enniscorthy

Legend

FIGURE NUMBER
8.1

Scale
Not To Scale

Revision
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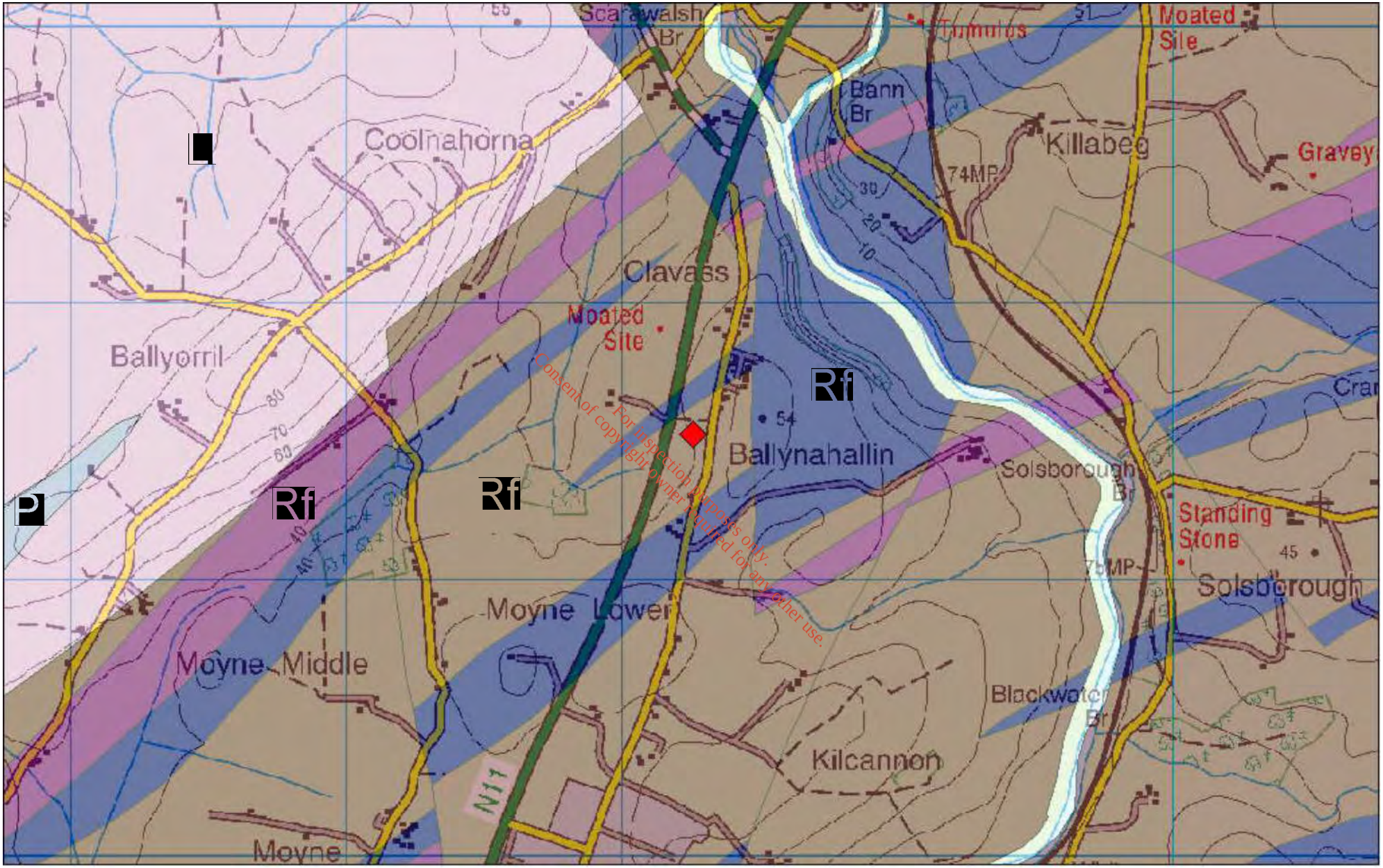

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Greenstar

TITLE

Geology - Enniscorthy

Legend

FIGURE NUMBER

8.2

Scale

Not To Scale

Revision

A

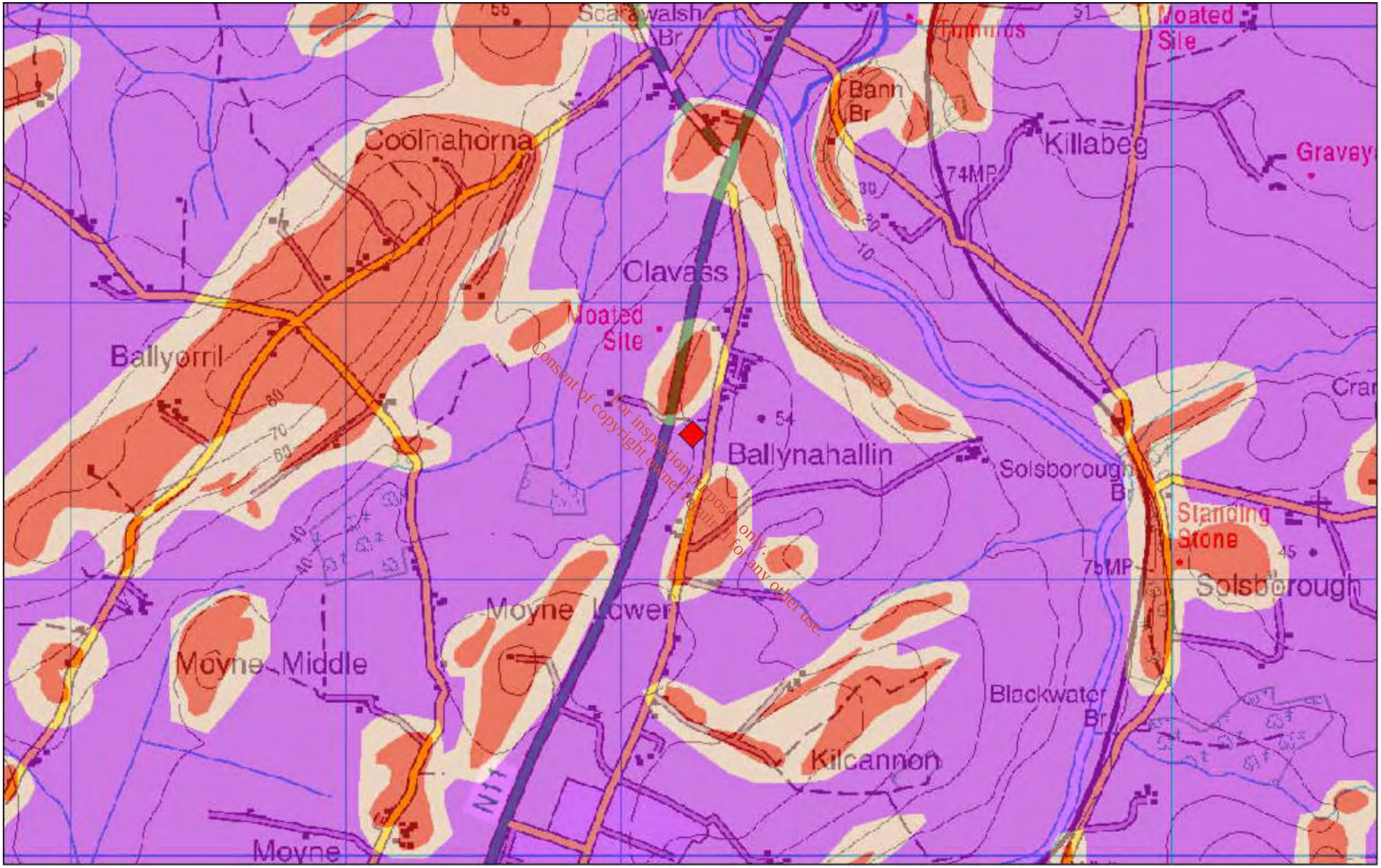
Groundwater was not encountered in the subsoils during the site investigation. The bedrock aquifer is classified by the GSI as a Regionally Important Aquifer that is fissured (**Rf**). The aquifer vulnerability was assessed using the Groundwater Protection Scheme Guidelines developed by the Department of the Environment & Local Government (DOE&LG), Environmental Protection Agency (EPA) and the GSI. Based on the available information the aquifer vulnerability is considered to range from high to low **(H/L)** (Refer to Figure No. 8.3).

8.4 Impact Assessment

The development does not involve the construction or use of underground fuel storage tanks. The design and construction of the foul sewer system will be carried out in accordance with best practice in order to minimise the risk of leaks.

During the construction phases there will be no direct or indirect long-term emissions to ground or groundwater. The provision of extensive paved areas with surface water collection drains, and secondary containment of the oil storage area minimises the potential for short term, direct or indirect discharges to ground or groundwater associated with spills or leaks.

Surface water run-off from the roof and paved areas will discharge to an on-site percolation area via an oil interceptor and silt trap. The percolation test confirmed that the ground conditions were suitable for the use of a percolation area. The maximum discharge to the percolation area will be 131.5l/s. There is no need for additional mitigation measures.



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TITLE
Vulnerability - Enniscorthy

Legend
H
E (Rock near Surface or Karst)
H

FIGURE NUMBER
8.3

Scale
Not To Scale

Revision
A

9. SURFACE WATER

This Section describes the surface water regime at the site and includes an assessment of the significance of the impacts of the facility during construction and operation.

9.1 Catchment Area

The facility is in the catchment of the River Slaney, which is to the north and east of the site, and approximately 2 km from the site boundary.

9.2 Surface Water Drainage System

There are no surface water drains within the site boundary. The proposed surface water drainage system is shown on Drawing No. D1080D2. There is no nearby municipal surface water sewer. In the absence of this outlet, surface water run-off from the roofs and paved areas will discharge to an on-site percolation area.

9.3 Hydraulic Loading Impacts and Mitigation

Storm design data, percolation test results and the design calculations for the percolation area are included in Appendix 4. The percolation test confirmed that the ground conditions were suitable for the use of a percolation area.. The maximum discharge to the percolation area will be 131.5l/s.

9.4 Surface Water Quality Impacts and Mitigation

Site activities with the potential to impact on surface water quality if uncontrolled, include: -

- Facility construction,
- Run-off from open yard areas,

- Spills and leaks,
- Foul Wastewater,
- Floor Washdown,
- Vehicle Washwater.

All fuel tanks and oil storage compounds used on site during construction will be provided with adequate secondary containment to prevent spills or leaks from entering the surface water drainage system.

When operational, surface water from the paved areas could potentially contain silt and small amounts of oils from minor leaks from road vehicles and the mobile plant. All surface water from the open yard areas, with the exception of the vehicle wash and refuelling area, will be collected in the surface water drainage system and discharged to the percolation area via a silt trap and oil interceptor. The location of the silt trap and proposed Klargester ByPass Separator are shown on Drawing No. D1080D2.

The volume of oils, anti-freeze, detergents and disinfectants stored at the facility will be kept to the minimum required for continued operation. These materials will be stored inside the MRTF Building in specifically designed storage cabinet/units provided with spill containment. Diesel will be stored in a properly bunded refuelling area. Spill containment kits will be provided and maintained on-site and facility personnel will be trained in the proper use of the kits to contain and clean up any major spills that occur.

Sanitary and sink wastewater from the Administration Building, wash water from the vehicle wash area and run-off from the refuelling area will be discharged to the facility's foul drainage system, which is separate from the surface water system. The foul sewer system will connect to an existing foul water pumping station, located to the south of the site. There is a rising main from the pumping station, which connects to the municipal foul sewer serving the area.

9.5 Firewater Retention

A fire sprinkler system will not be provided and all firewater will be obtained from the two water storage tanks on site, as shown on Drawing No. D1080D2. The paved areas will be surrounded by a concrete kerb (approximately 150mm high). Firewater generated within the site will be contained inside the MRTF Building and the open paved areas. A shut off-valve will be installed on the surface water sewer upstream of the silt trap/interceptor and also on the foul sewer connected to the Mixed Waste area

in the MRTF building. In the event of a fire these valves can be shut to contain run off inside the site.

Firewater run-off will be contained within the Main Building and in the kerbed area to the south. The available storage capacity in the Dry Waste and Mixed Waste area is approximately 400m^3 and the storage capacity in the external kerbed area is approximately 250m^3. The required storage capacity, based on published guidelines on firewater generation, which is calculated using flow rate of 5 m^3/minute for 60 minutes, is 300 m^3.

10. ECOLOGY

10.1 Introduction

This Section describes the ecological significance of the site and assesses the ecological impacts of the construction and operation of the proposed facility. It is based on an ecological study completed by Ecofact Ltd. and which addressed the entire 3ha site. The complete Ecofact report is included in Appendix 5.

10.2 Existing Environment

The site has been used in the past for agriculture. The nearest designated site is the Slaney Valley, which is approximately 2km to the east. The site habitats are dominated by improved agricultural grassland and hedgerows.

10.3 Evaluation of the Ecological Importance of the Site

The majority of the site is categorised as improved agricultural grassland, which is dominated by two species principally perennial rye-grass (Lolium perenne) and white clover (Trifolium repens). This habitat type is common in the surrounding area and the species that are found at the site are all common in the wider countryside. It is an intensively managed habitat and of low value to wildlife. Therefore it is deemed to be of low ecological importance.

Hedgerows are situated along the southern and eastern boundaries of the site. These semi-natural habitats have the potential to support birds and small mammals, or at least act as a wildlife corridor from one between habitats and are therefore of local ecological importance.

10.4 Impact Assessment

The proposed development works will impact directly on the improved agricultural grassland and one section of hedgerow along the eastern boundary. Their importance is considered to be low, and the impact of the development is considered to be imperceptible.

11. AIR

11.1 Introduction

This Section describes the ambient air quality, assesses impacts and discusses mitigation measures. The airborne pollutants assessed included particulate matter (PM_{10}), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), carbon monoxide (CO), hydrogen sulphide (H_2S), benzene, ethylbenzene, toluene and xylene (BTEX), Volatile Organic Compounds (VOCs) and dust. Odours and Noise, which are forms of air pollution, are dealt with separately in Sections 12 and 13 respectively.

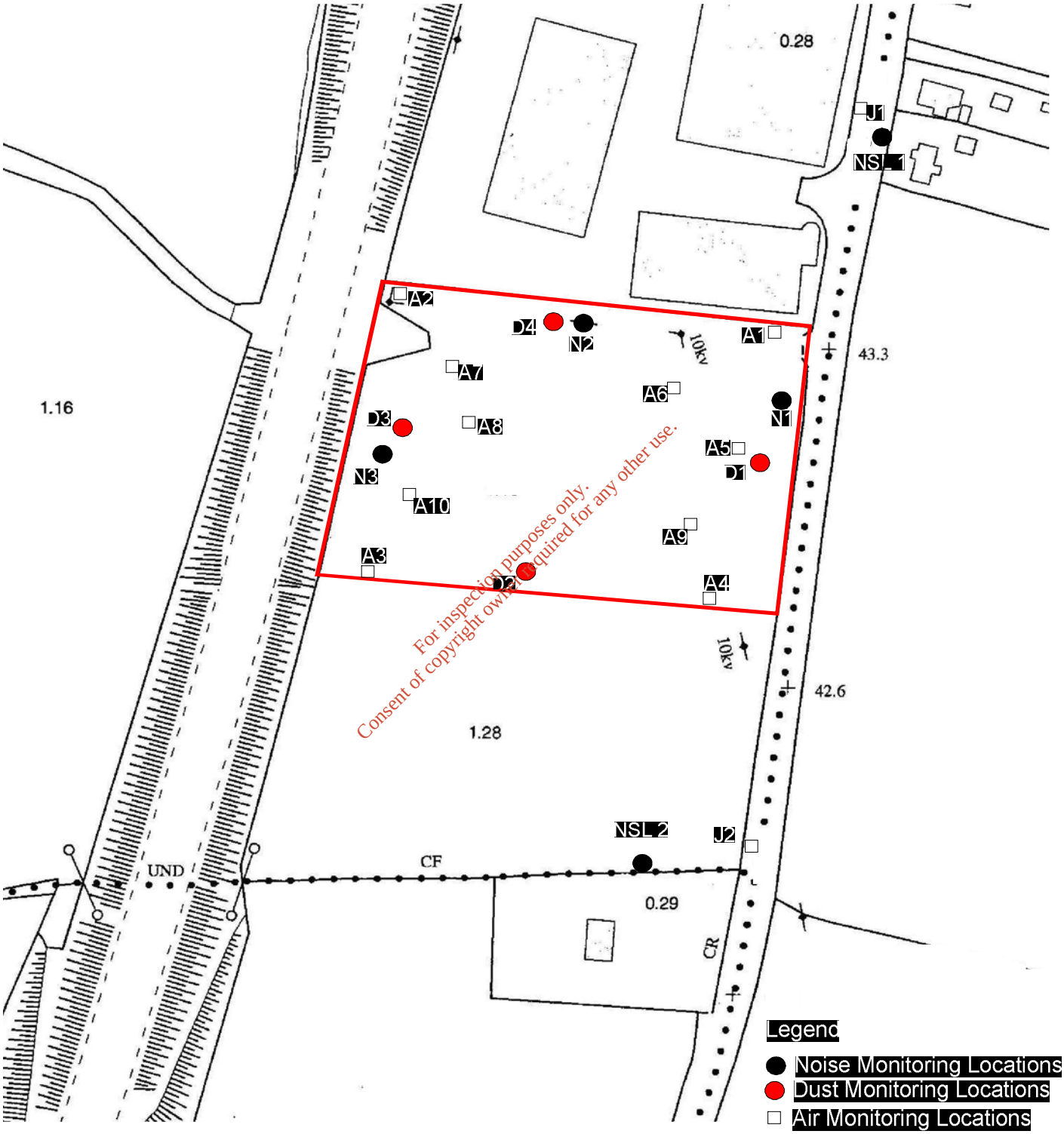
A baseline air quality survey and impact assessment was carried out by Odour Monitoring Ireland Ltd and is included in Appendix 6. A baseline dust survey was carried out by OCM.

11.2 Monitoring Locations & Methods

The Odour Monitoring Ireland monitoring programme included those parameters primarily associated with vehicle exhaust emissions e.g. PM_{10}, NO_2, SO_2, CO and BTEX and those linked to some of the household and C & I waste that will be handled at the facility- H_2S, VOCs. H_2S is used as an indicator gas for the assessment of significant odour nuisance in the vicinity of waste handling facilities.

Ten (10) monitoring locations were selected were within the site, along the site boundaries and at off-site locations near occupied dwellings, shown on Figure No. 11.1. The monitoring was carried out in August and September 2007.

The methodologies used and the national and EU standards/limits applied are described in detail in the Odour Monitoring Ireland report in Appendix 6 and are summarised in Table 11.1 The Table also identifies the parameters monitored at each location and the monitoring techniques applied.



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CLIENT
Greenstar

TITLE
Monitoring Locations
Enniscorthy

Details
O.S. Licence Agreement
Number AR 0038707

Ordnance Survey Ireland,
Government of Ireland.

FIG. No
11.1

Scale
NTS

Rev
A

Table 11.1 Air Monitoring Locations

Reference	*Monitoring parameters*	*Description and monitoring location*
A1	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide, PM_{10}, H_2S and Speciated VOC's	Monitored using passive diffusion tubes, Partisol PM10 analyser, Jerome analyser and Pumped sorbent tube.
A2	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide and H_2S	Monitored using passive diffusion tubes and Jerome analyser.
A3	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide, H_2S and Speciated VOC's	Monitored using passive diffusion tubes, Jerome analyser and Pumped sorbent tube.
A4	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide and H_2S	Monitored using passive diffusion tubes and Jerome analyser.
A5	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide and H_2S	Monitored using passive diffusion tubes and Jerome analyser.
A6	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide and H_2S	Monitored using passive diffusion tubes and Jerome analyser.
A7	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide and H_2S	Monitored using passive diffusion tubes and Jerome analyser.
A8	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide, H_2S and Speciated VOC's	Monitored using passive diffusion tubes, Jerome analyser and Pumped sorbent tube.
A9	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide and H_2S	Monitored using passive diffusion tubes and Jerome analyser.
A10	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide and H_2S	Monitored using passive diffusion tubes and Jerome analyser.

11.3 Existing Conditions

11.3.1 BETEX

The results are presented in Table 11.2. The results indicate that the existing BTEX levels are well within their respective exposure limits.

Table 11.2 Average BTEX Concentrations

Location	**Benzene ($\mu g/m^3$) [1, 3]**	**Toluene ($\mu g/m^3$) [1,3]**	**Ethyl benzene ($\mu g/m^3$) [1,3]**	**p-Xylene ($\mu g/m^3$) [1,3]**	**o-Xylene ($\mu g/m^3$) [1,3]**
A1[2]	1.866	4.846	0.774	1.067	0.366
A2[2]	1.946	5.494	0.821	1.527	0.626
A3[2]	2.145	4.258	0.704	1.019	0.334
A4[2]	1.637	4.643	0.588	1.289	0.438
A5[2]	2.053	5.552	0.629	1.213	0.392
EPA value-Wexford town hourly value[6]	0.90	-	-	-	-
Limit Value	**5[4]**	**4700[5]**	**10,875[5]**	**5525[5]**	**5525[5]**

11.3.2 Nitrogen dioxides (NO_2)

The results are presented in Table 11.3.

Table 11.3 Average NO_2 Concentrations

Location	Sampling Period	Average NO_2 conc. ($\mu g/m^3$)[2]
A1	Aug to Sept 2007	10.23
A2	Aug to Sept 2007	9.38
A3	Aug to Sept 2007	7.63
A4	Aug to Sept 2007	8.31
A5	Aug to Sept 2007	13.00
EPA Wexford town annual hourly average	2006	12.60
Limit value-Annual average	**-**	**40**
Limit value 1 hour average	**-**	**200**

The dominant source of NO_2 in the area appears to be from motor vehicle exhausts and the burners/boiler of space heating of local light industry and business units. The levels at all monitoring locations are below the Irish and EU Ambient Air Standards.

11.3.3 Sulphur dioxide (SO_2)

The results are presented in Table 11.4.

Table 11.4 Average SO_2 Concentrations

Location	Sampling Period	Average SO_2 conc. ($\mu g/m^3$)[1]
A1	Aug to Sept 2007	1.18
A2	Aug to Sept 2007	1.79
A3	Aug to Sept 2007	0.81
A4	Aug to Sept 2007	1.74
A5	Aug to Sept 2007	0.74
EPA Wexford town, maximum 24 hour period	2006	50.60 [2]
Limit value-Annual average	**-**	**20**

The dominant source of SO_2 in the area appears to be from motor vehicle exhausts and the burners/boiler/solid fuel heating local single residences and industrial units. The levels at all monitoring locations are below the Irish and EU Ambient Air Standards.

11.3.4 Carbon Monoxide (CO)

It was not possible to conduct CO monitoring at the site. However baseline data was obtained from EPA databases and are presented in Table 11.5.

Table 11.5 Average Ambient CO Concentrations

Location	**Sampling Period**	**Ambient CO conc. (mg/m^3)**
EPA-Maximum annual mean Coalraine St	2005	1.10
EPA- 8 hour value-Coalraine St	2005	1.80
EPA-Maximum 8 hourly average value, Wexford town	2006	2.90

The dominant source of CO in this area appears to be vehicle emissions, boilers (i.e. home heating and industrial heating).

11.3.5 Particulate matter (PM10)

The monitoring results are presented in Table 11.6.

Table 11.6 Average Ambient PM10 Concentrations

.

Location	**Sampling Period**	**Ambient PM_{10} conc. ($\mu g/m^3$)**
A1-24 hour average	Sept 2007	26
A1-24 hour average	Sept 2007	33
EPA measured conc. – Wexford Town, 24 hour mean value [4]	2006	25.30
Limit Value at 98.07th percentile	-	50 [1, 2]
Limit Value-annual mean Stage 1		40
Limit value-annual mean Stage 2		20 [3]

The dominant source of PM10 in the area appears to be vehicle emissions, boilers (i.e. home heating and industrial heating). The average ambient concentrations are comparable to those monitored elsewhere in Ireland.

11.3.6 Hydrogen Sulphide (H_2S)

The results are presented in Table 11.7.

Table 11.7 Hydrogen Sulphide Concentrations

Sample Reference	Sampling period	Hydrogen sulphide conc. (µg/m^3)
A1	Sept 2007	<4.5
A2	Sept 2007	<4.5
A3	Sept 2007	<4.5
A4	Sept 2007	<4.5
A5	Sept 2007	<4.5
A6	Sept 2007	<4.5
A7	Sept 2007	<4.5
A8	Sept 2007	<4.5
A9	Sept 2007	<4.5
A10	Sept 2007	<4.5
Recommended Limit value	**-**	**7.50**

Currently there are no national statutory limits for hydrogen sulphide concentrations in ambient air, however levels of less than 7.50 µg/m3 is considered to limit odour nuisance.

11.3.7 Speciated Volatile Organic Compounds (VOCs)

The results are presented in Table 11.8, 11.9 and 11.10.

Table 11.8 Speciated VOC Profile and Concentrations at A1

Compound identity	Ambient air conc. (µg/m^3)
2,5-Furandione	9.81
2-Ethoxyamphetamine	1.87
Hexahydropyridine,	5.21
Decanal	2.97
Ethanol, 2-phenoxy-	1.85
Oxirane, tetradecyl-	2.79
Cyclotetradecane	5.74
3-Piperidinone,	2.40
2-Ethylhexyl chloroformate	9.09
Total VOC's	**58.25**

Table 11.9 Speciated VOC Profile and Concentrations at A3

Compound identity	Ambient air conc. (µg/m^3)
2,5-Furandione	18.69
2-Propenamide	3.99
5H-Naphtho[2,3-c]carbazole, 5-methyl-	8.12
Nonanal	6.69
Decanal	5.27
3,4-Dichlorobenzyl alcohol	2.73
E-14-Hexadecenal	10.98
Heptadecane, 4-methyl-	4.12
2-Ethylhexyl chloroformate	3.12
Total VOC's	**140.19**

Table 11.10 Speciated VOC Profile and Concentrations at A8

Compound identity	Ambient air conc. (µg/m^3)
2,5-Furandione,	46.86
Imidazole,	3.00
Benzeneethanamine,	3.94
Thiophene,	4.59
Acetic acid,	2.48
Oxirane, hexadecyl-	4.90
Cyclotetradecane	22.74
1,3-oxazole-4-carboxylic acid,	12.29
Total VOC's	**150.48**

There are no statutory limits for total VOC concentrations in ambient air, however an ambient air level of less than 250 µg/m^3 is considered to limit odour impacts. The overall background level of speciated VOCs is slightly elevated, which may be a result of traffic in the vicinity of the proposed site.

11.3.8 Dust Monitoring

The assessment included dust deposition monitoring at four locations around the site in the period August – September 2007. The results are presented in Table 11.9.

Table 11.11 Dust Deposition Monitoring Results

Location	Total Deposited Dust mg/m^2.day	Organic Dust	Inorganic Dust
D-1-East	<10	<10	<10
D-2-South	32	22	<10
D-3-West	54	44	<10
D-4-North	26	16	<10

Under the Air Pollution Act 1987, dust is considered a nuisance if it is injurious to public health, deleterious to ecology or impairs or interferes with amenity or the environment. There are no statutary standards in Ireland for the control of dust nuicences. In general, waste licences issued by the EPA set dust deposition limits at 350 mg/m^2/day. The baseline dust levels are all siginficanlty below 350mg/m^2/day.

11.4 Impact Assessment

Potential air quality impacts associated with the operation of a MRTF include traffic emissions, odours and dust. The proposed site design and method of operation incorporates measures to effectively mitigate these potential impacts.

A detailed assessment of the potential impacts from the proposed development is included in the Odour Monitoirng Ireland report in Appendix 6 and is summarised below.

11.4.1 Traffic Emissions

The information on projected traffic movements provided in Section 7 was used to identify whether any significant impact on sensitive receptors will occur. The predicted increases in traffic volumes as a result of the development are expected to be lower than if the site were to be operated solely as a business park.

An emission screening model using a worst-case scenario to estimate emissions was employed. Details of the model and the methodology applied are presented in Section 1.5 of the Odour Monitoring Ireland Report in Appendix 6.

The emission factors used for each pollutant were intentionally biased to overestimate the actual emission rate. Also, wind speeds are assumed to be 2 m s-1 (approximately 3.9 knots compared to a mean wind speed of between 4 to 5 m s-1 from nearest the Meteorological station. In addition to this, the background concentrations incorporated into the model are worst-case scenario concentrations.

The modelling was based on the two traffic flow scenarios presented in the Traffic Impact Assessment (Section 7). Scenario 1 assumes that the northern junction of Old Dublin Roadd/N11 will remain open, while Scenario 2 assumes that the northern junction of Old Dublin RoaddN11 will close.

The model assessed the potential impacts from traffic up to 2023. Impacts are expected to be even lower beyond this date due to improvements in engine technology. The concentrations of CO, Benzene, NO_2 and PM10 were determined for a receptor point J1 to the north of the Old Dublin Rd and J2 to the south of the Old Dublin Rd. The locations of the receptor points are shown on Figure 11.1. The results of these calculations are presented in Tables 11.12 (J1) and 11.13 (J2) for Scenario 1 and Table 11.14 (J2) for Scenario 2.

The model predicts that even under worst-case scenario conditions, the maximum CO level will not breach the EU limit at locations J1 and J2. The predicted results for benzene at the indicate that the concentrations will be below the relevant Irish and EU limit at both locations. The predicted levels of NO_2 indicate that the proposed facility will cause negligible increases NO_2 on the surrounding area. The relative concentrations of NO_2 will stay relatively constant, whether the proposed development proceeds or not. There is a general overall improvement in the NO_2 levels as the development proceeds from 2008 to 2023 due to improvements in engine technology.

Table 11.12 SCENARIO 1 - Screening Air Quality Assessment At location J1

Scenarios	Traffic Speed Km hr^{-1}	Carbon Monoxide (mg/m^3)	Benzene ($\mu g/m^3$)	Oxides of Nitrogen ($\mu g/m^3$)	Particulates (PM_{10}) ($\mu g/m^3$)
	-	Annual Average-Traffic component	Annual Average-Traffic component	Annual Average NO_2-Traffic component	Annual Average-Traffic component
Existing Scenario 2007	20	0.02	0.02	3.11	0.40
	50	0.02	0.02	2.29	0.24
2008 "Do Nothing" Scenario	20	0.02	0.02	2.94	0.36
	50	0.02	0.02	2.16	0.24
2008 "Do Something" Scenario	20	0.02	0.02	5.31	0.58
	50	0.02	0.02	3.76	0.34
2013 "Do Nothing" Scenario	20	0.02	0.02	2.09	0.23
	50	0.02	0.02	1.57	0.14
2013 "Do Something" Scenario	20	0.02	0.02	4.18	0.39
	50	0.02	0.02	2.99	0.23
2023 "Do nothing" Scenario	20	0.02	0.02	2.32	0.26
	50	0.02	0.02	1.74	0.16
2023 "Do Something" Scenario	20	0.02	0.02	5.06	0.46
	50	0.02	0.02	3.59	0.27
Irish and EU Standards	-	-	**5**	**40**	**40**

Table 11.13 SCENARIO 1 - Screening Air Quality Assessment At location J2

Scenarios	Traffic Speed Km hr^{-1}	Carbon Monoxide (mg/m^3)	Benzene ($\mu g/m^3$)	Oxides of Nitrogen ($\mu g/m^3$)	Particulates (PM_{10}) ($\mu g/m^3$)
	-	Annual Average-Traffic component	Annual Average-Traffic component	Annual Average NO_2-Traffic component	Annual Average-Traffic component
Existing Scenario 2007	20	0.02	0.02	3.11	0.40
	50	0.02	0.02	2.29	0.24
2008 "Do Nothing" Scenario	20	0.02	0.02	2.94	0.36
	50	0.02	0.02	2.16	0.24
2008 "Do Something" Scenario	20	0.02	0.02	3.44	0.38
	50	0.02	0.02	2.51	0.22
2013 "Do Nothing" Scenario	20	0.02	0.02	2.09	0.23
	50	0.02	0.02	1.57	0.14
2013 "Do Something" Scenario	20	0.02	0.02	2.31	0.24
	50	0.02	0.02	1.73	0.15
2023 "Do nothing" Scenario	20	0.02	0.02	2.32	0.26
	50	0.02	0.02	1.74	0.16
2023 "Do Something" Scenario	20	0.02	0.02	1.90	0.20
	50	0.02	0.02	1.46	0.13
Irish and EU Standards	-	-	**5**	**40**	**40**

Table 11.14 SCENARIO 2 - Screening Air Quality Assessment At location J2

Scenarios	Traffic Speed Km hr^{-1}	Carbon Monoxide (mg/m^3)	Benzene ($\mu g/m^3$)	Oxides of Nitrogen ($\mu g/m^3$)	Particulates (PM_{10}) ($\mu g/m^3$)
	-	Annual Average-Traffic component	Annual Average-Traffic component	Annual Average NO_2-Traffic component	Annual Average-Traffic component
2013 "Do Nothing" Scenario	20	0.001	0.001	0.1	0.01
	50	0.001	0.001	0.1	0.01
2013 "Do Something" Scenario	20	0.001	0.001	2.06	0.15
	50	0.001	0.001	1.42	0.09
2023 "Do nothing" Scenario	20	0.001	0.001	0.06	0.01
	50	0.001	0.001	0.06	0.01
2023 "Do Something" Scenario	20	0.001	0.001	1.64	0.11
	50	0.001	0.001	1.14	0.06
Irish and EU Standards	-	-	**5**	**40**	**40**

For particulate matter (PM10) the predictions indicate that, even under worst-case scenario conditions, the annual average levels will not breach the Irish and EU limit at either location for Scenario 1 or 2.

In summary the computer model predictions indicate the following:-

- Ambient concentrations will, in general, decrease due to legislation driven improvements in engine technology and fuel content. Any increases will be slight;
- There will be negligible increases in NO_2 and PM_{10} concentrations at J1 and J2 for Scenario 1 and 2;
- The net impact of the proposed development will be a slight negative for NO_2 and PM_{10} but will remain well within the Irish and EU legislative limit values.

11.5 Mitigation Measures

11.5.1 Dust

It is not anticipated that dust will be a significant problem at the facility. There will be no open storage or processing of waste, the facility access roads, vehicle manoeuvring and parking areas will be paved and the waste delivery and transfer vehicles will not track across waste off loaded inside the MRTF Building.

Although all loads entering and leaving the site will be in sealed covered containers, enclosed tankers or netted skips there may be some soiling of the roads and regular inspections will be made of the site roads and hardstand areas. Road cleansing procedures will be put in place whenever necessary and at a minimum of once per week. In addition, any material that may inadvertently be dragged out of the building by any vehicle will immediately be brushed back into the building.

All waste handling and mechanical separation and processing will be carried out internally in the MRTF Building so any dust generated will be contained within the building.

11.5.2 Traffic Emissions

Emissions of pollutants from road traffic are not considered by be significant but can be controlled by either controlling the number of road users or by controlling the flow of traffic. Speed restrictions and traffic control measures will be employed at the facility.

12. ODOURS

12.1 Odours

This Section discusses the likely impacts of odours associated with the facility operations. Predictive modelling was carried out by Odour Monitoring Ireland Ltd. and the full report is included in Appendix 7. The purpose of the modelling was to determine the potential odour impact on the surrounding population from the proposed MRTF.

12.2 Assessment Scenarios & Impacts

The potential odour sources are the household and C&I waste containing putrescibles materials. Odour emission rates were calculated from available olfactometry data. The computer model used was Aermod Prime. Details of the modelling techniques and input data are presented in detail in the Odour Monitoring Ireland Report in Appendix 7.

The modelling considered two scenarios:-

Ref. Scenario 1: Emissions from the proposed MRTF without the implementation of odour mitigation measures;

Ref. Scenario 2: Emissions from proposed the MRTF with the incorporation of odour management, minimisation and mitigation measures.

Scenario 1 was:-

- The predicted odour emission contribution, without mitigation, for an odour plume dispersal at the 98th percentile, with an odour concentration of less than or equal to 1.50 Ou_E m^{-3}. This odour impact criterion was chosen to ascertain the level of odour impact on the surrounding residential population and workers in the Commercial Park.

Scenario 2 was:-

- The predicted odour emission contribution, with odour abatement measures, for an odour plume dispersal at the 98th percentile, with an odour concentration of less than or equal to 0.70 Ou_E m^{-3}, and

- The predicted odour emission contribution with odour abatement measures, for an odour plume dispersal at the 99.5th percentile, with an odour concentration of less than or equal to 1.0 Ou_E m^{-3}.

The modelling established that:-

- In keeping with the odour impact criterion currently applied in Ireland, an odour impact would be noted by residents in the vicinity of the proposed MRTF if odour mitigation measures are not implemented;

- No significant odour impact will be noted by residents if appropriate odour management, minimisation and mitigation measures are put in place. These measures will result in ground level odour concentrations approximately 53% and 63% lower than the 98th and 99.5th percentile guideline values.

12.2.1 Mitigation Measures

The proposed method of operation minimises the potential for odours to escape the MRTF Building. Greenstar will, prior to the start of waste activities, install an odour management system that will include an appropriately sized air extraction and emissions treatment system. The system design, which must receive the approval of the EPA, will be similar to that installed at other Greenstar MRTFs that handle similar waste types, and will include:-

- Internal segregation of the building to allow for separate processing of odorous and non-odorous wastes in a designated Mixed Waste area;
- Provide a good building fabric skin, with minimal gaps;
- An air extraction system that provides negative air pressure in the areas where odorous wastes are handled. This should provide between 2 and of 4.5 air changes/hour inside the Mixed Waste area;
- Air collection pipework connected to an air treatment system that will use activated carbon.

In addition to these design aspects Greenstar will maintain good housekeeping practices (i.e. keep yard area clean, etc.), closed-door management strategy (i.e. to eliminate puff odour emissions from the building), and clean dirty surfaces regularly.

Greenstar will develop and implement a detailed Odour Management Plan (OMP), which will describe the operational and control measures for both normal and abnormal conditions and which will include:-

- A summary of the site, odour sources and the location of receptors;
- Details of site management responsibilities and procedures for reporting faults, identifying maintenance needs, replenishing consumables and complaints procedure;
- Odour management equipment operation procedures (e.g. correct use of equipment, process, materials, checks on equipment performance, maintenance and inspection;
- Operative training;
- Housekeeping;
- Maintenance and inspection of plant (both routine and emergency response);
- Spillage/contaminated surface management procedures;
- Record keeping – format, responsibility for completion and location;
- Emergency breakdown and incident response planning.

13. NOISE

13.1 Introduction

This Section addresses the impacts of noise associated with road traffic and the waste processing equipment. The assessment included predictions of the likely noise levels and the evaluation of mitigation measures. The baseline noise assessment and predictive modelling was completed by Dixon Brosnan Ltd., whose full report is included in Appendix 8.

13.2 Baseline Survey Details and Results

An environmental noise survey was conducted to quantify the existing noise environment. The survey was carried out in accordance with ISO 1996: 1982: Acoustics – Description and measurement of environmental noise. Full details of the methodologies applied are presented in the Dixon Brosnan Ltd. Report and are summarised below.

13.2.1 Measurement Locations

The noise measurement locations are shown in Figure 11.1. They included three onsite stations (N1-N3) and two noise sensitive locations (NSL1-NSL2). N1 is on the eastern boundary, N2 is on the northern boundary and N3 is on the western boundary. The noise sensitive locations (NSLs) are located along Old Dublin Road, adjacent to the nearest occupied private dwellings.

There are no NSLs within 500m east or west of the site. A cluster of NSLs, approximately 15 dwellings, is located to the northeast. The nearest of these is a detached cottage, approximately 50 m from the northeast corner of the site and opposite the entrance to the Commercial Park. A private residence is to the south of the site, approximately 100 m beyond the proposed boundary.

13.2.2 Survey Periods

Measurements were conducted on the 28th August 2007 during the period 06:00 to 19:00. Measurements were recorded twice at each of the monitoring locations, once in the morning and once during the afternoon.

13.2.3 Instrumentation and Procedure

The Dixon Brosnan Ltd. report contains details of the methodology applied, the personnel who completed the survey and the instrument calibration procedures.

13.2.4 Measurement Parameters

The measurement parameters applied were: -

1) L_{aeq} is the equivalent continuous sound level. It is a type of average and 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 in this report are expressed in terms of decibels (dB) relative to 2x10-5 Pa.

13.2.5 Baseline Survey Findings

The results of the baseline noise survey are presented in Table 13.1. The dominant source of noise is traffic on the N11, which was the cause of elevated levels at N2 and N3. The lowest levels were recorded at NSL1, where shielding from the N11 is provided by the existing buildings in the Commercial Park.

Table 13.1 Baseline Noise Survey Results August 2007

Station	Time	$L_{Aeq\ 30\ min}$ dB	$L_{A10\ 30\ min}$ dB	$L_{A90\ 30\ min}$ dB	Noise audible
NSL1	0615-0645	61	53	45	Traffic continuously audible on N11, dominant. Sporadic traffic on old N11 intrusive when present. Birdsong.
NSL1	0646-0716	58	53	46	
NSL2	0722-0752	60	63	54	N11 entirely dominant, continuous and intrusive. Sporadic traffic on old N11. Pigeons cooing.
NSL2	0756-0826	61	63	54	
N1	0847-0917	58	61	50	N11 traffic dominant, continuous and intrusive. Old N11 traffic intermittent and significant, particularly tractors drawing grain.
N1	0922-0952	60	62	47	
N2	1000-1030	55	58	47	N11 traffic dominant, continuous and intrusive. Old N11 traffic intermittent and significant, particularly tractors drawing grain. Sporadic vehicle movements audible at adjacent commercial park.
N2	1030-1100	55	59	47	
N3	1104-1134	68	72	56	N11 traffic continuous, intrusive and dominant. Old N11 traffic sporadic, not significant. Occasional birdsong.
N3	1136-1206	68	72	57	
NSL1	1330-1400	66	66	46	Intermittent traffic on old N11 intrusive when passing, particularly frequent tractors drawing grain. N11 traffic audible continuously in background, significant. Sporadic vehicles accessing local sites, particularly commercial park across road. Birdsong. Trees slightly rustling nearby. Music audible at low volume from nearby commercial unit from 1440.
NSL1	1400-1430	67	69	47	
NSL2	1444-1514	60	63	53	Intermittent old N11 traffic significant. New N11 continuously dominant and intrusive. Birdsong not audible due to absence of traffic lulls.
NSL2	1514-1544	61	63	55	
N1	1547-1617	61	64	53	N11 continuously dominant and intrusive. Traffic volume increasing. Old N11 traffic intermittent, significant when present.
N1	1618-1648	61	63	52	
N2	1651-1721	60	63	54	N11 continuous, dominant and intrusive. Old N11 traffic intermittent. Sporadic vehicle movements at adjacent commercial park.
N2	1722-1752	61	64	55	
N3	1758-1828	70	73	58	N11 continuously dominant and intrusive. Old N11 traffic barely audible due to dominance of new N11. Tractor occasionally audible at 200 m spreading fertiliser during second interval.
N3	1828-1858	68	71	55	

13.3 Predicted Impact of the Proposed Development

13.3.1 Noise Criteria

The proposed facility will require a waste licence from the EPA. The licence will probably include noise limits applicable to offsite NSLs. These limits will most likely be taken from the EPA document *Guidance note for noise in relation to scheduled activities 2nd edition* (2006), which states that the noise level at a sensitive location should be kept below an L_{Ar} value of 55 dB during the hours 08:00-22:00 and below 45 dB outside of these hours, the L_{Ar} being equal to the L_{Aeq} plus a penalty applied where the noise is tonal or impulsive. The guidance states that at night-time there should be no clearly audible tonal or impulsive noise at any noise sensitive location.

Both EPA documents *Environmental noise survey guidance document* (2003) and *Guidance note for noise in relation to scheduled activities 2nd edition* (2006) recommend measurement intervals of 15-30 minutes during daytime hours. Daytime noise limits typically included in EPA waste licences usually refer to 30 minute intervals. The most pertinent noise limit applicable to operations at the proposed facility is therefore considered to be $L_{Aeq\ 30\ min}$ 55 dB during the hours 08:00-22:00, measured at offsite noise sensitive location. This limit is not considered suitable with respect to construction phase, as the works will only be temporary.

13.3.2 Construction Phase

It is not considered practical to predict the level of construction noise emissions arising onsite for several reasons:-

- The timing, duration and amplitude of emissions associated with the above works will vary considerably;
- Construction details, plant requirements, etc. may be modified on a daily basis as circumstances change;
- There will be extensive periods when little or no construction noise emissions arise e.g. during installation of internal services;
- Each individual source may be relocated frequently e.g. Excavators;
- The overall construction period will be relatively short. The duration of individual stages will be limited, lasting days or weeks at most e.g. steelwork erection;
- There are no recommended noise limits applicable to construction phase emissions;
- The proposed site is located in an area with relatively high background noise levels due to road traffic.

13.3.3 Operational Phase

Noise emission predictions were based on *British Standard BS 5228:1997 Noise control on construction and open sites*. Due to the relatively large dimensions of the proposed building in comparison with the distances to the nearest noise sensitive receptors, the building cannot be treated as a single point source. It was therefore necessary to calculate noise breakout from the building before applying propagation modelling. This is discussed further in the Dixon Brosnan Ltd. report in Appendix 8.

The calculations show that noise levels will vary at each of the receptor points, depending on operations. The predicted values are summarised in Table 13.2 and discussed below.

Table 13.2 Predicted Noise Levels in Decibels ($L_{Aeq\ 30\ min}$ dB)

Receptor	Building services	In-building plant		2 trucks on yard	Yard Sweeper	Trucks on road
		No screen	Screen			
NSL1	18	28	-	43	46	54
NSL2	18	48	42	43	46	48
N boundary	35	49	-	58	71	-
W boundary	32	42	-	58	71	-
E boundary	33	39	-	58	71	-
S boundary	33	65	55	58	71	-

Noise levels arising from continuous operations in the building will be negligible at receptor NSL1, and by extension will be negligible at all receptors further to the northeast. Combined noise levels attributable to building services and in-building plant will be 28 dB, significantly less than background noise levels recorded locally (45-47 dB). Emissions from trucks manoeuvring in the yard and from the use of the yard sweeper will result in $L_{Aeq\ 30\ min}$ levels of 43-46 dB at NSL1, marginally lower than existing background levels.

Truck movement of trucks on the public road will result in $L_{Aeq\ 30\ min}$ levels of approximately 54 dB at NSL1. These levels will not be significant in the context of existing noise levels, particularly the $L_{A10\ 30\ min}$ values of 53-69 dB measured at NSL1.

Due to position of the roller shutter doors on the southern façade of the MRTF Building, offsite receptor NSL2 will be more vulnerable than NSL1 to noise emissions from internal waste activities. While emissions from building services will be negligible, those from in-building processing plant will result in an $L_{Aeq\ 30\ min}$ level of 48 dB at NSL2. This calculation assumes no screening of emissions through the eight open doors. These emissions can be effectively screened by the installation of an acoustic barrier along the southern boundary of the site. Calculations indicate that a barrier of height 4 m along the boundary, opposite the doors, will reduce the $L_{Aeq\ 30\ min}$ level to 42 dB. Existing background noise levels at NSL2 are significantly higher (53-55) dB.

Manoeuvring of trucks on the site apron and the use of the yard sweeper will result in $L_{Aeq\ 30\ min}$ noise levels of 43-46 dB at NSL2, significantly lower than current background levels. $L_{Aeq\ 30\ min}$ levels arising from truck movements on the public road will be 48 dB, lower than all parameters measured at NSL2.

The predicted noise levels at NSL1 and NSL2 will comply with the limits typically applied by the EPA and local authorities. The 55 dB daytime limit will not be exceeded by onsite emissions. The night-time 45 dB limit will be met if an acoustic barrier is installed on the southern boundary and the operation of the yard sweeper is confined to daytime hours.

13.4 Impact and Mitigation Measures

13.4.1 Construction Phase

The following mitigation measures will be applied:-

- The construction works will be confined to 07:00-18:00 hours Mondays to Fridays and 07:00-16:00 hours Saturdays. The use of potentially noisy plant will not begin until after 08:00 hours;
- General construction work at the site will not be undertaken on Sundays or public holidays;
- Delivery of materials will be timed where practical to avoid morning and evening peaks in order to minimise traffic disruption and consequent noise impacts;
- Delivery times and site access clearance will be arranged so that trucks do not congregate outside the site entrance;
- Where it is necessary to operate plant close to the site boundaries for extended periods, only relatively quiet plant will be used;
- All mobile plant will be maintained in a satisfactory condition and in accordance with manufacturer's recommendations. Where relevant, the plant will comply with the EC (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1988 (S.I. No. 320 of 1988) as amended.

13.4.2 Operational Phase

In the operational phase the following mitigation measures will be applied:-

- All building services plant will be assessed prior to installation to ensure that the associated noise levels will be below 45 dB at 10 m from the building façade. The plant will also be assessed for tonal and impulsive noise components;
- A 4m high acoustic barrier will be installed on the southern site boundary, opposite the roller shutter doors. The barrier will extend 10 m east of a straight line linking the eastern shutter door to NSL2;
- The use of the yard sweeper will be confined to daytime hours only;
- Plant will be subject to a routine maintenance programme;
- The use of vehicle horns will be prohibited.

14. LANDSCAPE

14.1 Introduction

This Section describes the landscape and assessment of the potential impacts of the facility on the landscape and visual amenity. It includes a landscape character assessment and a viewpoint analysis.

14.2 Methodology

The assessment was based on guidelines in the document 'Landscape and Landscape Assessment, Consultation Draft of Guidelines for Planning Authorities' published by the Department of the Environment and Local Government (June 2002). It is based on site inspections carried out in September 2007, a review of Ordnance Survey maps and the facility design.

This study area was defined based on the visibility of the development and the analysis of public viewpoints. The choice of viewpoints was influenced by the identification of private residences, key vantage points and the visibility of the existing buildings in the Commercial Park.

14.3 Site Context

The site encompasses an area of c. 1.5 ha and is bounded to the west by the N11 National primary route, to the east by the Old Dublin Road, to the north by a Commercial Park and to the south by an open field. The nearest occupied private dwellings are approximately 80m to the north and 130 south of the proposed building. Enniscorthy is the closest settlement to the facility. Ferns is approximately 7 km to the north of the facility on the N11. Landuses in the surrounding area vary between industrial/commercial, residential and agricultural uses.

The surrounding landuse is shown on Figure No. 4.2. Elevations and sections for the development are shown on Drawings P005, 6, 15 and 16.

14.4 Landscape Character

14.4.1 Landform

The site is an open field, which slopes to the west, towards the N11 from an elevation of 42 m OD to 36 mOD.

14.4.2 Landcover

The site is completely, with no internal hedgerows or other features.

14.4.3 Landscape Value

The landscape value was established based on a review of the relevant Development Plans and the findings of other surveys conducted during the preparation of the EIS. The site is not in an area designated as of scenic or of special amenity importance. It is not designated as a Special Area of Conservation or Special Protection Area. The closest proposed Natural Heritage Area is 10 km to the south west and will not be affected by this development. There are no known significant archaeological, heritage or socio-cultural features on the development site or adjoining lands.

The site is in an area zoned for industrial and related uses, and are therefore not considered unique or highly scenic.

14.5 Landscape Sensitivity

The sensitivity of the landscape is considered to be low. The facility will not significantly interfere with the existing landscape character or eliminate a landscape value.

14.6 Viewpoints

The facility will be visible to a residence located to the south of the site and from the N11 and the Old Dublin Road. Various views of the site as well as a viewpoint reference map are shown on Figures 14.1 to 14.4.

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CLIENT
Greenstar

TITLE
Visual Assessment
View From Nearest Residence to North

LEGEND

FIGURE NUMBER
14.1

Scale
Not To Scale

Revision
A

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TITLE

Visual Assessment
View From Nearest Residence to South

LEGEND

FIGURE NUMBER

14.2

Scale

Not To Scale

Revision

A

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Greenstar

TITLE

Visual Assessment
View From N11 Looking North

LEGEND

FIGURE NUMBER

14.3

Scale

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Revision

A

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TITLE
Visual Assessment
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LEGEND

FIGURE NUMBER
14.4

Scale
Not To Scale

Revision
A

14.7 Impact Assessment

Site sections and elevations are shown on Drawing Nos.P005, P006, P015 and P016. The height of the main building is consistent with those of the units in the adjoining Commercial Park to the north. The visual impact of the facility is considered insignificant, given the relatively developed character of the surrounding landscape.

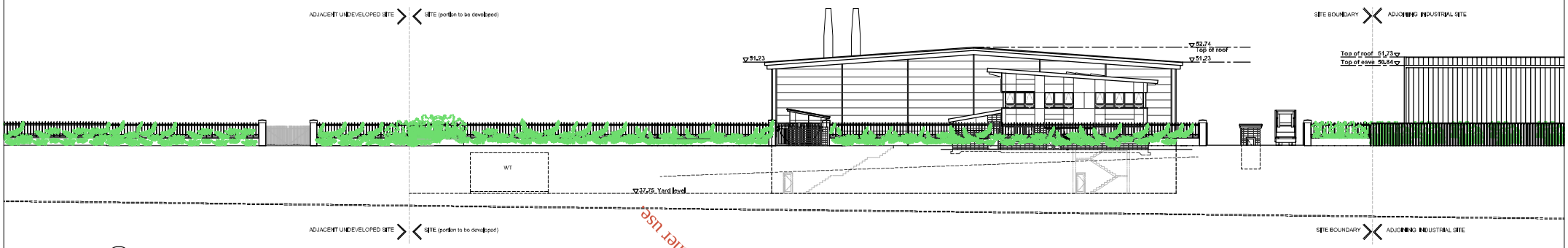
The site is visible from one house located approximately 100 m to the south and partially visible from the house located approximately 50m to the north. The impact on these properties is however considered to be imperceptible given their existing view of the Commercial Park.

14.8 Mitigation Measures

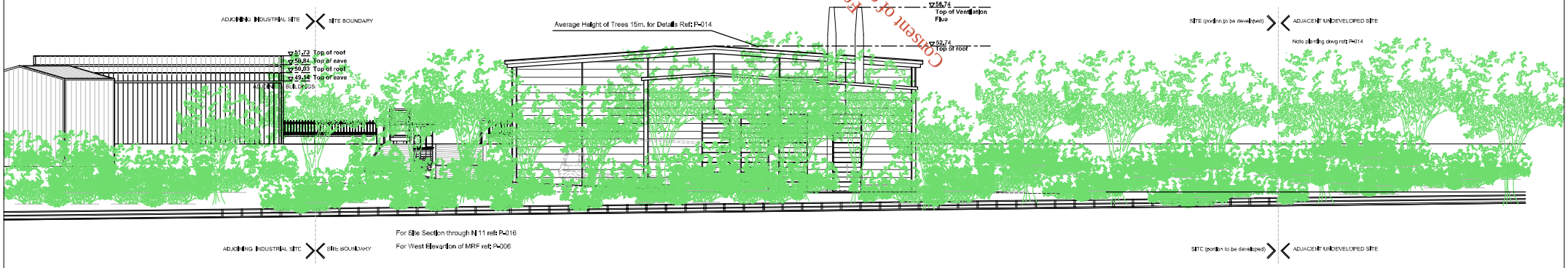
The building and site layout, including landscaping measures, have been designed to blend into the existing industrial environment. The existing hedgerows along the western boundary and the southern boundary of the application area will be retained. With the exception of a stretch south of the existing entrance, the hedgerows along the eastern boundary will be retained and will screen the site from views along the public road to the east of the site. Landscape works will be carried out along the southern site boundary, which when mature will screen the facility from the dwelling to the south.

A Visual Impact Assessment of the proposed development starting with an analysis of the visual prominence of the site and the landscape ameliorations required is included in Appendix 9 along with visual assessments of the facility as viewed from locations on both the old, and the new N11. Views taken reflect (a) the site prior to development, (b) post-development with initial planting cover and (c) subsequently with mature planted cover.

Landscaping will comprise a mixture of extra heavy standard trees in two staggered rows planted at 7.0 m centres, in a matrix of whips planted at 1.2m centres. The extra heavy standards will provide immediate screening to 5m height and will achieve a height of 8 -8.5 m in 5 years. The whips will be planted as 1500 mm whips, and will achieve a height of c.5 m in 5 years. The combination of the 8.5m high standard trees and the 5m whips will provide substantial screening and as they will continue to grow to maturity over a 30 – 50 year period the screening will be more than fully provided during the lifetime of the trees.



01 East Elevation to Access Road (Old Dublin Road)
P-005 Scale 1:200 (A1)



02 West Elevation to N 11
P-005 Scale 1:200 (A1)

West Elevation to N 11 In context of landscaping per drwg no. P-006 for elevation without planting.

revisions	description	date	issue
	Issued for Planning Permission	23 Nov 07	FL
rev. 01	General changes for RFI information	07 May 08	RFI

Do not scale from this drawing. If in doubt, consult the Architects.

stage: Planning / RFI

job title: Materials Recovery and Transfer Facility at Clavass, Ennscorthy, County Wexford for Greenstar Ltd. (Greenstar)

job no.	drwg no.	rev.
1375	P-005	Rev.- ; (RFI)

drwg title: Site Elevations from Adjacent Roads

drwn by	scale	date
QO	1:200 (A1)	04.07.2008

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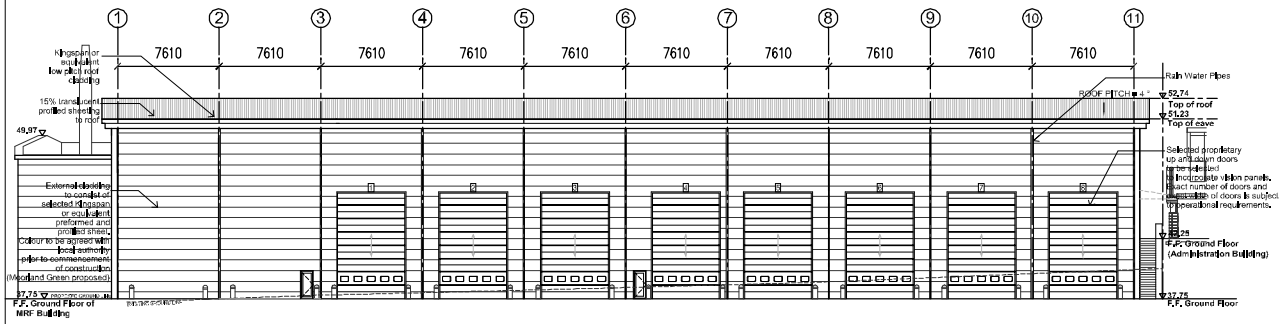
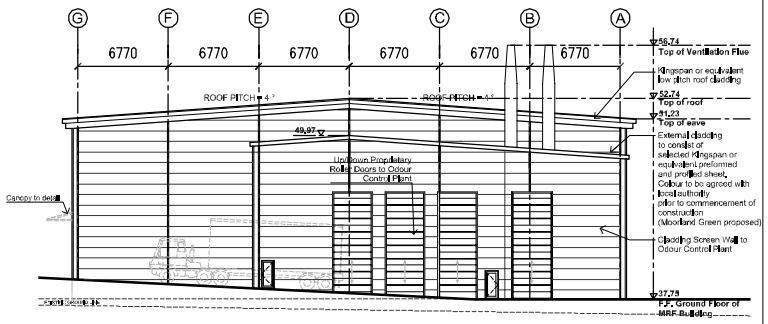
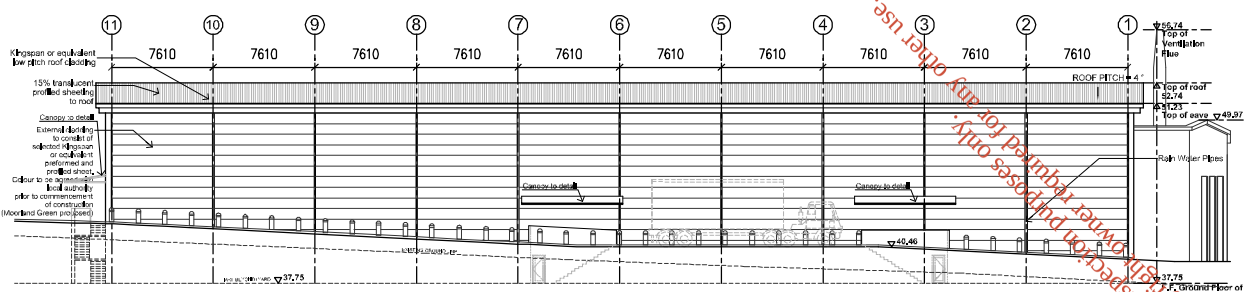


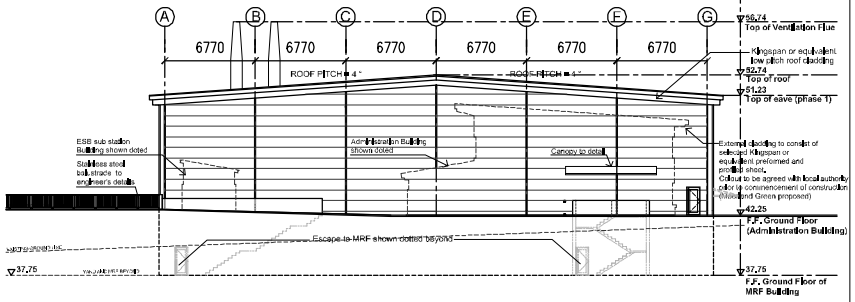
04 South Elevation of MRF Building
R-006 Scale 1:200 (A1)



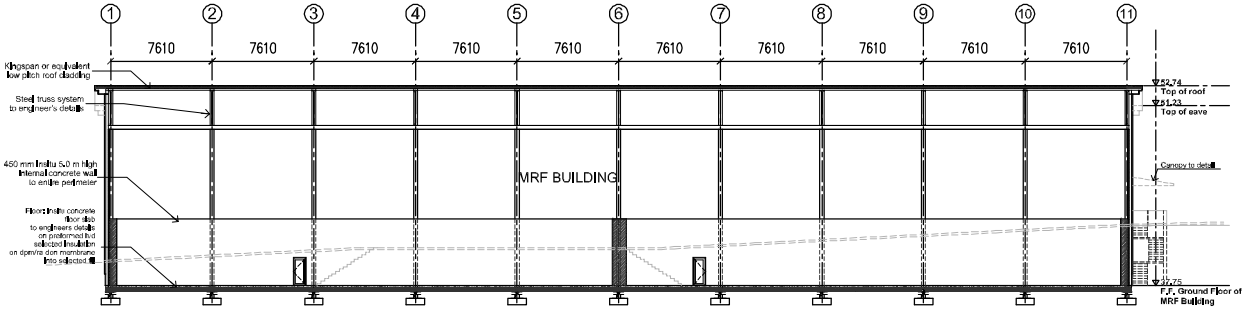
03 West Elevation of MRF Building
R-006 Scale 1:200 (A1)
(Indicated Phase 1 and Phase 2 Completed)



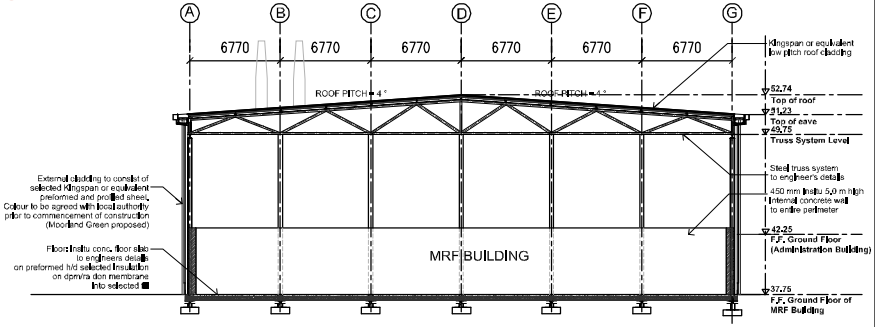
05 North Elevation of MRF Building
R-006 Scale 1:200 (A1)



02 East Elevation of MRF Building
R-006 Scale 1:200 (A1)



06 Longitudinal Section Through MRF Building
R-006 Scale 1:200 (A1)



01 Cross Section Through MRF Building
R-006 Scale 1:200 (A1)

revision	description	date	issue
	Issued for Planning Permission	23 Nov 07	PL
rev. C	General changes for RFI information	07 May 08	RF

Do not scale from the drawing. If in doubt, consult the Architects.

stage: Planning / RFI

job title: Materials Recovery and Transfer Facility at Clavass, Ennscorthy, County Wexford for Greenstar Ltd. (Greenstar)

job no.	drwg no.	rev.
1375	P-006	Rev. : (RFI)

drwg title: Elevations and Sections MRF Building

drwn by	scale	date
QO	1:200 (A1)	07.07.2008

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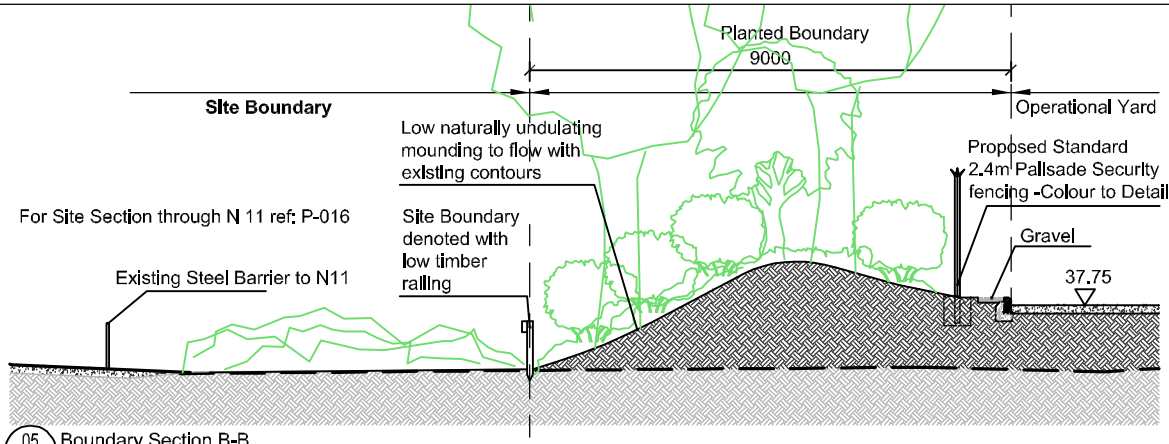

05 P-015 Boundary Section B-B
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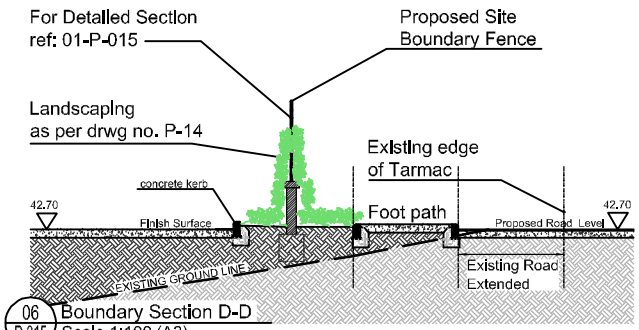
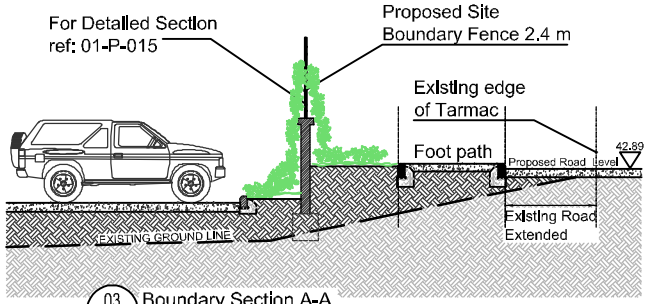
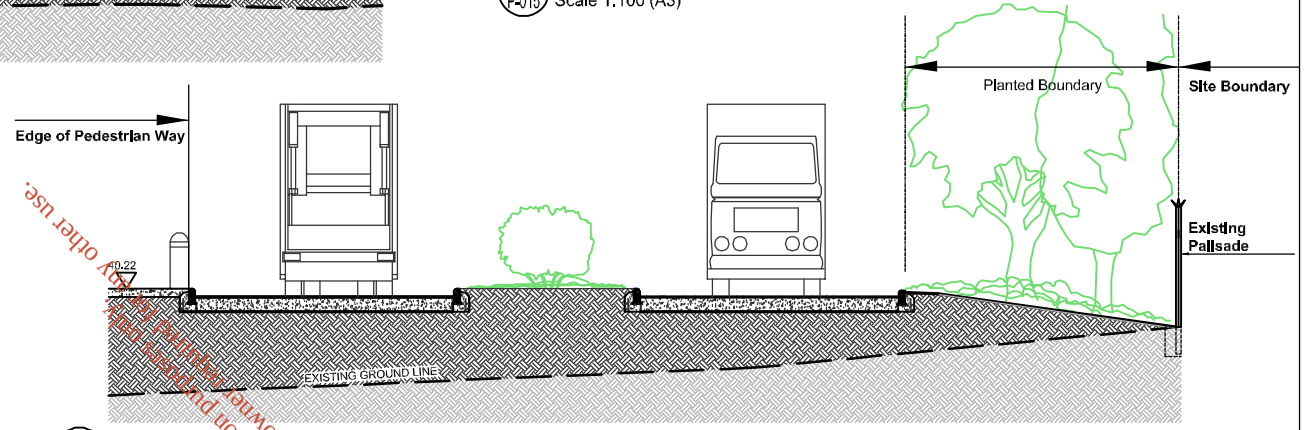


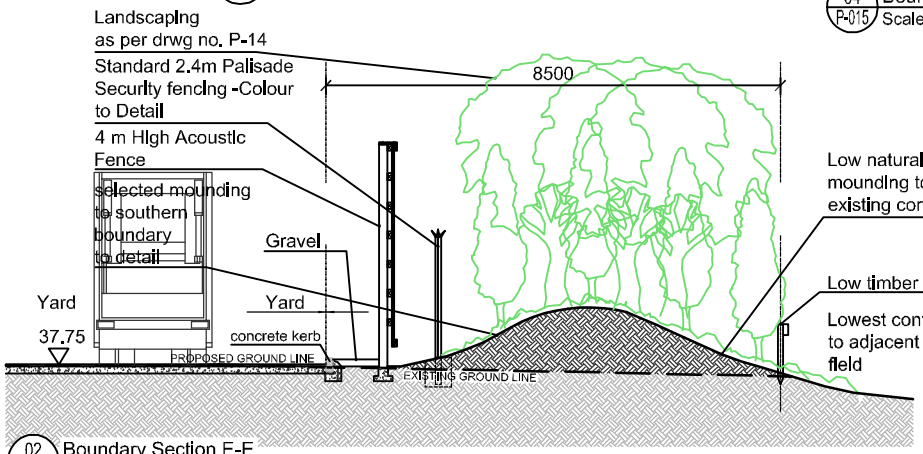
06 P-015 Boundary Section D-D
Scale 1:100 (A3)



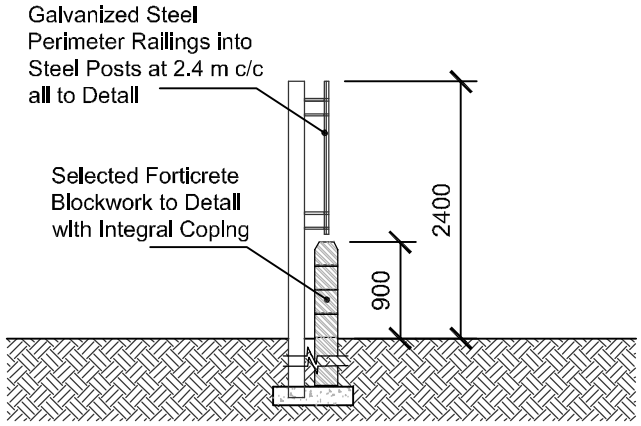
03 P-015 Boundary Section A-A
Scale 1:100 (A3)



04 P-015 Boundary Section C-C
Scale 1:100 (A3)



02 P-015 Boundary Section E-E
Scale 1:100 (A3)
Reduction to GFL: from 38.75 m to 37.75 m



01 P-015 Boundary Detailed Section
Scale 1:50 (A3)

Do not scale from this drawing. If in doubt, consult the Architects.

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job no.	drwg no.	issue
1375	P-015	Rev.-1 (RFI)

drwg title: Boundary Sections

drwn by	scale	date
QO	1:100 (A3)	07.07.2008

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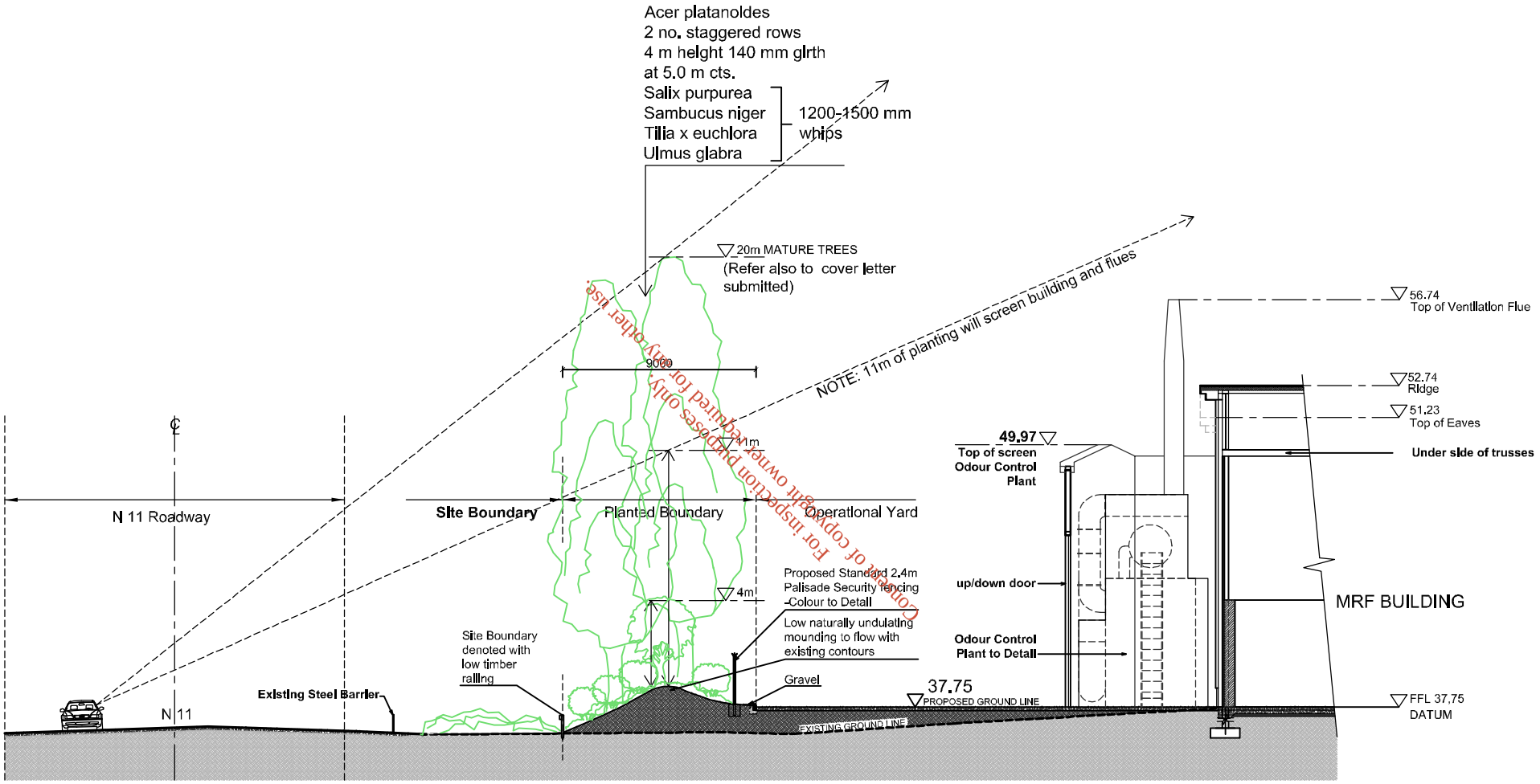

01 P-016 **Site Section through N 11**
Scale 1:200 (A3)

Rev 1 - Extra height to main building (2m) and reduction to GFL: from 38.75 m to 37.75 m

Do not scale from this drawing. If in doubt, consult the Architects.

Planning / RFI

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job title
Materials Recovery and Transfer Facility at Clavass, Enniscorthy, County Wexford for Greenstar Ltd. (Greenstar)

job no.	drwg no.	issue
1375	P-016	Rev.-1 (RFI)

drwg title: Section Through N 11 Site Boundary Indicating Height of Landscape Screening

drwn by	scale	date
QO	1:200 (A3)	07.07.2008

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15. HUMAN BEINGS

15.1 Introduction

This Section 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.

15.2 Existing Environment

Land use in the surrounding area varies between industrial, commercial, residential and agricultural uses. Figure No. 4.2 shows all dwellings within 500 m of the site boundary, with the nearest dwelling approximately 50 m to the north east of the site boundary. There are no hospitals, hotels or holiday accommodation within 1 km of the site.

15.3 Human Health

The facility will only accept non-hazardous Household, C & I and C & D waste. All wastes will be processed indoors. The operation of a non-hazardous waste facility in accordance with the conditions set in a Waste Licence issued by the Environmental Protection Agency will not result in any adverse impacts on human health.

The processing of all wastes internally and the provision of appropriate control measures will ensure that the facility does not attract vermin or birds. The only emissions to ground will be surface water run-off from paved and roofed areas that will initially pass through a silt trap and oil interceptor, which minimises the risk to groundwater. Vehicle exhaust emissions from traffic using the facility will not result in the exceedance of any air quality limits. Perceived impacts, associated with potential nuisances like noise and odours, can be effectively mitigated as discussed in Sections 10 and 11 of the EIS.

15.4 Socio-Economic Activity

The facility will not adversely influence the existing economic activities in the surrounding area, nor will it reduce the potential for the expansion of economic activities in the area. The facility is in keeping with national and local waste management policy objective and existing and proposed land use patterns, and will not result in the loss of amenities or rights of way.

There is a commonly held perception that the development of waste management facilities will affect property prices in the surrounding locality. This perception is not supported by any robust research on modern, properly operated MRTFs.

15.5 Environmental Nuisance

The facility has been designed and will be operated in a manner that will either eliminate, or minimise the risk of environmental nuisance, (noise, litter, vermin and odours). The proposed mitigation measures concerning environmental nuisances have been described in detail in Sections 5, 11, 12 and 13 of the EIS.

15.6 Impact Assessment

It is considered that the proposed development will have a neutral impact with imperceptible consequences for Human Beings.

16. ARCHAEOLOGY & CULTURAL HERITAGE

16.1 Introduction

This Section describes the existing environment from an archaeological and cultural heritage perspective, identifies potential impacts and recommends mitigation measures. It is based on the baseline archaeological survey, which was carried out by Icon Archaeology, whose report is included in Appendix 10 and summarised herein.

16.2 Existing Conditions

The existing conditions were established by a study, which included an examination of OS maps; records and publications of the Archaeological Survey of Ireland; documentation and archive material from the National Library of Ireland; National Museum of Ireland, and the Department of the Environment, Heritage and Local Government (DEHLG); and a field survey.

16.2.1 Archaeological and Historical Background

The proposed development site is located in the townland of Clavass, which once formed part of the Anglo-Norman barony of Scarawalsh, one of ten such baronies in the county of Wexford. The townland extends over a relatively small area of 157 acres. The Archaeological Inventory of County Wexford contains three entries for Clavass townland

Ring-ditch. Cropmark of small circular enclosure (diam. c.12m) with central pit visible on aerial photographs (NM 35-6). The site is located 150m to the north-west of the proposed development site.

Enclosure (site). Cropmark of circular enclosure (diam. c. 25m) visible on aerial photographs (NM 8-11). The site is located 380m to the north-west of the proposed development site.

Moated site. Rectangular area (dims. 49m N-S; 40m E-W) with earthen bank (Wth 4m; H z1m) on W and N sides and external fosse (Wth 4-5m; D below interior 2-3m) on all sides except E. Mixed Wood. Site inspection carried out in 1987. The site is located 320m to the north-west of the proposed development site.

16.2.2 Archaeological Excavations

An examination of the excavation bulletins and periodicals records no excavations within close proximity to the development

16.2.3 The Topographical Files

The topographical files of the National Museum of Ireland were examined for recorded finds within the townland of Clavass. There are no entries recorded in the files.

16.2.4 Cartographic Background

1st Edition Ordnance Survey. The proposed development site is located in the south-east corner of the small townland, Clavass. The site is bounded to the east by the old Enniscorthy road and to the south by the townland boundary. The townland is divided up into a series of small fields centred around two farms. The principal archaeological feature within the townland is the "*site of castle*", listed as the moated site in the Record of Monuments and Places. The two sites identified from aerial photography in the county inventory are not depicted on the map and were presumably destroyed prior to the 1830's.

3rd Edition Ordnance Survey. This edition from the 1920's shows little change. The two farms and the moated site are still apparent but no further development has taken place.

Latest Edition Ordnance Survey. This edition shows that a considerable amount of development has taken place. The N11 road now forms the western boundary of the development site. Several residential houses are in the adjacent field to the south and a further group to the north east. Three larger buildings are in the field to the north and the moated site is still apparent.

16.2.5 Field Survey

A field inspection was carried out during March, 2008. The proposed development site covers 1.5 hectares and has a natural slope from north-east to south-west. No surface anomalies were visible during the time of inspection. The site is bounded to the east by a mature hedgerow and the old Enniscorthy road and to the west by the N11 Dublin-Enniscorthy road. A substantial private residence separated by a line of mature trees occupies the adjacent field to the south. Several large commercial premises occupy the field to the north.

The three archaeological sites listed in the Record of Monuments and Places are located several hundred metres to the north of the proposed development site. The ring-ditch (WX20-66) and the enclosure site (WX20-65) were located 150m and 380m to the north and north-west of the development site. Both sites were identified from aerial photography and were not visible during the time of inspection.

The moated site (WX20-08) is located 320m to the north-west of the development site on the opposite side of the N11 Dublin-Enniscorthy Road. The monument is not visible from the development site and the view is partially blocked by the commercial premises to the north. The moated site was characterized by an internal rectangular platform surrounded on three sides by a deep fosse. The eastern side had been filled in and was no longer visible. Several disused farm buildings and a section of an old boreen were to the south of the moated site.

16.3 Impact Assessment

The proposed development site is not located within or close to the *zone of archaeological potential* of any archaeological site. The field inspection found no evidence of any sub-surface archaeological remains. The development area and its immediate environs do not have a significant amenity value.

16.4 Mitigation Measures

No mitigation measures are required.

17. MATERIAL ASSETS

17.1 Introduction

This Section describes the material assets on and in the environs of the site. It describes the associated impacts and proposed mitigation measures.

17.2 Amenities

The site is in an area zoned for industrial and related development. The application area and its immediate environs do not have a significant leisure or amenity potential. It is considered, based on the nature of the development; the existing land use; and the existing planning zoning status that the potential for diminution of amenities and leisure land use linked to the development and operation of the facility is negligible.

17.3 Infrastructure

The impact of the proposed development on the local and regional road network is described in Section 7.

17.4 Agriculture

The development site has been used for agriculture purposes in the past, however the lands are now zoned for industrial use. The Planning Authority considered the impact on local agriculture into account, and deemed it to be insignificant, when approving the change to the zoning status. The lands north and south of the proposed use facility are also zoned for industrial use and the N11 forms the western site boundary. The lands to the east of the site are used for agriculture.

The only emissions from the waste activities with the potential to impact on agriculture is dust and effective mitigation measures are described in Section 11 of the EIS. The facility will not have any impact on agricultural land use in the area.

17.5 Natural Resource Consumption

Facility operations will involve the consumption of water, oil and electricity. The main source of energy for the facility will be electricity and diesel. Diesel will be used as fuel for mobile equipment in the facility (e.g loader, forklift). Table 17.1 shows the expected annaul non-renewable resource consumption. Greenstar will actively consider the provision of a wind turbine at the site to provide electricity and reduce reliance on non-renewable electricity sources. This would be the subject of a separate planning application.

Table 17.1 Expected Annual Non-Renewable Resource Consumption

Resource	Quantities
Diesel Oil	100,000 litres
Hydraulic Oil	100 litres
Disinfectant	80 litres
Engine Oil	200 litres
Water	3500m^3
Electricity*	100,000 kW

*Subject to variation depending on the processing plant layout

18. INTERACTION OF THE FOREGOING

18.1 Introduction

Earlier Sections have described the impacts associated with the proposed development and proposed mitigation measures on individual sensitive receptors. This Section discusses the significance of the actual and potential direct, indirect and cumulative effects of the development due to interaction between relevant receptors. Only those receptors between which there is an identifiable actual or potential relationship are addressed.

18.2 Human Beings / Air

Waste activities have the potential to impact on human beings arising from noise, dust, vehicle exhaust emissions and odour. The location, design and proposed method of the current and future activities have taken account of these emissions and effective mitigation measures have been incorporated into the facility design. When the facility is operational appropriate control measures will be implemented to ensure that the facility activities do not result in adverse emissions. These measures will be based on the Conditions of the Waste Licence granted by the EPA.

18.3 Human Beings / Landscape

The majority of the site is already effectively screened by mature hedgerows. It is proposed to provide additional planting around the site boundaries to augment the existing hedgerows, and provide additional screening to views from the south.

18.4 Human Beings / Material Assets / Traffic

The facility will result in an increase in traffic on the Old Dublin Road. The existing road infrastructure has the capacity to handle the increased traffic associated with the development.

APPENDIX 1

Public Consultation

Greenstar Ltd., Unit 6 Ballyogan Business Park, Ballyogan Road, Sandyford Dublin 18, intends to apply to Wexford County Council for Planning Permission for the development of the Materials Recovery and Transfer Facility at Clavass, Enniscorthy, County Wexford. The proposed facility, which will be purpose built and designed and operated in accordance with best international practice, will handle up to 90,000 tonnes of non-hazardous household, Commercial & Industrial and Construction & Demolition waste annually. An Environmental Impact Statement (EIS) is being prepared as part of the planning application. Greenstar Ltd. invites interested parties to submit written comments on the proposed development for consideration in the EIS. Written submissions should be sent to O'Callaghan Moran & Associates, Granary House, Rutland Street, Cork to be received by the 31/08/2007.

07-048-19 – EIS Public Consult.

'St. Martha'
Old Dublin Road,
Enniscorthy,
Co. Wexford.

Telephone: 053 92 36568

RECEIVED 30 AUG 2007

27/08/07

Dear Mr. O'Callaghan,

Thank you for taking the time to discuss the proposed material recovery and transfer facility to be developed by Greenstar Ltd at Clovass, Enniscorthy. As you advised I am now putting in writing the topics which we discussed during our conversation and I will send a copy to Wexford County Council.

As industries go waste processing generally falls into the category of enterprises that raise all sorts of questions and worries in any community, especially when the development is to be located within close proximity to ones residence. As you can appreciate there are a number of concerns regarding the proposed development that we would like clarified.

The main concern is the impact that the proposed development will have on our residence, which will have a direct proximity of about 100 meters from the site. The residential development where we are located is private and to date there are nine dwellings in it with the potential for 3 or 4 more. It has been the contention of the owner that the roadway into and around the residential development would be finished when all of the house construction was completed. It is worth noting that construction of dwelling houses on this site started in the mid 1970's and the last house actually built here was in c.1987. It is a matter of record that planning permission issues have been responsible for the non completion of this residential development. The arrival of the waste recovery and transfer facility will further detract the future development of the residential area. It may be worth stating that as this residential development was started some 30 years ago there is in our view if not a legal but at least a moral obligation on the local authority to uphold the residential status of this general area from further commercial development that would detract from the 'residentiality' of the area.

As well as developing the residential site or as we would see it 'finishing it off' the arrival of such a facility would not necessarily enhance the potential resale value of our house as the proximity of a waste handling unit where there is processing of domestic refuse is typically not a feature that one will be looking for in a prospective property.

Other concerns outside that which pertain directly to our house and family are

Increase in road traffic activity and the corresponding compatibility with the residential area as regards use of the roadway by pedestrians, cyclists etc. Currently there are no footpaths and the road is quite a popular walking area both for exercise and for going to and from the local shops located approximately 1.5 km away. At this time of year the road traffic does increase due to grain intake and the difference that this makes is quite significant as regards road safety.

The current projected annual tonnage through the proposed unit is 90,000 tonnes per year; with an average of 40 tonnes being output per trailer load. This would mean 2,250 x 40 tonnes loads per year or approximately 45 such trailer loads per week, based on a 5 day working week. I appreciate these figures are based on operating at the plant's maximum capacity but with the possibility of further site development available we must assume that the current target will be met at some stage in the not too distant future even if it only to meet the return on investment. The above traffic figures only relate to outgoing materials from the unit and do not even come close to estimating what the vehicle activity may be for incoming materials to the unit.

This further raises the question as to the suitability of the road itself. Is it capable of handling such increased traffic volumes when coupled with the current traffic activity? It must have been noted that even at the more populated section of this road, at Kilcannon, the road surface quality is at best poor despite the Council themselves having a presence there. The surface quality does improve at Moyne Upper and Clovass but the road width could certainly not be classed as adequate as is our experience with the current traffic volumes. It would be assumed that additional road lighting may be required, a feature that may / may not be welcome given the current rural nature of this locale as further lighting may create a more urban feel to the area.

Issues with the proposed development include;-

1. It is not uncommon for vehicles to inadvertently 'loose' part of their cargo and in the case of waste materials this would clearly be unacceptable given that a significant proportion of the waste will be household waste and its proximity to a residential area.
2. You have indicated that the activities of the development will be carried out inside the plant/transfer station and that there will be odour treatment of all emissions. In most plants where this activity is carried out it is impractical for all aspects of this process to be carried internally – movement of the material in and out of the premises being the main issues. The presence of household waste of unknown age or degradation and however well contained will not prevent all odour emissions to an area that has never been exposed to any such emissions previously. Vehicles that carry household waste both to and from the site will also be subject to odour emissions, including vehicles that are normally parked there. A further point on odour emissions would be what contingencies would be in place if the air/odour treatment system breaks down or power failure an event which is not uncommon in the area. This is of major significance especially as there will be a significant level of household waste scheduled to be processed within the proposed unit.

3. Further to the presence of household waste we can also envisage that vermin such as rats will be attracted by such a Pied Piper - like enterprise. The installation of baited traps etc will foil some but may not detract from the potential increase in rodent population.
4. With the increase of commercial and vehicular activity there will also be an increase in noise levels. As was stated previously the increase in road traffic due to grain intake does make a noted difference both to noise and road safety. The current business park does not have any major processing industries except a joinery the rest are mainly small service industries and trade depots. These are type of enterprises that do not severely impact the residential nature of the general area.
5. At the moment it has not been made clear whether activity in the proposed development will only be carried out on an 8am to 6pm basis as if longer hours including Saturdays/Sundays and shift work are envisaged it will increase traffic, noise and general activity in the area.
6. You have indicated that the site as will only be developed to 50 % of its capacity. The proposed building will handle up to 90,000 tones per year and that future development while not currently under discussion is a possibility, especially with the ground available for such an expansion. This would only add to our concerns for this development.
7. It would also be interesting to know what other locations were considered along with the site at Clovass, Enniscorthy and why they are not the chosen site for the proposed development.

Waste processing and handling are acknowledged necessities in our modern day world and they are to be welcomed not just from an environmental point of view but should be considered the right thing to do. It is however a little difficult to understand why more appropriate locations cannot be found that do not compromise established residential areas. It is natural to have pride in one's area and to try and uphold the factors that originally attracted residents to the area in the first place which were

1. Proximity to the town but still some distance from it
2. Quiet rural setting
3. Clean fresh air
4. Privacy
5. The aspiration that the house value might increase

It is impossible to live without change and this may involve some encroachment on factors which influenced original decisions. For sure the current commercial activity does infringe on some of the above but in our opinion not to the extent that a waste handling facility would.

Thank you for your time and we await your response regarding our concerns.

Yours sincerely,

Liam Cullen Ellen Cullen.

Liam & Ellen Cullen

Mr. & Mrs. Liam Cullen,
"St. Martha",
Old Dublin Road,
Enniscorthy,
Co. Wexford.

4th September 2007

Re: Proposal to Develop a Materials Recovery Facility at Clavass, Enniscorthy,

Dear Mr. & Mrs. Cullen,

I acknowledge receipt of your submission in relation to the above. The concerns expressed in your submission have been noted and will be addressed in the Environmental Impact Statement.

Yours Sincerely,

Jim O' Callaghan

APPENDIX 2

Climatic Information

KILKENNY

monthly and annual mean and extreme values

1961-1990

TEMPERATURE *(degrees Celsius)*	***jan***	***feb***	***mar***	***apr***	***may***	***jun***	***jul***	***aug***	***sep***	***oct***	***nov***	***dec***	***year***
mean daily max.	7.7	7.9	10.0	12.4	15.1	18.1	19.9	19.6	17.2	13.9	10.1	8.4	**13.4**
mean daily min.	1.4	1.6	2.3	3.4	5.6	8.4	10.4	9.9	7.9	6.1	2.8	2.1	**5.2**
mean	4.6	4.8	6.1	7.9	10.3	13.3	15.2	14.7	12.6	10.0	6.4	5.3	**9.3**
absolute max.	14.1	15.1	18.5	23.5	26.0	31.5	31.4	30.5	25.6	22.2	17.4	14.8	**31.5**
absolute min.	-14.1	-11.1	-7.9	-5.4	-3.7	0.5	2.3	1.2	-1.6	-4.4	-7.0	-10.8	**-14.1**
mean no. of days with air frost	10.8	8.7	7.4	4.1	0.8	0.0	0.0	0.0	0.4	2.0	8.4	10.5	**53.0**
mean no. of days with ground frost	18.2	14.9	14.3	12.4	7.3	2.0	0.4	0.8	3.4	6.8	14.2	16.8	**111.5**
RELATIVE HUMIDITY *(%)*													
mean at 0900UTC	88	87	85	79	76	76	78	82	85	88	89	89	**84**
mean at 1500UTC	80	74	68	64	64	65	65	66	69	76	78	82	**71**
SUNSHINE *(hours)*													
mean daily duration	1.71	2.29	3.32	4.85	5.47	5.15	4.65	4.50	3.82	2.71	2.22	1.48	**3.51**
greatest daily duration	8.2	9.7	12.1	14.0	15.8	16.3	16.0	14.2	11.8	10.2	9.0	7.3	**16.3**
mean no. of days with no sun	11	8	6	3	2	2	2	2	3	6	9	12	**65**
RAINFALL *(mm)*													
mean monthly total	86.3	66.1	63.9	51.4	61.9	50.5	52.5	69.4	73.5	84.9	73.8	88.6	**822.8**
greatest daily total	31.5	32.3	29.9	24.5	23.9	30	66.4	49.8	30	34.6	29	45.8	**66.4**
mean no. of days with >= 0.2mm	19	15	17	15	17	14	13	15	15	18	17	18	**192**
mean no. of days with >= 1.0mm	15	11	12	10	12	10	9	11	11	13	12	13	**137**
mean no. of days with >= 5.0mm	7	5	5	4	5	4	3	4	5	6	5	6	**58**
WIND *(knots)*													
mean monthly speed	7.4	7.4	7.7	6.7	6.4	5.8	5.6	5.6	5.9	6.4	6.4	7.1	**6.5**
max. gust	77	72	60	53	54	45	46	56	65	74	56	65	**77**
max. mean 10-minute speed	44	39	36	33	32	28	27	29	40	45	35	40	**45**
mean no. of days with gales	0.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	**1.4**

APPENDIX 3

Traffic Impact Assessment

PROPOSED MATERIALS RECOVERY FACILITY,
OLD DUBLIN ROAD,
ENNISCORTHY,
CO. WEXFORD

Traffic Impact Study

October 2007

02801/311007/DR10/BM/jk

Bracetown Business Park, Clonee, Co. Dublin
Tel: +353 (0)1 801 4009 - Fax: +353 (0)1 801 4035
E-mail: info@trafficwise.ie Internet: www.trafficwise.ie

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Network Flow Diagrams

Appendix C

Trafficwise Ltd. Drawing No. 02801/01/01/PL01

1 NON TECHNICAL SUMMARY

1.1 This report addresses existing and potential future traffic conditions on the local road network in the vicinity of a proposed Materials Recovery Facility, located in the established industrial area on the Old Dublin Road in Enniscorthy.

1.2 The proposed facility will replace two smaller existing facilities in Gorey and Wexford town. Forecasts indicate that the facility will process some 60,000 tonnes of material per annum upon opening. This initial tonnage is predicted to increase incrementally by 6% per annum over an eight year period until the proposed ultimate processing capacity of 90,000 tonnes per annum is achieved.

1.3 Under the 'worst case' traffic generation scenario it is estimated that the facility has the potential, upon opening, to generate some 71 HGV trips on a daily basis. During the development peak hour[1], which is expected to occur between 1100-1200hrs or 1400-1500hrs, it is expected that some 6 HGV arrival trips[2] and 3 HGV departure trips will be generated. This is equivalent to a total of 9 HGV movements[3] in and 9 HGV movements out.

1.4 The volume of traffic generated by the facility is expected to increase incrementally up to the ultimate processing capacity of 90,000 tonnes per annum. When at ultimate capacity the facility is, under a worst case traffic scenario, forecast to generate 105 HGV trips on a daily basis. During the development peak hour, this is calculated to equate to 8 HGV arrival trips and 5 HGV departure trips, or 13 HGV movements in and 13 HGV movements out.

1.5 Recent traffic surveys show the Old Dublin Road to have an existing AADT in the region of 1,100 to 1,400 vehicles along its northern end in the vicinity of the site. The proposed development is therefore estimated to increase traffic volumes by approximately 10% along the local section of the road in the immediate vicinity of the site (between site and N11).

[1] Development Peak Generation as opposed to traffic generation in the network peaks

[2] A **Trip** is the inbound movement of a vehicle combined with the return outbound movement (ie in empty and out full or vice versa).

[3] A vehicle **Movement** is simply an inbound or outbound vehicle taken in isolation.

1.6 The N11 has an existing AADT in the region of 13,000 to 19,500 in the vicinity of the N11/N80 staggered crossroad junction. When the proposed development opens in 2009, it is forecast to increase daily traffic volumes on the N11 by approximately 0.5-1.0%. It should be noted nonetheless that at least half of the traffic which is likely to be generated by the facility is already using the N11 in the vicinity of the site at any rate. This existing traffic includes vehicular trips to larger sorting facilities in the Greater Dublin Area, accordingly it can be appreciated that not all traffic generated by the proposed facility will be entirely new to the N11. This existing traffic will now 'divert' from other existing opportunities to the proposed site.

1.7 The results of the analysis in this report shows that if the traffic generated by the proposed facility remains relatively constant when it reaches its operating capacity; then this traffic is not likely to have an adverse impact upon the capacity and operation of the receiving roads environment.

1.8 When opened the future N11 Enniscorthy Bypasses should offer a significantly enhanced level of service to the site with respect to capacity, accessibility and traffic safety.

2 INTRODUCTION

2.1 Overview

2.1.1 **Traffic***wise* Ltd. has been retained by Greenstar Ltd. to carry out a Traffic Impact Study for the proposed development of a Materials Recovery Facility (MRF) at a green field site located on the Old Dublin Road on the outskirts of Ennsicorthy, County Wexford.

2.1.2 This report identifies existing traffic conditions and assesses the relative level of impact which the proposed development is likely to have on the local road network. Where appropriate, measures are discussed regarding the management of traffic associated with the proposed development.

2.1.3 This report is structured in accordance with the Institution of Highways & Transportation (IHT) document 'Guidelines for Traffic Impact Assessment' (September 1994). This document is acknowledged by the National Roads Authority (NRA): Traffic and Transport Assessment Guidelines (Sept 2007) to represent the best practice approach in preparing Traffic Impact Assessments.

2.1.4 It is anticipated that this IHT recommended approach will provide the decision makers with a comprehensive picture of likely traffic impact and thus likely future traffic conditions on the receiving roads environment.

2.1.5 The scope and methodology of the study was agreed in pre-planning discussions with the Roads Section of the Local Authority.

3 EXISTING CONDITIONS

3.1 Location of Site

3.1.1 The site is Greenfield and is located in an established industrial area on the northern outskirts of Enniscorthy. The site is situated on the Old Dublin Road approximately 600 metres south of the N11/N80/Old Dublin Road staggered ghost island crossroads.

3.1.2 The site is bounded to the west by the N11 National Primary Road and to the east by the Old Dublin Road, to which there is an existing gated access. To the north, the site is bounded by a developing industrial estate, whilst the southern boundary is defined by undeveloped lands.

3.1.3 The general site location is shown in Figure 1 below.

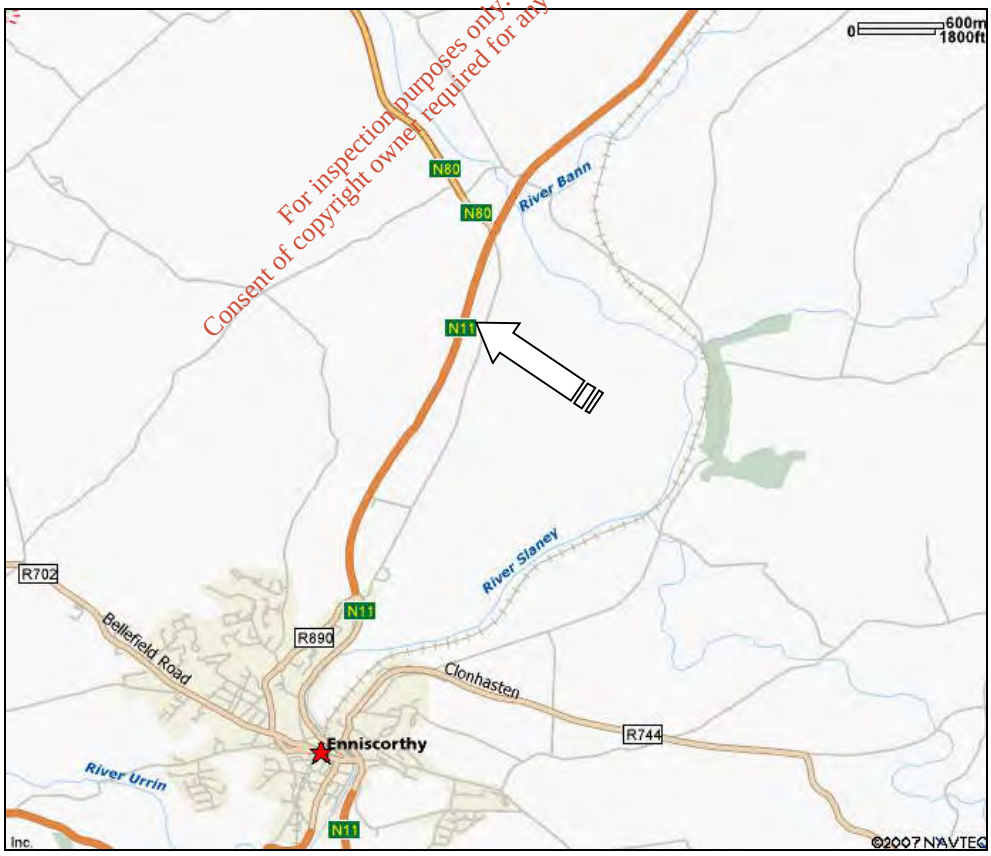

Figure 3.1 General Site Location

3.2 The Local Road Network

3.2.1 The local road network is characterised by the Old Dublin Road and the N11 which are linked by three junctions, those being: the N11/N80 staggered crossroad junction (at the northern end); the N11/R702 roundabout junction (at the southern end); and the N11/IDA Link Road junction (central or between preceding junctions). These links and junctions are described below:

The Old Dublin Road

3.2.2 The Old Dublin Road runs for a length of approximately 2.7km, linking the N11/N80 staggered crossroad with the N11/R702 Roundabout. The road follows a north-south alignment and runs roughly parallel to the N11.

3.2.3 The Old Dublin Road is subject to a 60kph speed limit and although essential straight for the most part it varies in quality along its length. In general the road can be defined in three sections and these are briefly described below.

3.2.4 The first section runs between the N11 roundabout and the IDA link road (EMO Petrol Filling Station) and is approximately 0.7km long. The average width of this section is 7.3m. This section is provided with at least one footway along its length and provides access to various developments on both sides. This section is considered typical of most industrial estate roads throughout the country.

3.2.5 The second section of the Old Dublin Road begins at the IDA Road and continues north for approximately 300m. The section similarly serves developments on both sides of the Old Dublin Road. The road has an average width of 6.5m along this section and there are no footways.

3.2.6 The remaining 1.7km length of the Old Dublin Road is more rural in character, nonetheless there are three industrial developments intermittently located on the western side of the road. This section is defined by a carriageway of 6.0m average width adjoined by 2.0m wide verges and mature hedgerow. There are parts of this road which have a bendy horizontal alignment; nonetheless past the site the road alignment is generally straight and flat.

3.2.7 We have undertaken a visual inspection of the existing road pavement and it appears in relatively good condition with no significant structural defects.

N11/N80 Staggered Crossroad Junction

3.2.8 The N11/N80 staggered crossroad junction is provided with a dedicated ghost island right turn lane from the N11 which provides access to both the N80 and the Old Dublin Road. The junction is also provided with a near side auxiliary lane for traffic turning left onto the N80 from the N11.

3.2.9 Visibility sightlines at this junction are commensurate with the NRA: Design Manual for Roads and Bridges (DMRB) requirements.

3.2.10 This junction is considered to represent the quickest and easiest form of access from the site via the Old Dublin Road to the national road network.

N11/R702 Roundabout Junction

3.2.11 The existing N11/R702 roundabout at the southern end of the Old Dublin Road provides a high level of service to existing road users. The industrial estate is well signed on all other roundabout approaches.

3.2.12 Visibility sightlines at this junction are commensurate with the NRA: DMRB requirements.

3.2.13 Vehicles accessing the proposed development from Enniscorthy and further south are considered likely to use this junction as the primary access to the site.

N11/IDA Link Road

3.2.14 The N11/IDA link road junction is characterised by a left turn deceleration lane adjacent to the southbound lane. 'No right turn' signage was observed to be erected in the verge adjacent to the N11 northbound lane, thereby prohibiting right turns from the N11 onto the IDA link road.

3.2.15 This junction is located on a straight section of the N11 and accordingly visibility sightlines at the IDA junction are commensurate with the requirements of the DMRB.

3.3 Current Local Authority Policy and Roads Objectives

3.3.1 In summarising current roads policies for the Enniscorthy area, reference has been made to Transport 21; the Wexford County Development Plan 2005-2011; and the Enniscorthy Town and Environs development Plan 2001.

Transport 21

3.3.2 The most significant roads project to impact upon the proposed development will be the completion of the N11 Dublin to Rosslare strategic route, which has been identified as an objective for Transport 21.

3.3.3 When completed the N11 will provide a road of motorway/high quality dual carriageway standard from south of Gorey to the M50. Under Transport 21 most of the upgraded route is expected to be constructed by 2010. The following sections of the N11 are currently outstanding:

- N11 Arklow to Rathnew (at tender stage]
- N11 Arklow Gorey Bypass (construction)
- N11 Clogh to Enniscorthy (constraints study stage)
- N11 Enniscorthy Bypass (preliminary design stage)
- N11 Enniskerry Junction Improvements (construction)

3.3.4 Of the schemes listed above, clearly the proposed N11 Enniscorthy Bypass is likely to impact most significantly upon the existing traffic patterns within and around Enniscorthy.

3.3.5 The Bypass scheme comprises of two routes: a 12.9km dual carriageway running to the east of Enniscorthy; and an 8.2km single carriageway road running to the west of Enniscorthy.

3.3.6 The western route runs from the N11/N80 junction in the townland of Clavass to a proposed roundabout with the N30 at Clohass. The eastern route runs from the N11/N80 junction to the town of Scurlocksbush to the south, where it is proposed to join the N30 Enniscorthy to New Ross realignment scheme.

3.3.7 As part of the proposed N11 Enniscorthy bypass scheme, it is currently proposed to upgrade the existing N11/N80 staggered crossroads to provide an at grade roundabout junction.

3.3.8 The exact location of this roundabout and the links which it will serve are currently under consideration and will be dependent upon the proposed final alignment of the N11 Eastern and Western Bypasses and the N11 Clogh to Enniscorthy route.

3.3.9 Preliminary design is currently taking place of the southern section of the N11 Enniscorthy Eastern Bypass (from the R744 southwards) and the N11 Enniscorthy Western Bypass. The N11 Clogh to Enniscorthy scheme is at constraints study stage and this scheme will provide a bypass of Camolin and Ferns. Preliminary design of the northern section of the N11 Enniscorthy Eastern Bypass is expected to commence in early 2009. As such the proposed form and layout of the upgraded N11/N80 staggered crossroads is not fully known at the time of writing.

3.3.10 Notwithstanding the above, the existing preferred route option shows an upgraded roundabout junction at Clavass; which is shown in Figure 3.2 below. This junction will provide links to the N11 (northwards), the N11 Enniscorthy Eastern and Western Bypasses and the N80, with no link provided to the existing Old Dublin Road.

3.3.11 In accordance with the preferred route alignment, the link with the Old Dublin Road at the proposed N11/N80 junction could be terminated; Following discussions with the NRA Tramore House Design Office, it has been established that the NRA is currently undertaking origin destination surveys and traffic count surveys to investigate the existing and likely future interaction between the existing links at this junction. Based upon the results of the NRA study a final decision as to the preferred junction arrangement is expected in early 2009.

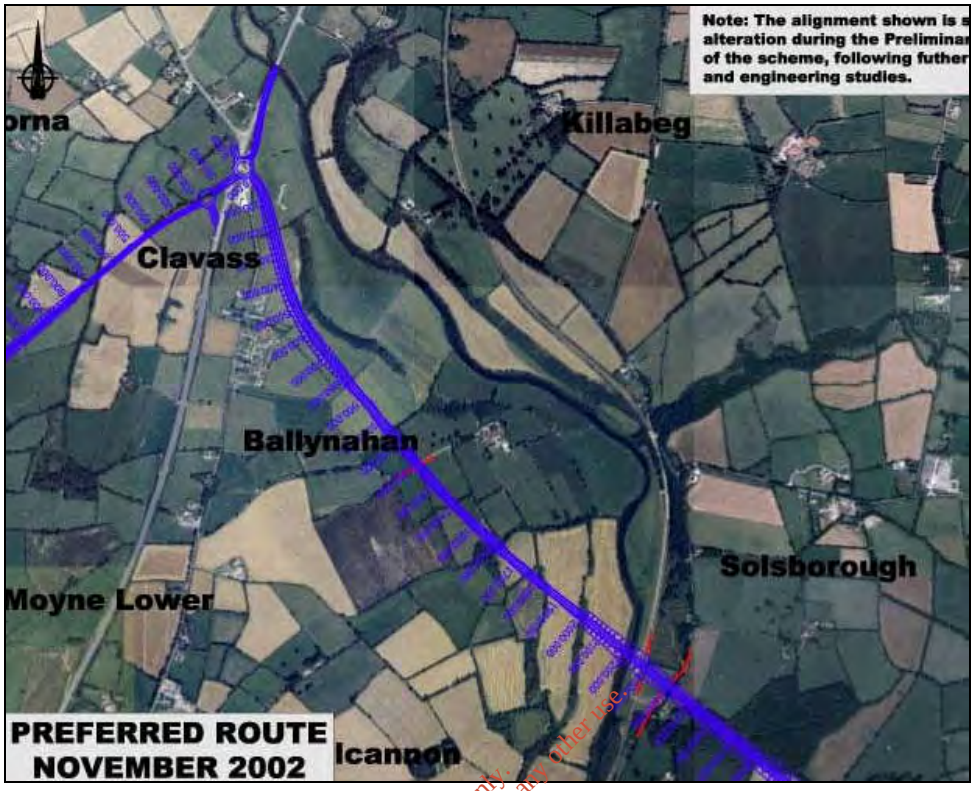

Figure 3.2 Proposed N11/N80/Enniscorthy Bypass Roundabout Junction[4]

3.3.12 Construction is expected to start on the N11 Enniscorthy Bypass in 2010 with a forecast completion date of 2013.

Wexford County Development Plan 2005-2011

3.3.13 Aside from the upgrading of the N11 Wexford to Dublin route, the following major roads improvement projects are proposed to be undertaken during the course of the development plan:

- N30 Enniscorthy/New Ross
- N25 Rosslare Harbour/New Ross (Also in Transport 21)
- N80 Bunclody/Enniscorthy

[4] Schematic taken from www.thrdo.ie

3.3.14 The N30 Enniscorthy/New Ross scheme has been divided into two sub-projects, those being: the N30 Enniscorty Clonroche scheme and the N30 Clonroche to New Ross scheme. The former was completed in April 2006 and consists of 5.3km of dual carriageway; whilst the latter is currently at preliminary design stage and incorporates the realignment of 14.4km of the existing road including a bypass of Clonroche.

3.3.15 The N25 Rosslare Harbour to New Ross scheme is a component part of the N25 Rosslare to Waterford scheme, which has a project completion date of 2015 under Transport 21. This route will provide improved links between the N9, N11 at its eastern end; and the proposed Atlantic Corridor at its western end; with the Port of Rosslare. The New Ross bypass forms part of this scheme and consists of a 13.6km orbital road from the townland of Jamestown to the west of New Ross to the townland of Ballymacar to the east of New Ross. The scheme will also include a link from the N25 to the N30. The New Ross scheme is currently at preliminary design stage.

3.3.16 The Development Plan proposes an upgrade of the N80 National Secondary Route between Enniscorthy and Bunclody; albeit that no timescales have been provided.

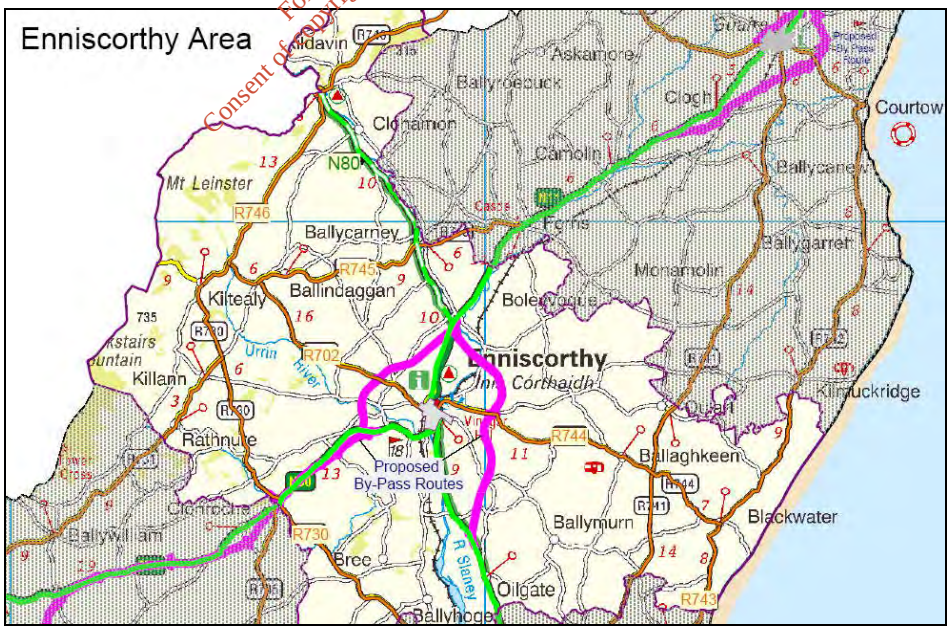

Figure 3.3 Proposed Road Schemes for Enniscorthy Area

Enniscorthy Town and Environs Development Plan 2001

3.3.17 The site is located in an area which has been zoned for industrial land use.

3.3.18 The Enniscorthy Development Plan identifies road improvement works for the lower part of the Old Dublin Road; nonetheless no further detail has been provided as to what these works entail or when they might be likely to commence.

3.3.19 The Plan outlines a number of roads and traffic management objectives; however these are primarily associated with the town centre and are not considered to be pertinent considering the location of the site.

4 EXISTING TRAFFIC FLOWS

4.1 Independent Traffic Surveys

4.1.1 In establishing the scope of the study, it was agreed with the Local Authority Area Engineer (Ms. Sinead Casey) that the following key junctions in the vicinity of the site should be assessed as a means of calculating the likely potential traffic impact on the receiving public road network:

- The N11/N80 Staggered Crossroad Junction
- The N11/R702 Roundabout Junction
- The N11/IDA Link Road

4.1.2 Abacus Transportation Surveys were commissioned to carry out 12-hour classified traffic turning count surveys at the N11/N80 staggered crossroad junction and the N11/R702 Roundabout junction.

4.1.3 In addition to these independent surveys, Trafficwise Ltd. carried out further counts at the N11/IDA Link Road during the network peak hours as identified from the 12-hour counts.

4.1.4 The independent traffic surveys were carried out on Tuesday 4 September 2007 over the period 0700-1900hrs using video surveillance (a copy of which can be made available upon request).

4.1.5 A copy of the original survey data together with a location map of the junctions surveyed is provided in Appendix A.

Survey Traffic Flows on Old Dublin Road

4.1.6 The general traffic flow patterns recorded on the Old Dublin Road over the 12-hour survey period are shown graphically in Figure 4.1 below. Figure 4.1 is based upon the results of the survey at the northern end.

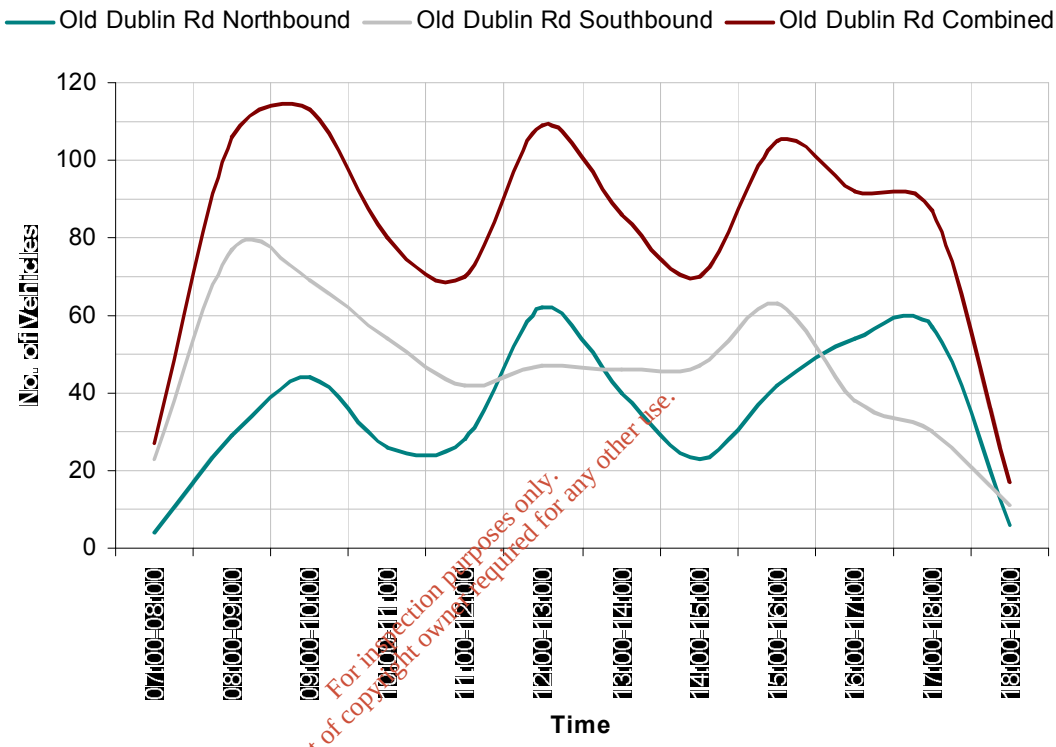

Figure 4.1 Old Dublin Road Surveyed Traffic Flows (2007)

4.1.7 Figure 4.1 shows that the daily traffic profile on the Old Dublin Road is characterised by a series of peaks and troughs. The peaks broadly occur in the morning, lunchtime and the late afternoon periods.

4.1.8 The survey indicates that the Old Dublin Road is not very heavily trafficked throughout the day, with a two-way vehicular flow never greater than 120 vehicles.

4.1.9 The predominant direction of vehicular flow in the morning is southbound whilst in the evening there is a relatively equal distribution of traffic.

4.1.10 The morning and evening peak hour periods on the Old Dublin Road were recorded between 0900-1000hrs and 1500-1600hrs respectively.

4.1.11 The morning peak hour recorded 113 two-way vehicular movements. Of these, 69 vehicles travelled southbound and 44 travelled northbound. In the evening peak hour, the two-way flow was recorded as 105 vehicle movements. Of these, 63 vehicles travelled southbound and 42 travelled northbound. During off peak periods traffic flow was observed to be relatively constant with an average two-way flow of 66 vehicles.

4.1.12 Over the entire survey period the Old Dublin Road carried 547 vehicles southbound and 415 vehicles northbound. Of the total volume of traffic in each direction, approximately 8% were HGV.

4.1.13 Using National Roads Authority document RT201 to convert the recorded traffic levels gives an indicative AADT for the Old Dublin Road somewhere in the range of 1,100 to 1,400 vehicles (at the 68% confidence interval).

Survey Results for N11

4.1.14 Figure 4.2 below shows a graph of the recorded northbound and southbound traffic flows on the N11 at the junction with the N80 over the course of the survey period.

4.1.15 It can be seen from Figure 4.2 that there is a relatively consistent volume of traffic in both directions throughout the day. Between 0900hrs and 1000hrs the recorded two-way traffic flow is typically less than 700 vehicles.

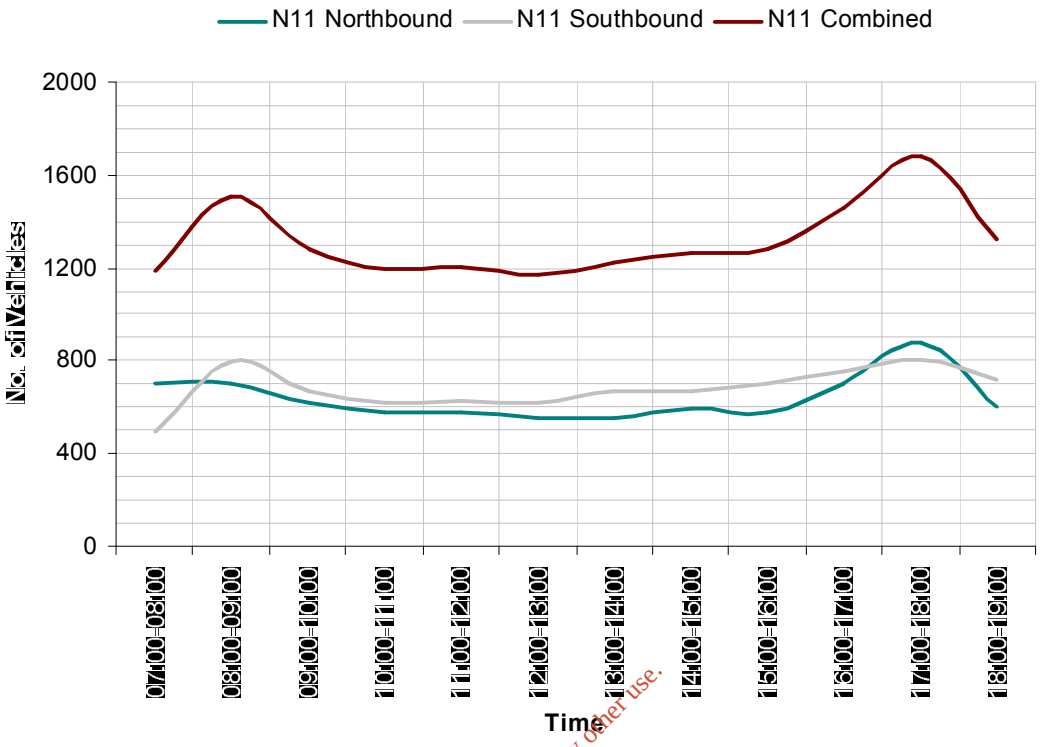

Figure 4.1 N11 Surveyed Traffic Flows (2007)

4.1.16 In contrast to the Old Dublin Road, the N11 has an obvious morning peak hour which occurs between 0800-0900hrs. During this period a combined two-way vehicular flow of 1,504 vehicles was recorded. Of these, 798 vehicles travelled southbound and 706 vehicles travelled northbound.

4.1.17 The evening peak period was recorded to occur between 1700-1800hrs. During this period a two-way flow of 1,683 vehicles was recorded. Of these, 876 vehicles travelled northbound and 807 vehicles travelled southbound.

4.1.18 Over the entire survey period the N11 carried 8,144 vehicles southbound, of which 12% were HGV. In contrast some 7,631 vehicles travelled northbound, 13% of which were HGV.

4.1.19 Using National Roads Authority document RT201 to convert the recorded traffic levels gives an indicative AADT for the Old Dublin Road somewhere in the range of 13,000 to 19,500 vehicles (at the 68% confidence interval).

4.2 Trafficwise Ltd. Surveys

4.2.1 In the interests of quantifying traffic activity at the N11/IDA Link Road junction, peak hour counts were carried out on 3 October 2007.

4.2.2 The results of the peak hour counts show that 100 vehicles were recorded travelling on the IDA Link road in the morning peak (0800-0900hrs). Of these 71 vehicles travelled westbound (to N11) and 29 vehicles travelled eastbound.

4.2.3 In the evening peak hour (1700-1800hrs), 122 vehicles were recorded. Of these, 102 vehicles travelled eastbound and 20 vehicles travelled westbound.

5 PROPOSED DEVELOPMENT

5.1 Threshold Approach for a Traffic Impact Assessment

5.1.1 The NRA: Traffic and Transport Assessment Guidelines recommend the following thresholds for undertaking a Traffic Impact Assessment:

> *"Applications that exceed any of the following thresholds will be required to produce full TIAs:*
>
> - *Industry GFA in excess of 5,000sq.m*
> - *100 trips (in/out combined) in the peak hour*
> - *Development traffic exceeds 10% of two-way traffic flow on adjoining road*
> - *Development traffic exceeds 5% of two-way traffic flow on adjoining road if congestive or sensitive"*
>
> *(Reference-NRA Traffic and Transport Assessment Guidelines: Table 2.2; page 4)*

5.1.2 The above thresholds have been used as a basis for undertaking this report, as well as establishing the area of influence or scope under consideration. We have included links and junctions on the local roads network, which have the 'potential' to experience increases in traffic flow of +10%, as a direct result of the proposed development.

5.2 Background to Proposed Facility and Processing Capacity

5.2.1 The proposed facility will replace two existing MRFs in Wexford Town and Gorey. The combined processing capacity of these two facilities is currently in the region of 60,000 tonnes per annum.

5.2.2 The processing capacity of the proposed facility will therefore be in the region of 60,000 tonnes per annum during the first year of the facility being operational.

5.2.3 It is nonetheless intended that the facility will have an ultimate processing capacity of 90,000 tonnes per annum. This ultimate capacity will be reached on a phased basis. Under current projections the applicant has estimated that the ultimate processing capacity could be reached approximately eight years after it first opens in 2008. This forecast is based on the assumption that the total tonnage accepted at the facility will increase by 6% per annum year on year which might be considered relatively fast.

5.2.4 It is envisaged that the ultimate processing capacity would only be realised after the opening of the N11 Enniscorthy Bypass, which under current forecasts is expected to open in 2013.

5.2.5 The realisation of the ultimate processing capacity will allow for the progressive expansion of recycling capacity and thus facilitate Greenstar Ltd. to tender for local authority contracts in relation to collecting and recycling of waste.

5.3 Development of Facility

5.3.1 When constructed the facility will include: a weighbridge; main sorting building; transfer yard; administration area; ESB substation; odour control plant; and car parking.

5.4 Hours of Operation

5.4.1 The proposed normal waste acceptance hours are 0600 to 2000hrs, Monday to Saturday inclusive. The operational hours will be 0600-2300hrs. The facility will not normally open on Sundays.

6 FORECAST TRAFFIC GENERATION OF PROPOSED DEVELOPMENT

6.1 Overview

6.1.1 In the following an outline is given as to how waste will be delivered and transferred at the facility. Average tonnages per waste stream loads and the likely vehicles which will be used to transport each waste stream have been provided. This data has been obtained through reference to data of MRFs with similar operational criteria.

6.2 Waste Types and Volumes

6.2.1 The anticipated waste types and volumes that will be accepted at the facility for the year of opening and when the ultimate processing capacity is reached; are shown in Table 6.1 below.

6.2.2 As stated earlier, when the facility first opens it will process approximately 60,000 tonnes of material per annum. This will eventually increase to an ultimate capacity of 90,000 tonnes per annum.

Waste Type	Operational Capacity	
	Year of Opening	Ultimate Capacity
C & D and C & I	25,000	37,800
Dry Recyclables	12,000	18,000
Municipal Solid Wastes	20,000	29,700
Other	3,000	4,500
TOTAL	**60,000**	**90,000**

Table 6.1 Total Waste Input to Facility

6.2.3 From Table 6.1 C&D and C&I are construction and demolition waste and commercial and industrial waste respectfully; dry recyclables are a mixture of domestic mixed recyclables and dry segregated recyclables; municipal solid waste is the normal un-segregated household waste; and other represents a mixture of fines (soils from C&D or C&I waste), wood as well as other types of waste.

6.2.4 The percentage breakdown of waste into the various waste streams is provided in Figure 6.1 below.

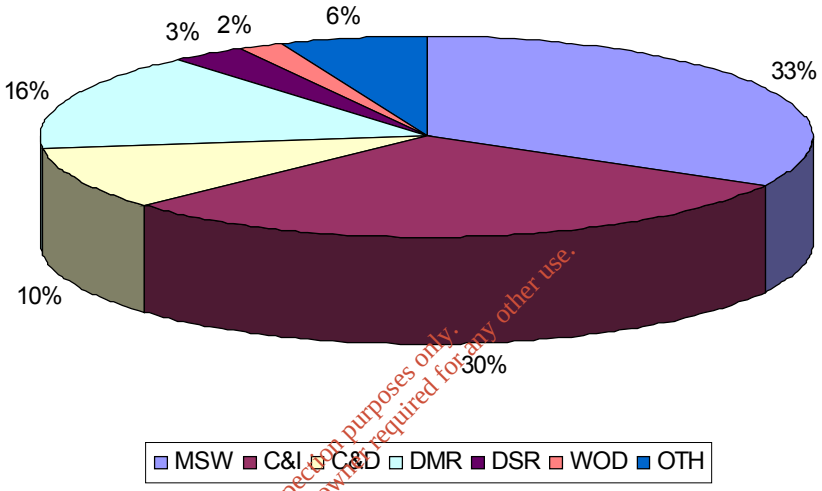

Figure 6.1 Percentage Breakdown of Waste Input to Facility

6.3 Types of Vehicle Used To Transport Waste To Facility

6.3.1 In the following reference is made to the Greenstar MRF at Fassaroe County Wicklow. As part of the data collection process undertaken to quantify traffic movements at the facility, a classified traffic count of HGV entering and exiting the site was undertaken in 2006. Based upon the two-way recorded movement of HGV at the site, the following Figure 6.2 shows the breakdown in waste related HGV vehicle types using the existing facility.

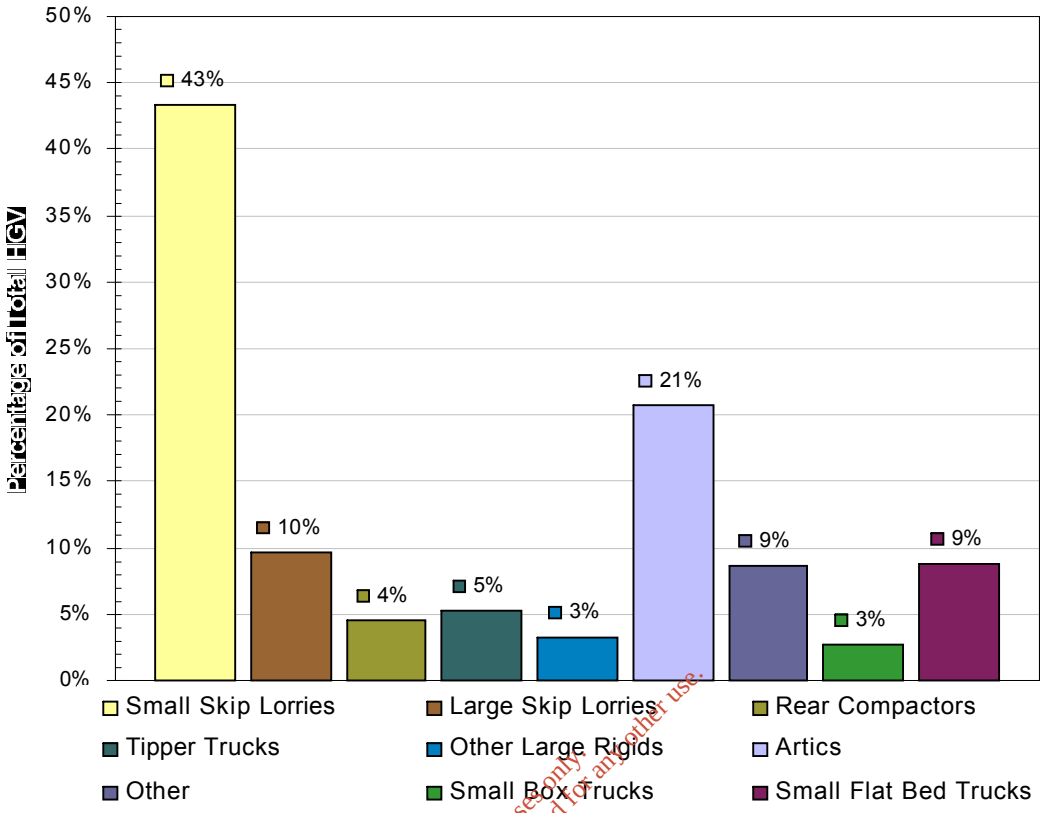

Figure 6.2 Percentage Breakdown of Vehicles used to Transport Waste

6.3.2 It can be seen from Figure 6.2 that in general only 20% of HGV traffic entering and exiting the existing facility is composed of large articulated HGV. The vast majority of traffic is composed of smaller 'collection' type vehicles. Small skip trucks are shown to comprise approximately 43% of all HGV traffic movements at the existing facility. It is considered likely that the proposed facility could reasonably be expected to have a similar HGV composition to that shown in Figure 6.2 above.

6.4 Average Traffic Generation Assessment of Proposed Development

6.4.1 In the following an estimate of the average HGV traffic generation is provided. The average HGV traffic generation is the volume of traffic which the facility is likely to generate on a day to day basis. For the purposes of modelling later in the report, an upper traffic generation value has been used instead of the average value. This is done in line with IHT guidance to ensure a level of robustness in the calculations in order that new infrastructure is not undersized.

6.4.2 In the following it is assumed that the vehicles delivering and transferring materials would be exclusively used for these purposes i.e. delivery vehicles are assumed to leave empty and removal vehicles are assumed to enter empty. This will ensure a factor of safety in the estimate of future traffic generation; since in reality this would be commercially unviable in relation to skip delivery and collection.

HGV Delivering Waste to Site (Input)

6.4.3 The loading characteristics at the existing Greenstar MRF are likely to reflect those at the proposed development. At the existing facility the C & I, C & D, and dry recyclable waste streams are generally brought to the facility in rear-end loaders and relatively small HGV carrying skips, trailers and hook loaders.

6.4.4 Table 6.2 below outlines typical average tonnages per load for waste streams which will be processed on site. These values have been obtained from data for the existing Greenstar MRF.

Waste Stream	Average Tonnes/Load
C & I and C & D	6.3
Dry Recyclables	8.0
Municipal Solid Waste	7.9
Other	5.5

Table 6.2 Typical Average Tonnages per Load

6.4.5 From Tables 6.1 and 6.2 above and based upon the proposed 252 days of operation, the resultant average number of HGV loads associated with delivering waste to the facility is shown in Table 6.3 below.

Waste Stream	Trips Per Weekday – Waste Input	
	Year of Opening (60,000 t/a)	Ultimate Capacity (90,000 t/a)
C & I and C & D	16	24
Dry Recyclables	6	9
Municipal Solid Waste	10	15
Other	2	3
TOTAL	**34**	**51**

Table 6.3 Forecast of Average No. of HGV Delivering Waste to the Site

HGV Transferring Waste from Site (Output)

6.4.6 After the waste materials have been processed on site, they will then be transferred off site for further treatment or in some cases transported directly to landfill. It is likely that loads will be transferred off site in large articulated vehicles, which can generally carry loads in the region of 20 tonnes. This has been observed to be the case at the existing Greenstar MRF and should ensure a robust assessment, since in reality modern articulated vehicles can carry loads of up to 24 tonnes.

6.4.7 Skips that are used to deliver waste to the site must eventually be transferred off site. It is common practice that several of these empty skips get stacked on top of each other (normally in groups of two to three) and delivered to customers by a single skip lorry trip. Following on from this, in the opening year allowance has been made for an additional 10 HGV skip delivery trips per day. Similarly at ultimate capacity 15 HGV skip delivery trips per day have been allowed for[5].

[5] This is in addition to the assumption that all skip lorries enter full and exit empty (clearly a most robust assumption)

6.4.8 The forecast number of HGV loads associated with transferring processed waste and delivery of skip containers is therefore provided in Table 6.4 below.

Waste Stream	Trips Per Weekday – Waste Output	
	Year of Opening (60,000 t/a)	Ultimate Capacity (90,000 t/a)
C & I and C & D	5	8
Dry Recyclables	3	4
Municipal Solid Waste	4	6
Other	1	1
Removal of Empty Skips	10	15
TOTAL	**23**	**34**

Table 6.4 Forecast No. of HGV Transferring Waste from Site

Expected Total HGV Generation (Average)

6.4.9 From the above, the following Table 6.5 shows the forecast average daily traffic generation at the facility for the opening year and when it is operating to full capacity.

Type of Trip	Trips Per Weekday – Waste Output	
	Year of Opening (60,000 t/a)	Ultimate Capacity (90,000 t/a)
Delivery	34	51
Removal	23	34
TOTAL	**57**	**85**

Table 6.5 Forecast Average HGV Generation

6.5 Upper Value Traffic Generation Assessment for Proposed Facility

6.5.1 The following is recommended in the IHT Guidelines, a document which is referenced by the NRA: Traffic and Transport Assessment Guidelines as best practice when compiling Traffic Impact Assessments:

> *"It is recommended that developers and highway authorities should adopt a robust forecast i.e. a value higher than the average."*

6.5.2 Following on from this, data available from the existing Greenstar MRF has been used to estimate the likely traffic during 'busier than average' periods.

6.5.3 Figure 6.1 shows a graphical representation of the monthly spread of HGV activity recorded by the weighbridge at the MRF over the period August 2005–September 2006.

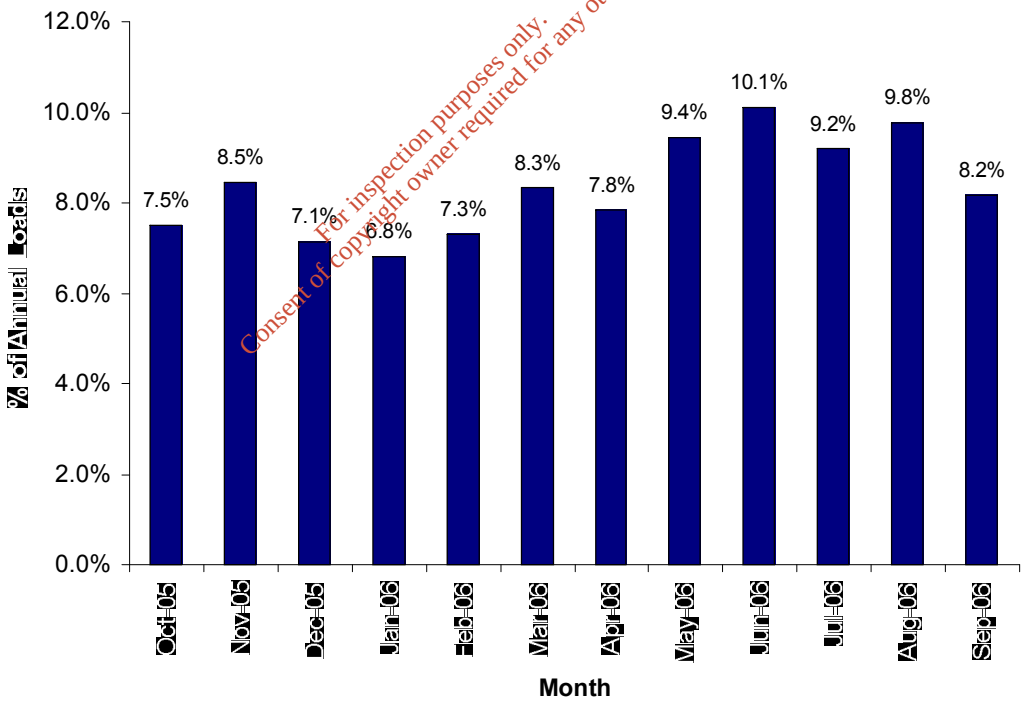

Figure 6.3 Annual Spread of HGV Activity at the existing Greenstar MRF

6.5.4 As can be seen from Figure 6.3 above, the busiest period for HGV traffic generation was recorded during the month of June 2006, during which in the region of 10.1% of the total annual traffic generation was recorded by the weighbridge. This is an established pattern throughout the waste industry and accords for the increase in building activity and consumption during summer months.

Upper Value Assessment – Year of Opening (60,000 tonnes per annum)

6.5.5 It is estimated that, of the 60,000 tonnes per annum accepted in the opening year, a maximum of 6,060 tonnes (10.1% of 60,000) would be processed in any single summer month. It is assumed that there would be 20 weekdays within this month.

6.5.6 Taking the above into consideration, Table 6.5 below outlines the upper value traffic generation assessment for delivery and removal of waste materials at the proposed development.

Waste Stream	Tonne Expected in Peak Month	Loading		Daily Traffic Generation (Trips)		
		Waste In (Tonnes)	Waste Out (Tonnes)	Delivery	Removal	Total
C & I and C & D	2,550	6.3	20	21	7	28
Dry Recyclables	1,210	8.0	20	8	3	11
Municipal Solid Waste	2,000	7.9	20	13	5	18
Other	300	5.5	20	3	1	4
Removal of Empty Skips					10	10
TOTAL	**6,060**			**45**	**26**	**71**

Table 6.5 Forecast Upper Value HGV Traffic Generation of Site (Opening)

Upper Value Assessment – Ultimate Capacity (90,000 tonnes per annum)

6.5.7 Of the proposed 90,000 tonnes of material which the facility will accept every year, when it is processing at its ultimate capacity, it is estimated that a maximum of 9,090 tonnes (10.1% of 90,000) could be processed in any single summer month.

6.5.8 Table 6.6 below outlines the upper value traffic generation for delivery and removal of waste materials at the proposed development when it is operating at full capacity.

Waste Stream	Tonne Expected in Peak Month	Loading		Daily Traffic Generation (Trips)		
		Waste In (Tonnes)	Waste Out (Tonnes)	Delivery	Removal	Total
C & I and C & D	3,820	6.3	20	31	10	41
Dry Recyclables	1,820	8.0	20	12	5	17
Municipal Solid Waste	3,000	7.9	20	19	8	27
Other	450	5.5	20	4	1	5
Removal of Empty Skips					15	15
TOTAL	**9,090**			**66**	**39**	**105**

Table 6.6 Forecast Upper Value HGV Traffic Generation of Site (Ultimate)

6.6 Estimate of Peak Hour for Development Generated Traffic

6.6.1 The daily HGV traffic profile at the existing Greenstar MRF is shown in Figure 6.4 below. This profile has been determined through analysis of the weighbridge data and graphically represents the percentage distribution of HGV traffic over the weighbridge during the course of a typical weekday.

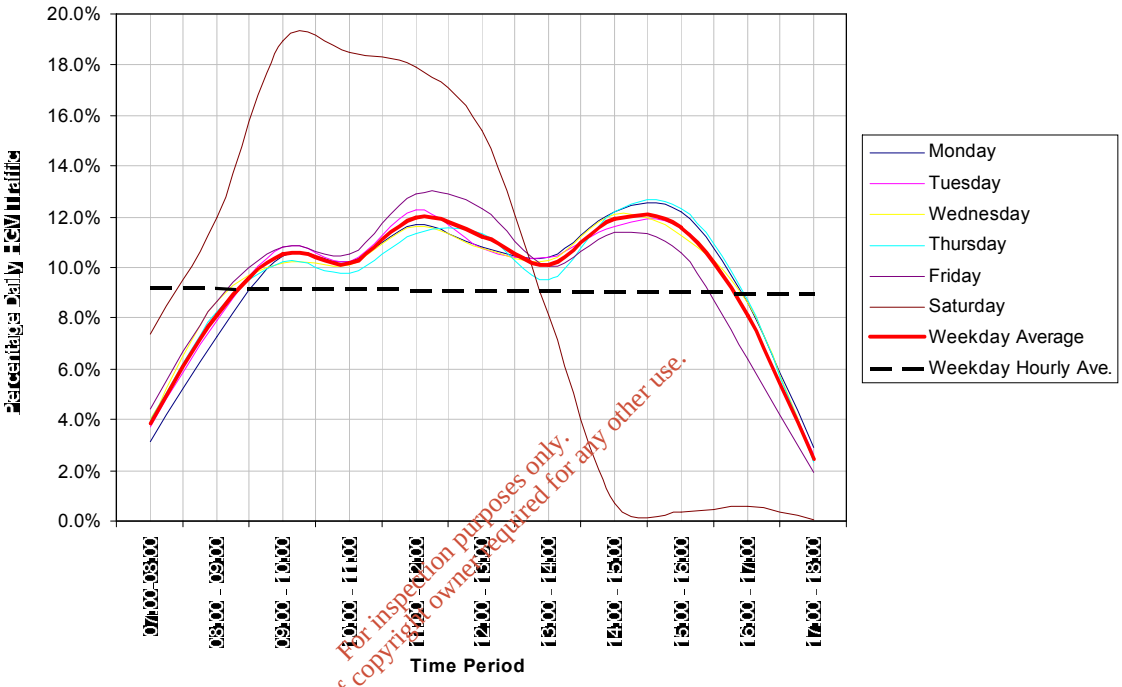

Figure 6.4 Daily Profile of HGV Traffic at Greenstar MRF

6.6.2 Figure 6.4 shows that the busiest period for HGV traffic at the existing MRF occurs from 1100-1200hrs and 1400-1500hrs, during which 12.0% of the total daily traffic generation was recorded. It is therefore expected that the period of maximum impact for HGV traffic could be manifest during these periods.

6.6.3 The likely peak hour traffic generation of the proposed facility has been calculated based upon the assumption that the daily profile of HGV at the proposed facility will be similar to that of the Greenstar MRF. The results of the calculations are summarised in Table 6.7 below.

Forecast Peak Hour Trips	Year of Opening (60,000t/year)		Ultimate Capacity (90,000t/year)	
	Average	Upper Bound	Average	Upper Bound
Delivery	4	6	6	8
Removal	3	3	4	5
TOTAL	**7**	**9**	**10**	**13**

Table 6.7 Forecast Peak Hour HGV Trips at the Proposed Development

6.6.4 In the assessments to follow the development peak hour of 1100-1200hrs and/or 1400-1500hrs has been assumed to coincide with the road network peak of 1700-1800hrs. This represents an extreme scenario, since all available data indicates that these two peak hours i.e. development and network, are not likely to occur at the same time.

6.6.5 This scenario, however likely or unlikely, is assessed in order to provide the Local Authority with sufficiently robust traffic data upon which to determine the traffic implications of the application with a high degree of surety or confidence. It can be seen from Figure 6.4 above nonetheless that contrary to the assumed assessment scenario, development generated traffic is likely to be at its lowest during the recognised network peak hour of 1700-1800hrs.

6.7 Staff and Sundry Traffic Generation

6.7.1 In addition to the above HGV traffic, clearly there will be other types of traffic generation at the site. This traffic will arise primarily from staff, customers, inspectors, sundry visitors etc.

6.7.2 From discussions with the Applicant it is expected that a maximum of 10No full time on-site staff and 35No drivers will be required upon opening at the proposed development. When the facility is operating at full capacity it has been assumed that 15No full time staff and 40No drivers would be required.

6.7.3 During the assessment network peak hour of 1700-1800hrs: upon opening the facility is assumed to generate in the region of 45No outbound private vehicle movements; whilst in the region of 55No outbound private vehicle movements have been assumed when the facility is operating at full capacity. We have also allowed for a marginal number of inbound private vehicle movements (5No) for both assessment scenarios.

6.8 Construction Related Traffic Attraction

6.8.1 It is not possible to provide a definitive programme for the construction of the proposed facility as this work will be tendered out and programmed by the successful contractor. Nonetheless, based on the experience of infrastructural projects of a similar scale an estimate has been made of the likely traffic movements associated with construction.

6.8.2 Table 6.8 below outlines the various stages in construction, together with an estimate of the duration of each stage and the expected number of deliveries.

Description of Activity	Duration (Months)	Number of HGV Deliveries		
		Monthly Average	Daily Average	TOTAL
Construction of MRF Building	6	40	2	240
Administration Building	3	20	1	60
Maintenance Building	2	20	1	40
Siteworks/Landscaping/Boundary	4	20	1	80
Entry/Exit Works	2	20	1	40
Vehicle Wash	2	20	1	40
Total Deliveries	**6**	**140**	**7**	**500**

Table 6.8 Forecast Construction Programme & Associated Traffic Generation

6.8.3 It is expected that on average there would be no more than 7 deliveries of construction materials per day to the site. It is expected that not more than one or two of these deliveries would occur in the network peak hour period.

6.8.4 In addition to the forecast number of deliveries there will be construction staff related trips. It is nonetheless expected that these trips are likely to occur outside the network peak in that contractors working hours are generally 0800 - 1800 hrs.

6.8.5 Since traffic generation during the construction period is forecast to be lower than when the facility is fully operational, we have not considered it worthwhile to undertake a separate assessment of the 'short term' traffic impact during construction.

7 CAPACITY ASSESSMENTS - ASSUMPTIONS

7.1 Assessment Scope

7.1.1 The assessment scope (links and junctions to be modelled for future year traffic levels) is largely dependent on the emerging road network in the vicinity of the site. The final alignments of the proposed N11 Enniscorthy bypass have not yet been approved. The precise layout of key links and junctions in the vicinity of the site is therefore unknown.

7.1.2 At any rate it is expected that the existing N11/N80 staggered junction will be upgraded to a roundabout junction providing links between the N11 eastern bypass, N11 western bypass and the N80. It is also assumed that a separate link will be provided between the N11 western bypass and the existing N11 alignment which runs into Enniscorthy.

7.1.3 It is not yet known however whether the junction of the northern part of the Old Dublin Road with the N11 will be preserved in advancing the bypass scheme. Following on from this capacity assessments have been carried out based on two potential scenarios. These scenarios are described below.

7.1.4 Scenario No.1

7.1.5 Scenario No.1 allows for the proposed roundabout junction of the N11 eastern bypass/N11 western bypass/N80 to be built; so as to preserve the existing junction of the N11 with the northern end of the Old Dublin Road; pending the opening of the bypass.

7.1.6 The traffic implications of Scenario No.1 are that practically all HGV traffic generated by the proposed development would use the junction of the N11 with the Old Dublin Road.

7.1.7 The assessment scope for Scenario No.1 will therefore concentrate on the performance of the proposed junction of the existing N11 with the proposed link to the N11 western bypass. A schematic of Scenario No.1 is shown in Figure 7.1 below (existing N11 shown green, Old Dublin Road shown black).

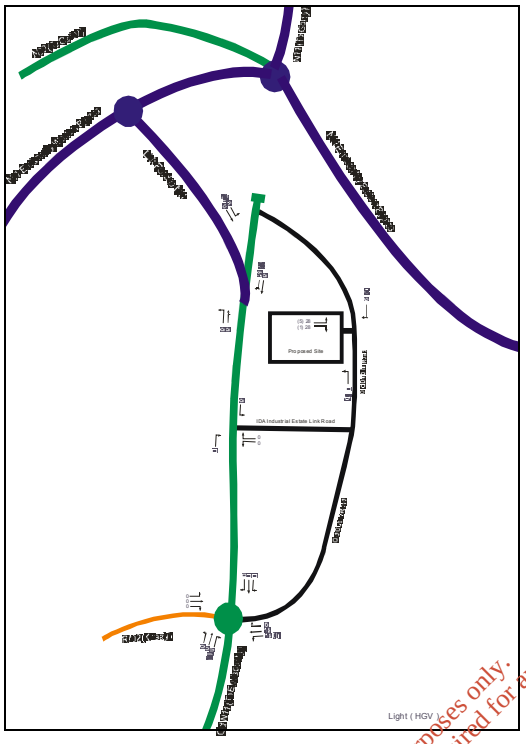

Figure 7.1 Schematic of Scenario No.1

7.1.8 Scenario No.2

7.1.9 Scenario No.2 allows for the closure of the existing junction of the Old Dublin Road and the N11 when the existing N11/N80 staggered crossroads is upgraded to a roundabout. This would result in practically all site generated HGV traffic using the junction of the N11 with the IDA Link Road.

7.1.10 The assessment scope for Scenario No.2 will concentrate on the performance of the existing junction of the N11 with the IDA Link Road. A schematic of Scenario No. 2 is shown in Figure 7.2 below.

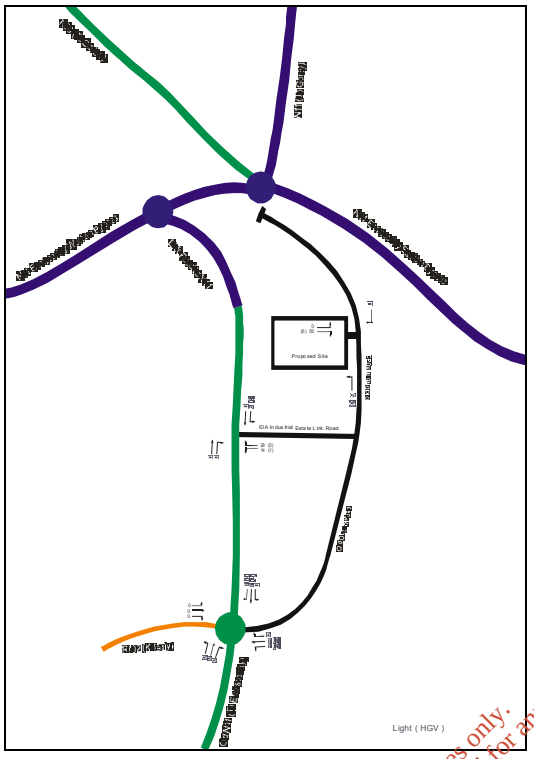

Figure 7.2 Schematic of Scenario No.2

7.2 Assessment Years

7.2.1 Regarding the choice of appropriate assessment years the NRA: Traffic and Transport Assessment Guidelines advise as follows;

> *"Timescale: Traffic volumes for opening year, opening +5 and opening year +15. These timescales are fairly standard and should be expected".*

7.2.2 It is assumed that the development could be open in 2008; as such this has been selected as the Opening Year.

7.3 Assessment Peak Hour

7.3.1 The capacity assessments examine future performance of the road network during the network peak hour of traffic activity. From the traffic surveys the evening peak hour (1700-1800hrs) has been identified as the network peak hour.

7.3.2 The assessments have nonetheless combined the peak hour for development generated traffic (mid morning or mid afternoon) with that of the network peak. This should represent an extreme 'worst case' scenario, which will provide the Local Authority with sufficiently robust traffic data upon which to determine the traffic implications of the application with high degree of surety or confidence.

7.4 Traffic Growth Rates

7.4.1 Development Traffic

7.4.2 The levels of traffic generation assumed at the site for the initial year of opening and when it is fully operational have already been outlined.

7.4.3 Once the facility reaches its processing capacity of 90,000 tonnes per annum, the levels of traffic generated by the site are not expected to grow any further over time.

7.4.4 It has been assumed in the analysis that the ultimate processing capacity of the facility will be reached in 2013, although based on current projections this is not likely to occur until approximately 2016. The assessment assumptions should ensure a robust assessment for the 2013 scenario.

7.4.5 Impact of Proposed N11 Enniscorthy Bypass

7.4.6 For the purposes of this assessment it has been assumed that the development could open in late 2008. The N11 Enniscorthy Bypass is currently programmed to be completed by 2013. Clearly there is a need therefore, to reflect the influence of the bypass in the capacity assessments of key links from 2013 onwards.

7.4.7 There are currently no projections of future traffic levels along the N11, nonetheless it is considered reasonable to assume that the existing N11, which runs through Enniscorthy town centre, might experience a 50% reduction in traffic when the bypass opens in 2013. This has been agreed with the Local Authority Area Engineer.

7.4.8 Network Traffic

7.4.9 The NRA document 'Future Traffic Forecasts 2002-2040' provides growth rates for traffic on National Primary, National Secondary and Non-national roads.

7.4.10 The growth rates used to derive Opening Year (2008), Opening Year +5 (2013) and Opening Year +15 (2023) from the surveyed 2007 flows are as follows:

- 2007-2008 (Opening Year) 1.04
- 2007-2013 (Opening Year +5) 1.23 (and reduce N11 by 50%)
- 2013-2023 (Opening Year +15) 1.30

These figures have been derived from growth rates for national primary roads.

7.4.11 Since traffic growth on the local roads network is mostly attributed to development in the area, it could be assumed that a portion of this network growth would account for the traffic generated by the proposed development.

7.5 Directional Split

7.5.1 The proposed development will serve the general regions between Rosslare and New Ross in south County Wexford; up to Baltinglass and across to Arklow in south County Wicklow.

7.5.2 For inbound HGV traffic it has been estimated that approximately: 35% of HGV traffic will arrive from the Wexford direction; 20% from Enniscorthy itself; 35% from the Gorey direction; and 10% from the Carlow direction.

7.5.3 For outbound HGV traffic it has been estimated that approximately 90% of HGV will travel towards Dublin with 10% travelling towards New Ross.

7.5.4 For private vehicular traffic which will be generated by the proposed development, a 50/50 split of traffic to/from the Enniscorthy and Dublin directions has been assumed.

7.5.5 The directional splits of site generated traffic before the opening of the bypass are shown in Figure 1 of Appendix B. When the bypass is open, the directional splits associated with Scenarios 1 and 2 are shown in Figures 2 and 3 respectively of Appendix B.

8 CAPACITY ASSESSMENTS - RESULTS

8.1 Overview

8.1.1 The capacity of any road network is directly related to the performance of the key links and junctions within that network. It is therefore considered worthwhile to model key junctions in the vicinity of the site in order to evaluate the general performance of the road network.

8.2 Methodology Used To Determine Capacity

8.2.1 As recommended by the NRA: Design Manual for Roads and Bridges (DMRB) and the Institution of Highways & Transportation (IHT), the Transport Research Laboratory (TRL), the computer modelling programs ARCADY (Assessment of Roundabout CApacity and DelaY) and PICADY (Priority Intersection Control And Delay) have been used to assess the performance of the local road network.

8.2.2 The output provides information for roads designers and planners with regards to capacity, queuing and delay. Generally a reserve capacity of 10-15% corresponding to a Ratio of Flow to Capacity (RFC) of 0.850-0.900 is accepted at junctions in urban areas and 0.75 in rural areas, however as with the other programs, this figure should not be considered in isolation and should be viewed together with queuing and delay information.

8.2.3 A copy of the full ARCADY and PICADY results can be made available upon request (Trafficwise Ltd. 01-8014009 Job Ref. No. 02801).

8.3 Assessment Scenarios

8.3.1 In the following the impact of development generated traffic on the operation of the local roads network has been assessed.

8.3.2 A series of traffic scenarios have been assessed both with and without the proposed development in place. These are referred to respectively as the 'do nothing' and 'do something' scenarios and are normally provided so that the incremental impact of development traffic can be evaluated against a baseline scenario.

8.3.3 'Do nothing' and 'do something' assessments of the assessment peak hour (1700-1800hrs) have been carried out for the Opening Year (2008), Opening Year +5 (2013) and Opening Year +15 (2023).

8.3.4 Appendix B provides the future year assessment flows for all assessment scenarios. The following network flow diagrams are included:

Proposed Development

Figure 1: Peak Hour Traffic Generation in the Opening Year (2008) [60,000 tonnes per annum]

Figure 2: Peak Hour Traffic Generation in the Opening Year+5 (2013) and Opening Year+10 (2023) [90,000 tonnes per annum]

Existing Traffic

Figure 3: Existing Surveyed Flows (2007) During the Peak Hour for the Road Network (1700-1800hrs)

Opening Year 2008

Figure 4: Peak Hour - Do Nothing

Figure 5: Peak Hour - Do Something [60,000 tonnes per annum]

Opening Year +5 2013 Scenario 1

Figure 6: Peak Hour - Do Nothing

Figure 7: Peak Hour - Do Something [90,000 tonnes per annum]

Opening Year +5 2013 Scenario 2

Figure 8: Peak Hour - Do Nothing

Figure 9: Peak Hour - Do Something [90,000 tonnes per annum]

Opening Year +15 2023 Scenario 1

Figure 10: Peak Hour - Do Nothing

Figure 11: Peak Hour - Do Something [90,000 tonnes per annum]

Opening Year +15 2023 Scenario 2

Figure 12: Peak Hour - Do Nothing

Figure 13: Peak Hour - Do Something [90,000 tonnes per annum]

8.4 Existing Performance of Junctions in the Vicinity of the Site

8.4.1 Table 8.1 below summarises the existing modelled performance of the key junctions, those being: the N11/N80 staggered cross roads; the N11/IDA Link Road; and the N11/R702/Industrial Estate roundabout.

Turning Movement/ Name of Roundabout Arm	Expected No. of Vehicles	Queuing Delay per vehicle (sec)	Maximum Queue (vehs)	Max RFC	Reserve Capacity
N11/N80/Old Dublin Road Staggered Cross Roads Peak Hour					
Turn Left off Old Dublin Rd	3	6.6	0	0.006	99.4%
Turn Right off Old Dublin Rd	50	7.8	0	0.128	87.2%
Turn Right off N80	158	13.2	1	0.464	53.6%
Turn Right into Old Dublin Rd	1	5.4	0	0.002	99.8%
N11/IDA Link Road Peak Hour					
Turn Left onto N11	60	6.0	0	0.110	89.0%
Turn Right onto N11	34	8.4	0	0.091	90.9%
N11/R702/Industrial Estate Roundabout Peak Hour					
Industrial Estate Arm	347	9.0	1	0.594	40.6%
N11 (Enniscorthy Side)	583	4.2	1	0.498	50.2%
R702 Kiltealy Arm	289	4.2	0	0.328	67.2%
N11 (Gorey Side)	803	6.6	2	0.701	29.9%

Table 8.1 Existing Performance of Key Junctions

8.4.2 It can be seen from Table 8.1 above that all three junctions of the N11 with the Old Dublin Road currently operate within capacity during the assessment peak hour period.

8.5 Performance of Junctions in 2008 (Year of Opening)

8.5.1 Assuming the facility becomes operational in 2008; all site generated traffic is expected to access the Old Dublin Road and then the site via either the N11/N80 staggered crossroad junction or the N11/R702 roundabout.

8.5.2 It is therefore assumed that traffic travelling to/from the north will use the N11/N80 staggered crossroads whereas all traffic travelling to/from the south will use the N11/R702 roundabout. It is assumed therefore that under this scenario no site traffic is expected to use the N11/IDA Link Road.

8.5.3 Table 8.2 below summarises the modelled performance of the N11/N80 staggered cross roads in 2008 upon the realisation of the proposed development.

Turning Movement	Expected No. of Vehicles	Queuing Delay per vehicle (sec)	Maximum Queue (vehs)	Max RFC	Reserve Capacity
2008 Assessment Peak Hour – Without Development					
Turn Left off Old Dublin Rd	4	6.6	0	0.008	99.2%
Turn Right off Old Dublin Rd	53	8.4	0	0.141	85.9%
Turn Right off N80	167	13.8	1	0.504	49.6%
Turn Right into Old Dublin Rd	2	5.4	0	0.004	99.6%
2008 Assessment Peak Hour – With Development					
Turn Left off Old Dublin Rd	4	6.6	0	0.009	99.1%
Turn Right off Old Dublin Rd	77	8.4	0	0.206	79.4%
Turn Right off N80	168	14.4	1	0.514	48.6%
Turn Right into Old Dublin Rd	2	5.4	0	0.004	99.6%

Table 8.2 Performance of the N11/N80 Staggered Cross Roads in 2008

8.5.4 Table 8.2 shows that the incremental impact of the proposed development upon the performance of the N11/N80 staggered cross roads is likely to be negligible.

8.5.5 Table 8.3 below summarises the expected performance of the N11/R702 roundabout in 2008 upon the realisation of the proposed development.

Turning Movement/ Name of Roundabout Arm	Expected No. of Vehicles	Queuing Delay per vehicle (sec)	Maximum Queue (vehs)	Max RFC	Reserve Capacity
2008 Assessment Peak Hour – Without Development					
Industrial Estate Arm	363	10.2	2	0.644	35.6%
N11 (Enniscorthy Side)	607	4.2	1	0.528	47.2%
R702 Kiltealy Arm	304	4.8	1	0.351	64.9%
N11 (Gorey Side)	838	7.2	3	0.735	26.5%
2008 Assessment Peak Hour – With Development					
Industrial Estate Arm	385	9.0	2	0.684	31.6%
N11 (Enniscorthy Side)	615	4.2	1	0.534	46.6%
R702 Kiltealy Arm	304	4.8	1	0.353	64.7%
N11 (Gorey Side)	838	7.2	3	0.738	26.2%

Table 8.3 Performance of the N11/R702 Roundabout in 2008

8.5.6 Table 8.3 above shows that the N11/R702 roundabout junction is not likely to be adversely affected as a result of traffic from the proposed development in the year of opening.

8.6 Performance of Junctions in 2013 (Opening Year +5)

8.6.1 The 2013 assessments allow for two potential scenarios catering for alternative layouts of the N11 Enniscorthy Bypass.

8.6.2 Scenario No.1

8.6.3 Scenario No.1 allows for the majority of HGV traffic accessing the site to do so via the junction of the N11 with the Old Dublin Road. In contrast private vehicular traffic is likely to be split almost 50/50 between the abovementioned junction and the N11/R702 Roundabout junction. The capacity assessments therefore concentrate on the performance of these two junctions. The layout and geometry of the future junction of the existing N11 with the proposed link to the N11 western bypass is assumed to be a standard T-junction with the minor road representing the N11 link to the Old Dublin Road.

8.6.4 Table 8.4 below summarises the expected performance of the junction of the existing N11 with the proposed link to the N11 western bypass for the assessment year of 2013.

Turning Movement	Expected No. of Vehicles	Queuing Delay per vehicle (sec)	Maximum Queue (vehs)	Max RFC	Reserve Capacity
2013 Assessment Peak Hour – Scenario No. 1 Without Development					
Turn off Old Dublin Rd	66	9.0	0	0.185	81.5%
Turn Right onto Old Dublin Rd	2	5.4	0	0.003	99.7%
2013 Assessment Peak Hour – Scenario No. 1 With Development					
Turn off Old Dublin Rd	123	10.8	1	0.337	66.3%
Turn Right onto Old Dublin Rd	10	8.4	0	0.026	97.4%

Table 8.4 Performance of the N11/ Link to N11 Western Bypass in 2013 (Scenario No.1)

8.6.5 Table 8.5 below summarises the modelled expected performance of the existing N11/R702 Roundabout junction for the assessment year of 2013.

Name of Roundabout Arm	Expected No. of Vehicles	Queuing Delay per vehicle (sec)	Maximum Queue (vehs)	Max RFC	Reserve Capacity
2013 Assessment Peak Hour – Scenario No.1 Without Development					
Industrial Estate Arm	399	7.8	1	0.570	43.0%
N11 (Enniscorthy Side)	513	3.6	1	0.422	57.8%
R702 Kiltealy Arm	266	4.2	0	0.280	72.0%
N11 (Gorey Side)	589	4.8	1	0.527	47.3%
2013 Assessment Peak Hour – Scenario No.1 With Development					
Industrial Estate Arm	422	7.8	1	0.603	39.7%
N11 (Enniscorthy Side)	513	3.6	1	0.425	57.5%
R702 Kiltealy Arm	266	4.2	0	0.280	72.0%
N11 (Gorey Side)	589	4.8	1	0.527	47.3%

Table 8.5 Performance of the N11/R702 Roundabout in 2013 (Scenario No.1)

8.6.6 Tables 8.4 and 8.5 above show that the junctions in the vicinity of the site will not be adversely impacted upon as a result of the proposed development for the Scenario No.1 future roads layout.

8.6.7 Scenario No.2

8.6.8 Scenario No.2 involves practically all HGV traffic accessing the site via the existing junction of the N11 with the IDA Link Road, as a result of the closure of the junction of the N11 and the Old Dublin Road. Similar to Scenario No.1, private vehicular traffic is likely to be split almost 50/50 between the IDA Link Road and the N11/R702 Roundabout junction.

8.6.9 Table 8.6 below summarises the forecast performance of the IDA Link Road junction with the N11 for the assessment year of 2013.

Turning Movement	Expected No. of Vehicles	Queuing Delay per vehicle (sec)	Maximum Queue (vehs)	Max RFC	Reserve Capacity
2013 Assessment Peak Hour – Scenario No. 2 Without Development					
Turn Left onto N11	74	6.6	0	0.145	85.5%
Turn Right onto N11	109	7.8	0	0.235	76.5%
2013 Assessment Peak Hour – Scenario No. 2 With Development					
Turn Left onto N11	101	6.6	0	0.199	80.1%
Turn Right onto N11	139	8.4	0	0.312	68.8%

Table 8.6 Performance of the N11/IDA Link Road in 2013 (Scenario No.2)

8.6.10 Table 8.7 below summarises the expected performance of the existing N11/R702 Roundabout junction for the assessment year of 2013.

Name of Roundabout Arm	Expected No. of Vehicles	Queuing Delay per vehicle (sec)	Maximum Queue (vehs)	Max RFC	Reserve Capacity
2013 Assessment Peak Hour – Scenario No.2 Without Development					
Industrial Estate Arm	399	7.8	1	0.570	43.0%
N11 (Enniscorthy Side)	513	3.6	1	0.422	57.8%
R702 Kiltealy Arm	266	4.2	0	0.280	72.0%
N11 (Gorey Side)	589	4.8	1	0.527	47.3%
2013 Assessment Peak Hour – Scenario No.2 With Development					
Industrial Estate Arm	412	7.8	1	0.595	40.5%
N11 (Enniscorthy Side)	514	3.6	1	0.426	57.4%
R702 Kiltealy Arm	266	4.2	0	0.280	72.0%
N11 (Gorey Side)	603	4.8	1	0.540	46.0%

Table 8.7 Performance of the N11/R702 Roundabout in 2013 (Scenario No.2)

8.6.11 Tables 8.6 and 8.7 above show that the junctions in the vicinity of the site will not be adversely affected as a result of the proposed development for the Scenario No.2 future roads layout.

8.7 Performance of Junctions in 2023 (Opening Year +15)

8.7.1 Scenario No.1

8.7.2 Table 8.8 below summarises the expected performance of the junction of the existing N11 with the proposed link to the N11 western bypass for the assessment year of 2023.

Turning Movement	Expected No. of Vehicles	Queuing Delay per vehicle (sec)	Maximum Queue (vehs)	Max RFC	Reserve Capacity
2023 Assessment Peak Hour – Scenario No. 1 Without Development					
Turn Left onto N11	87	11.4	0	0.286	71.4%
Turn Right onto N11	3	6.0	0	0.006	99.4%
2023 Assessment Peak Hour – Scenario No. 1 With Development					
Turn Left onto N11	144	13.8	1	0.465	53.5%
Turn Right onto N11	11	8.4	0	0.030	97.0%

Table 8.8 Performance of the N11/Proposed Link to N11 Western Bypass in 2023 (Scenario No.1)

8.7.3 Table 8.9 below summarises the expected performance of the existing N11/R702 Roundabout junction for the assessment year of 2023.

Name of Roundabout Arm	Expected No. of Vehicles	Queuing Delay per vehicle (sec)	Maximum Queue (vehs)	Max RFC	Reserve Capacity
2023 Assessment Peak Hour – Scenario No.1 Without Development					
Industrial Estate Arm	522	18.6	7	**0.879**	12.1%
N11 (Enniscorthy Side)	670	5.4	2	0.608	39.2%
R702 Kiltealy Arm	347	4.8	1	0.408	59.2%
N11 (Gorey Side)	768	7.2	2	0.717	28.3%
2023 Assessment Peak Hour – Scenario No.1 With Development					
Industrial Estate Arm	548	22.2	9	**0.924**	7.6%
N11 (Enniscorthy Side)	671	5.4	2	0.613	28.7%
R702 Kiltealy Arm	347	4.8	1	0.409	59.1%
N11 (Gorey Side)	768	7.2	2	0.717	28.3%

Table 8.9 Performance of the N11/R702 Roundabout in 2023 (Scenario No.1)

8.7.4 Table 8.9 above shows that the existing N11/R702 roundabout junction may reach capacity in the 2023 assessment scenario. This is forecast as likely to occur even without the proposed development, as can be seen from the 'do nothing' scenario.

8.7.5 The proposed development is considered not to contribute significantly to this phenomenon in that its' incremental impact results in a net 4% increase in RFC.

8.7.6 Scenario No.2

8.7.7 Table 8.10 below summarises the expected performance of the junction of the existing N11 with the IDA Link Road for the assessment year of 2023.

Turning Movement	Expected No. of Vehicles	Queuing Delay per vehicle (sec)	Maximum Queue (vehs)	Max RFC	Reserve Capacity
2023 Assessment Peak Hour – Scenario No. 2 Without Development					
Turn Left onto N11	97	7.2	0	0.205	79.5%
Turn Right onto N11	143	9.6	1	0.343	65.7%
2023 Assessment Peak Hour – Scenario No. 2 With Development					
Turn Left onto N11	124	7.8	0	0.272	72.8%
Turn Right onto N11	173	10.8	1	0.423	57.7%

Table 8.10 Performance of the N11/IDA Link Road in 2023 (Scenario No.2)

8.7.8 Table 8.11 below summarises the expected performance of the existing N11/R702 Roundabout junction for the assessment year of 2023.

Name of Roundabout Arm	Expected No. of Vehicles	Queuing Delay per vehicle (sec)	Maximum Queue (vehs)	Max RFC	Reserve Capacity
2023 Assessment Peak Hour – Scenario No.1 Without Development					
Industrial Estate Arm	522	18.6	7	**0.879**	12.1%
N11 (Enniscorthy Side)	670	5.4	2	0.608	39.2%
R702 Kiltealy Arm	347	4.8	1	0.408	59.2%
N11 (Gorey Side)	768	7.2	2	0.717	28.3%
2023 Assessment Peak Hour – Scenario No.1 With Development					
Industrial Estate Arm	561	28.8	14	**0.968**	3.2%
N11 (Enniscorthy Side)	671	5.4	2	0.616	28.4%
R702 Kiltealy Arm	347	4.8	1	0.408	59.2%
N11 (Gorey Side)	791	7.8	3	0.739	26.1%

Table 8.11 Performance of the N11/R702 Roundabout in 2023 (Scenario No.2)

8.7.9 Table 8.11 above shows that the roundabout junction may near capacity in 2023; nonetheless this is likely to occur regardless of whether the facility opens or not. The incremental impact of the proposed facility is to increase the RFC from a 'do nothing' value of 0.879 to a 'do something' value of 0.968. The forecast average delay per vehicle of nearly 29 seconds further indicates that the junction is reaching capacity, although queuing of 14 vehicles is not considered excessive.

8.8 Summary of Capacity Assessment Results

8.8.1 Taking the proposed infrastructural improvements into account the results show that the local road network should function satisfactorily up to the assessment year of 2013 and beyond. It is nonetheless forecast that the capacity of the existing N11/R702/Old Dublin Road Roundabout may eventually and perhaps inevitably be reached in the year of 2023. This is likely to occur, not as a result of the proposed development, but rather due to the realisation of other potential future developments in the local vicinity.

8.8.2 The results are not intended to highlight the failure of the local road network to accommodate potential future developments, rather they can be used a tool to identify the actual impact associated with the proposed development, when viewed in context with potential future developments. The capacity of the roundabouts has been shown to be exceeded in 2023, nonetheless this may not actually be the case since the assessments contained herein are very robust for the following reasons:

- A robust traffic growth rate year by year for all road links in line with that of national primary roads was adopted.
- The assumption that the development peak would occur at the same time as the network peak.
- A high proportion of the traffic which will be generated by the site is already on the local road network as it travels along the N11 to and from Gorey and Wexford town.
- An assumed 50% reduction in traffic as a result of the Bypass (in reality traffic could be reduced by up to 70%).
- No account has been taken of likely traffic reductions as a result of future improvements in public transport.