

1 INTRODUCTION

1.1 GENERAL

MCR Environmental will lease two No. high bay industrial units within Premier Business Park Ballycoolin Road, Cappoge, Dublin 11 (Refer to Figure 1.1 - Regional Site Location) for the phased development of a Materials Recovery Facility. The business park is being developed by Harcourt Developments over the next year and has received full planning permission (Ref No. F05A/1363) in May 2006. This Planning Application consists of six No. high-bay industrial units and 71 No. small enterprise units.

A Planning Application is required due to the change in use of the proposed industrial units from warehousing to a Materials Recovery Facility.

1.2 SITE LOCATION & BACKGROUND

The site of the proposed Materials Recovery Facility is located approximately 2 kilometres (km) to the northeast of Blanchardstown and approximately 2.5km west of Finglas, in Dublin. The M50 forms the southern boundary of the site. The Ballycoolin Road forms the northern boundary to the Premier Business Park development site. The surrounding area is made of up commercial buildings, warehouses and office campuses. The Premier Business Park will be accessed off the roundabout at the entrance to Stadium Industrial Estate along the Ballycoolin Road.

1.3 PLANNING BACKGROUND

Premier Business Park received Planning Permission (Ref No. F05A/1363) in May 2006 and development of this is currently under construction. The proposed development site is located in an area that is zoned for industry and large parts of the surrounding area are made up of large industrial estates, business parks and other commercial buildings with attendant road networks.

1.4 COMPANY BACKGROUND

MCR Environmental was set up in 2006 as a trading name of MCR Personnel Ltd, which forms part of the MCR Group of companies comprising the following:

- MCR Consortium Ltd.
- MCR Steelworks Ltd.
- MCR Personnel Ltd.

- MCR Cleaning Ltd.
- MCR Environmental Ltd.
- MCR Security Ltd.

The Group is based in 1-3 The Capel Building, Dublin 7. It has a projected annual turnover for 2007 of approximately €80 million and employs approximately 2000 people. The core business for the Group is recruitment for the construction sector.

The recruitment business was set up in 1996, by the Group's Managing Director, Mr. Douglas Taylor. The other companies in the Group were set up recently as the Group diversifies from its core business. These companies provide support services to the construction sector as their core business, but each is expanding into other sectors.

MCR Environmental began collecting waste in May 2007. The company currently has a fleet of 5 waste collection vehicles and intends to grow this fleet exponentially over the next 2 years. The current fleet consists of hook loaders and skip lorries, designed to collect construction and demolition (C&D) wastes. The company intends to purchase a range of vehicle types to facilitate the collection of commercial and industrial (C&I) wastes in addition to the C&D wastes.

Four waste collection permits have been issued to MCR:

- Dublin Region (CP D 947/7)
- County Wicklow (WCP/WW/493/07A)
- County Kildare (WCP/KE/445C/07B)
- North- East Region (Meath, Louth, Cavan, Monaghan) (WCP MH/2007/53/B)

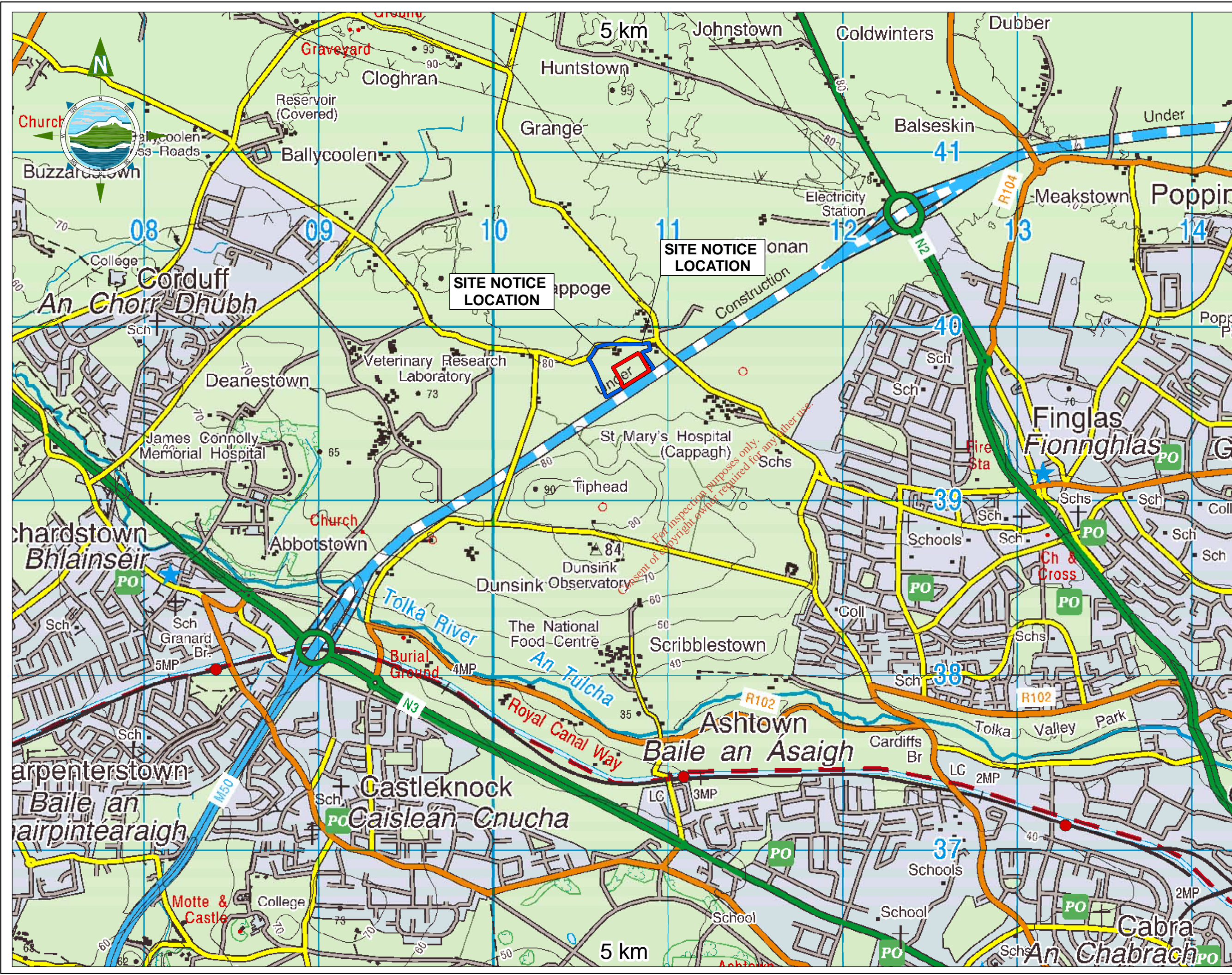
The company has applied for a waste collection permit from the Midlands Region and this permit is expected to issue in the coming weeks.

The company intends to develop a number of facilities in addition to the proposed Materials Recovery Facility. These will include a Mechanical Biological Treatment plant and a number of regional recycling facilities that will allow the company provide a comprehensive and national recycling service. The company is confident that it can achieve the following targets over the next 2 to 3 years

- 90% recovery rate for C&D wastes
- 70% recovery rate for C&I wastes
- 60% recovery rate for household wastes

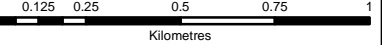
These targets are ahead of national and EU targets and will be achieved by investment in the most appropriate and advanced waste recovery technologies and operation of these technologies with an appropriate economy of scale.

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LEGEND

- Site Activity Boundary
- Premier Business Park



- NOTES**
1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
 2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
 3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
 4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Issue	Date	Description	By	Chkd.
A	26-11-07	Issued	A.G.	M.H.

Client: **MCR ENVIRONMENTAL**

Project: **BALLYCOOLIN ROAD MATERIALS RECOVERY FACILITY**

Title: **REGIONAL SITE LOCATION MAP**

Scale @ A3: **1:20,000**

Prepared by: **A.Gruschka** Checked: **M.Hogan** Date: **Nov 2007**

Project Director: **D. Grehan**

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FIGURE 1.1 A

1.5 EIS PROCEDURES

The consequences of any major development project are generally presented in the form of an Environmental Impact Statement (EIS). The EIS contains information on the scale and nature of the proposed development, a description of the existing environment, impact assessment of the proposed development and mitigation measures to mitigate and/or reduce the impact on the receiving environment.

This EIS covers Phases 1 and 2 of the development. Planning is currently being sought for Phase 1 only. However, MCR Environmental are applying for a Waste Licence Application for Phase 1 and 2. The planning permission for Phase 2 will be applied for at a later date and is subjected to scoping with An Bord Pleanála under the terms of the Strategic Infrastructure Act.

The structure and content of the EIS has been based on the following documents, as published by the Environmental Protection Agency (EPA).

- Advice Notes on Current Practice in the preparation of Environmental Impact Statements (September 2003).
- Guidelines on the information to be contained in Environmental Impact Statements. (2002).

The overall EIS is arranged in three volumes, as follows:

- Volume I: Non-Technical Summary;
- Volume II: Main Environmental Impact Statement; and
- Volume III: Appendices.

Volume I: Non-Technical Summary

This document provides an overview and summary of the main EIS using non-technical terminology and detail. It is a means for non-professionals to review the information included in the main EIS document. It is a stand-alone document and should offer a clear and concise summary of the existing environment, characteristics of the development and mitigation measures for the development.

Volume II: Main Environmental Impact Statement;

To allow for ease of presentation and consistency when considering the various elements of the environment, a systematic structure will be adopted for the main body of the statement.

This structure is known as a “Grouped Format”. The structure is used for each particular environmental aspect, as given below.

Chapter 1 of the Main EIS will provide an introduction and a brief background of the project and the legislative requirements under which the document is prepared. It describes the EIS Consultation and Scoping procedures, the structure of the EIS, the study team and contributors of the Environmental Impact Assessment. It also examines Alternatives to this development.

Chapter 2 will provide a detailed description of the existing site and the operation details.

Chapter 3 provides details of the examination of alternatives to the proposed development.

Chapter 4 provides details of the planning context of the proposed development.

Chapters 5 to Chapter 15 inclusive will deal with the following: -

- Chapter 5 - Socio- Economic
- Chapter 6 - Ecology
- Chapter 7 - Soils, Geology & Hydrogeology
- Chapter 8 - Water
- Chapter 9 - Climate
- Chapter 10 - Air & Odour
- Chapter 11 - Noise & Vibration
- Chapter 12 - Traffic
- Chapter 13 - Landscape & Visual Assessment
- Chapter 14 - Cultural & Archaeological Heritage
- Chapter 15 - Interaction of the foregoing

Each of the environmental criteria will be prepared using the following heading: -

- Introduction
- Existing Environment

- Potential Impacts
- Mitigation Measures

Introduction

This section will include background to the assessment and will describe the study methodology in carrying out the assessment.

Existing Environment

In describing the receiving environment, an assessment is made of the context into which the proposed development will be located. This takes account of any other proposed and existing developments.

Potential Impacts

This section allows for a description of the specific, direct and indirect impacts, which the proposed development may have. This is done with reference to Existing Environment and Characteristics of the Development, while also referring to the magnitude, duration, consequences and significance of the development during the operational phases.

Mitigation Measures

This includes a description of any remedial, or mitigation measures that are either practicable or reasonable having regard to the potential impacts.

Volume III: Appendices

All supporting documentation and references, referred to in the EIS text body (Volume II) are included in this volume.

1.6 OVERVIEW OF THE STRUCTURE OF AN EIS

The minimum information that must be contained in an EIS is specified in Part X of the Planning and Development Act, 2000 and Schedule 6 of the Planning and Development Regulations, 2001. The structure and content of this EIS has been based on the legislative requirements as set out in Part X of the Planning and Development Act, 2000 and Part 10 of the Planning and Development Regulations, 2001 and the guidance documents by the Environmental Protection Agency, namely:

- Advice Notes on Current Practice in the preparation of Environmental Impact Statements (September 2003).
- Guidelines on the information to be contained in Environmental Impact Statements. (2002).

1.7 SCOPING OF THE ENVIRONMENTAL IMPACT STATEMENT

MCR Environmental met with the Planning Authority in Fingal County Council to discuss the scope of the Environmental Impact Statement on 25th October 2007. Correspondence was also sent to the Planning Authority outlining the proposed scope of this report.

1.8 CONSULTATION

The consultation process consisted of consultation with competent bodies, statutory bodies and interested parties. A Copy of correspondence received from Consultees is included in Appendix 1.1.

Table 1.1 overleaf lists the various parties consulted to date. -

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Table 1-1 List of Consultees contacted

Consultee	Date of Written Correspondence	Response Date
An Taisce	3 rd August 2007	
Head of Services, Enterprise & Environment	3 rd August 2007	
Eastern Regional Fisheries Board	3 rd August 2007	
Environmental Protection Agency	3 rd August 2007	
Department of Agriculture	3 rd August 2007	13 th August 2007
Geological Survey of Ireland	3 rd August 2007	19 th September 2007
The Heritage Council	3 rd August 2007	
Fingal County Council – Services, Enterprise & Environment Department	3 rd August 2007	17 th August 2007
Fingal County Council – Transportation Department	3 rd August 2007	9 th August 2007
The National Roads Authority	3 rd August 2007	14 th September 2007
Development Applications Section, The Heritage and Planning Division of The Department of the Environment, Heritage and Local Government	3 rd August 2007	10 th September 2007
Teagasc	3 rd August 2007	
Development Applications Unit	3 rd August 2007	
Irish Wildlife Trust	3 rd August 2007	
Railway Procurement Agency	3 rd August 2007	20 th August 2007

1.9 TECHNICAL DIFFICULTIES AND AVAILABILITY OF DATA

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

1.10 STUDY TEAM AND CONTRIBUTORS TO THE REPORT

A team of Consultants co-ordinated by TOBIN Consulting Engineers, has prepared this Environmental Impact Statement. The relevant inputs of the various members of the Study Team are listed in Table 1.2 below.

Table 1-2 List of consultants involved in the preparation of the Environmental Impact Statement

Team Member	Inputs
TOBIN Consulting Engineers	Project Direction, Project Management, Production, Evaluation and Reporting. Planning Context, Alternatives, Human Beings / Socio Economic, Flora & Fauna, Soil, Geology and Hydrogeology, Water, Climate, Dust Monitoring, Noise & Vibration, Cultural Heritage
Clifton Scannell Emerson Associates	Traffic Impact Assessment
Scott Wilson	Landscape and Visual Assessment
Odour Monitoring Ireland	Air Monitoring and Odour Assessment
Carew Kelly Architects	Planning Drawings

2 DESCRIPTION OF THE EXISTING ENVIRONMENT AND PROPOSED DEVELOPMENT

2.1 DESCRIPTION OF THE EXISTING ENVIRONMENT

2.1.1 The Site

The proposed development is located in the townland of Cappoge, Dublin 11. The site will form part of the Premier Business Park and is located approximately 2km to the northeast of Blanchardstown and approximately 2.5km west of Finglas. The M50 forms the southern boundary of the site while the Ballycoolin Road forms the northern boundary of the Premier Business Park. Premier Business Park will be accessed off the roundabout at the entrance to Stadium Industrial Estate along the Ballycoolin Road. Large parts of the surrounding area are made up of large industrial estates, business parks and other commercial buildings with attendant road networks.

The planning boundary for the proposed development site comprises an area of approximately 1.16 hectares (ha), within a total landholding for the Premier Business Park of approximately 7.88 ha. Phase 1 and Phase 2 will take place at Block L (Refer to Planning Drawing No. 4039- 2002 - Site Layout Plan) and Phase 3 will take place at Block K.

The site is surrounded by large industrial estates, business parks and other commercial buildings with attendant road networks. The proposed development site does not lie within or adjacent to any area that has been designated for nature conservation under Irish or European legislation, the nearest being the Royal Canal pNHA, which lies some 2.1km to the south. The land to which this application applies has received full planning permission (Ref No. F05A/1363). The development of Premier Business Park is currently under construction including Warehouse Block L. The proposed Materials Recovery Facility will not involve any change to the physical environment i.e. no additional buildings or major infrastructural changes will be required.

Some minor alterations to the site infrastructure are proposed and these materials changes will be sought in a separate planning application lodged by Airscape Limited.

2.1.2 Application area

Premier Businesses Park has already received full planning permission (Ref No. F05A/1363), in May 2006. The Planning Application consists of six No. industrial high- bay units (approximately 2500m² each) and 71 No. small enterprise units. Planning Permission

is being sought from Fingal County Council due to a change in use at the proposed development.

Construction activities on site related to the change of use will be restricted to setting up processing equipment and materials handling and storage facilities. Ancillary facilities such as weighbridge infrastructure, loading platform and bunded diesel tanks will be constructed in the yard area to the back of the site.

The construction of this ancillary infrastructure will consist of relatively minor works in the context of the already approved major construction works. No significant impacts are expected from this minor construction activity in the context of the overall construction activity.

2.2 THE OPERATIONAL PHASE

The following section describes the Operational Phase at the Materials Recovery Facility. The Materials Recovery Facility will be operated by MCR Environmental. Phase 1 and Phase 2 will take place at Block L (Refer to Planning Drawing No. 4039- 2002 - Site Layout Plan) and Phase 3 will take place at Block K. During Phase 2, Block K will be used solely for the storage of materials, trucks and skips. Phase 3 will involve further use of Block K, as yet to be determined, and therefore is not covered by this EIS.

2.2.1 Working Hours

The facility will operate 24 hours per day, seven days per week. Processing will be carried out in two shifts per day with time allowed for cleaning and maintenance. Shifts will include from 5am to 3pm and 3pm to 1am. Office hours will be 8am to 6pm.

2.2.2 Employment

The site will employ approximately 72 staff in Phase 1 and approximately 179 staff by Phase 2 as shown in Table 2.1 below. The attached organisational chart (Refer to Figure 2.2 – Indicative Workforce) is indicative of the roles that will be filled.

Table 2-1 Number of employees

			Operations		Business		Total
		Shift	Factory	Office	Office	Drivers	
Phase 1	Morning	5am-3pm	15	5		15	
	Day	8am-6pm			8		
	Night	3pm-1am	12	1	1	15	
	Subtotal 1		27	6	9	30	72
Phase 2	Morning	5am-3pm	36	7		40	
	Day	8am-6pm			20		
	Night	3pm-1am	32	2	2	40	
	Subtotal 2		68	9	22	80	179

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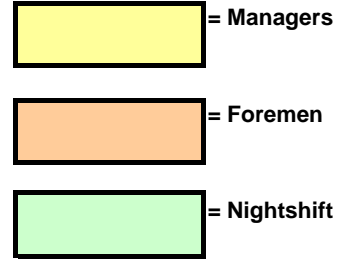


Figure 2.1 Indicative Workforce Phase 2

2.2.3 Site Security Arrangements/ Site Access

The site will be enclosed by a 2.4 metre (m) high pallisade fence with secure gates. MCR Security, a sister company of MCR Environmental will provide site security when the site is closed. A system of surveillance cameras will be installed around the site and these will be monitored from the control room at all times.

2.2.4 Waste Types and Volumes

Initially (Phase 1), the site is expected to handle approximately 95,000 TPA. This will consist of approximately 80,000 TPA of construction and demolition (C&D) waste and 15,000 TPA of commercial and industrial (C&I) waste.

Phase 3 will involve intensification to 300,000 TPA. This will consist of approximately 200,000 TPA of C&D waste and approximately 100,000 TPA of C&I waste.

2.2.5 Waste Acceptance Procedures

The waste will be delivered to the site by MCR vehicles and third parties with the appropriate waste collection permits. All vehicles will be enclosed, covered or appropriately netted. Third parties without the appropriate waste collection permits or with uncovered vehicles will be refused entry. MCR drivers that breach procedures will be reprimanded.

Entry to the facility is via a one-way system at the Materials Recovery Facility. Vehicles will approach the weighbridge via an on-site queuing lane that can accommodate between 4 and 10 vehicles, depending on the vehicle types. The entrance road also has a by-pass lane that will allow maintenance vehicles, fuel tankers, emergency service vehicles, etc, to access the facility without delay. The weighbridge operator will check the waste using a camera situated above the vehicle where possible. Any non-conforming loads will be rejected at this point.

After de-netting or the removal of covers, vehicles will unload inside the Materials Recovery Facility by tipping onto the concrete floor. The waste will be examined at this point by a waste checker. The waste checker will direct the loading shovel driver or bobcat driver to consign material as follows:

- Non-conforming items will be removed (by bobcat or by hand) to the quarantine area where they will be stored in an appropriate manner prior to removal to a suitably licensed waste disposal or recovery site. Quarantined liquids, sludges, batteries, etc. will be stored on bunded pallets to prevent spillage of potentially polluting substances.

- Odorous waste will be directed to a bay where it will be contained by a retractable tarpaulin cover and the odorous air treated with a localised activated carbon treatment system. This material will not be processed and will be removed within 24 hours to a licensed landfill or other suitable licensed site, such as a Mechanical Biological Treatment (MBT) plant.
- Construction and demolition (C&D) waste is expected to be rich in clay, stone, wood and metals and will be directed to the C&D waste processing line which is described in detail below.
- Commercial and industrial (C&I) waste is expected to be rich in cardboard, wood and plastics and this material will be directed to the C&I waste processing line, which is also described in detail below.
- Bulky municipal waste (household and commercial skips) will be examined for content and directed to the most suitable line.
- Skips exclusively containing soil & stone, wood or metal will be directed to designated bays rather than mixed with other wastes.
- Dry recyclables will be directed to the C&I waste processing line.

2.2.6 Waste Handling

Waste will be processed in two separate processing lines described in the following paragraphs and shown on Figure 2.2 – Waste Processes. The processes are shown as a flow chart on Figure 2.3 – Process Flow Diagram.

Control Room

A control room will be incorporated into the northeast corner (Block L) of the materials recovery building at a high level. This position will be manned at all times during operation of the facility. The controller will have a view of operations directly through windows and through a series of strategically placed cameras. The controller will have appropriate computer software that will give him (or her) direct control of all machinery and all conveyor belts. Emergency stop buttons, strategically placed around the processing lines will be able to over-ride the control room in the event of an emergency.

C&D Waste Processing Line

A Grab machine will be used to remove large items from the construction and demolition waste prior to processing. This is likely to include recyclables such as metal and wood as well as non-recyclable items such as mattresses and carpets. These bulky objects will be stored in pre-sort bays near the entrance to the waste recovery building.

The Grab machine will then feed the material to a hopper which will feed via an incline conveyor to a pre-sort picking platform. Plasterboard, polystyrene and glass will be hand-picked by personnel that will be issued with appropriate personal protection equipment to ensure their health and safety. Removing these materials will protect physical and chemical quality of the clay fines produced later in the process. These pickers will also watch for items with the potential to damage the shredder that may have been missed by the Grab operator.

The material will then pass into the shredder where it will be broken down to fractions that will be less than 100mm in diameter. From the shredder, the material will be raised to a high level (approximately 11m) using a slat conveyor (40 degrees).

The material will then pass under an in-line industrial magnet where ferrous metals will be removed to a short conveyor belt where a manual picker will control quality by removing contaminants. The ferrous metals will fall from the short conveyor to a bay or an appropriate container on the factory floor.

The material will then pass into a rotating drum (trommel) screen where the >40mm fraction will be separated from the <40mm fraction. The finer fraction will be further processed by passing over a flip-flop screen. This 8mm screen will allow soil particles to pass through as a product.

The 8mm to 40mm fraction will pass over the flip-flop screen and be further treated by a single drum separator (SDS) that will use an air classification technique to separate the material by density. The heavy fraction from the windshifter will consist of a stone product, whereas the light fraction will consist of residual waste to be sent off site to a licensed disposal facility.

The > 40mm fraction emanating from the end of the Trommel screen will be conveyed into a Double Drum Separator (DDS). This machine will use an air classification technique to separate three fractions based on their density. The heavy fraction will emerge first and will consist of stone product. The stone will be monitored for quality by a manual picker as it is conveyed to feed directly into trailers. When trailers are full or unavailable the stone will fall into a storage bay on the factory floor from where it will be later fed into trailers using a loading shovel.

The medium density (mid-heavy) fraction will emerge second from the DDS and will consist of wood, hard plastics, non-ferrous metals, cardboard, etc. This material will be conveyed to a ballistic separator that will separate by shape, density and hardness. The materials will be thrown onto the ballistic separator, which comprises of a number of paddle boards attached to two cam shafts. Materials have a range of trajectories when impacted by paddle boards in this way.

Flat low density materials such as cardboard, plastic and magazines will be conveyed up the machine and be separated from heavier 3-dimensional objects such as chunks of wood, which will roll down the machine. In addition, the paddle boards will be perforated allowing

finer to drop through and be separated as a third fraction. These fines will primarily consist of clay that had been attached to the wood fraction but is released by the action of the paddle boards in the ballistic separator. The fines will be examined prior to a decision on their suitability for recovery or disposal.

The wood emerging from the ballistic separator will be checked for quality control by a number of hand pickers and the clean wood will be conveyed to a bay on the floor. The lighter flatter fraction will merge with the light fraction from the DDS and be conveyed to a picking station for further segregation.

C&I Waste Processing Line

The C&I waste will be processed on a separate line to the C&D waste. The material will be fed into a Cascade Screener (or similar) that will vibrate on springs to agitate the material and present it evenly on a conveyor. The screen will allow fines of <75mm through to a lower belt and these will pass under an industrial magnet where the ferrous metals will be removed. The remainder of the <75mm fraction will be conveyed to a bay where it will be examined for content prior to a decision on further processing or removal for landfill disposal.

The >75mm fraction will be conveyed up an incline conveyor belt and pass under an industrial magnet which will remove ferrous metals. The material will then merge with the lights from the C&D line and these will be conveyed together to the picking station. Materials such as cardboard, plastic, wood, paper, tetra-pak and non-ferrous metals will be hand-picked by 8 or 10 pickers. Materials with no potential for recycling will also be removed for disposal.

The picking station will be enclosed and equipped with air conditioning and all pickers will be issued with Personal Protection Equipment (PPE). The materials will be dropped into chutes that will feed onto reversal belts in contained sections perpendicular to the picking belt. These reversal belts will be fitted with load cells to determine the weight of material in each contained section. When a contained section holds enough material, the control room operator will dispatch this material onto another belt to feed directly to the baler.

The baled products will be loaded from the baler by forklift to trailers located adjacent to loading bays located outside the door of the materials recovery building. A storage area is available in the southwest corner of the building for excess bales.

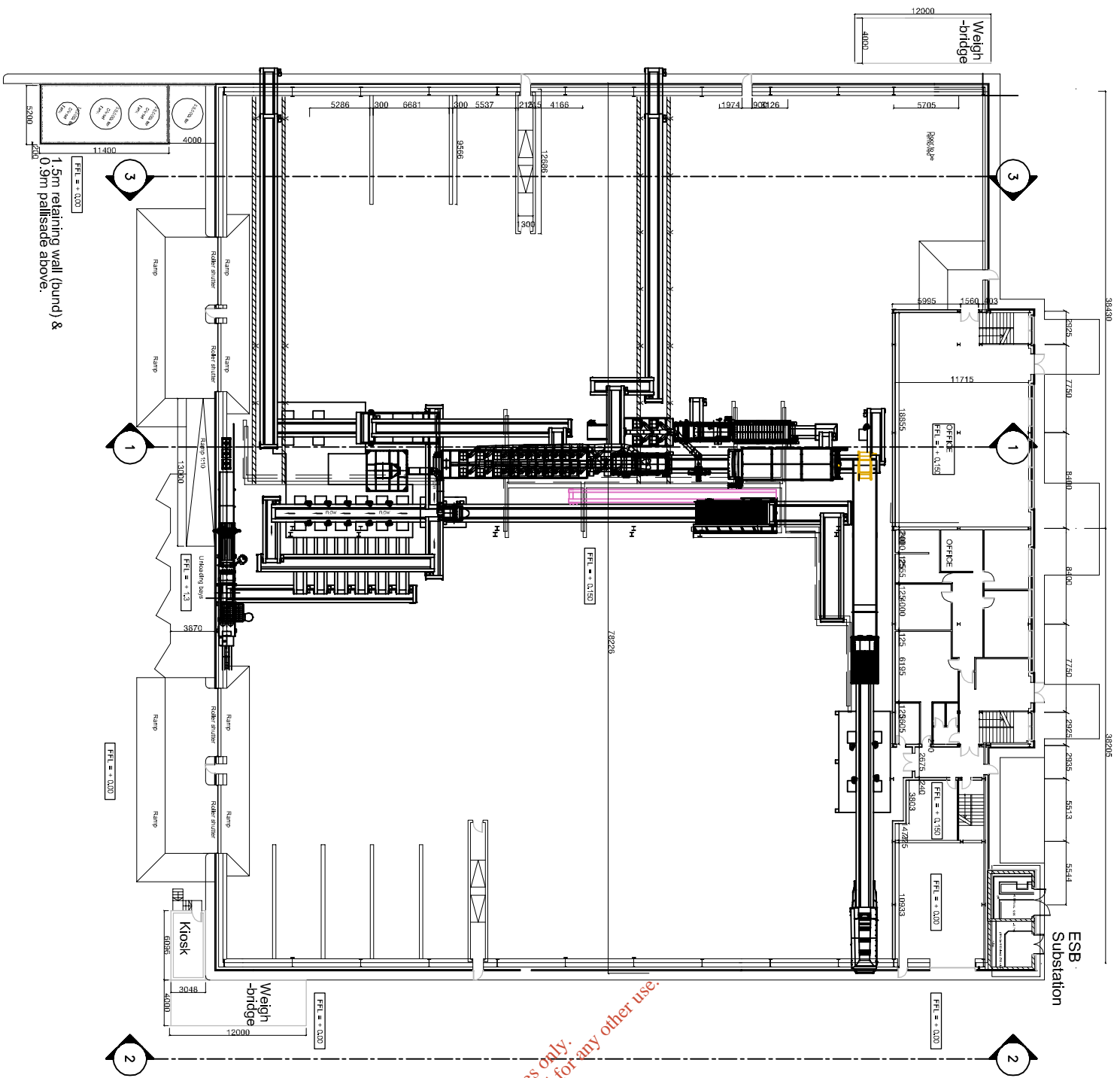
Un-picked materials that pass through the picking station will be re-circulated via a series of conveyor belts and will be presented to the pickers a second or third time to ensure maximum recovery levels of all materials.

Refuse Derived Fuel (RDF)

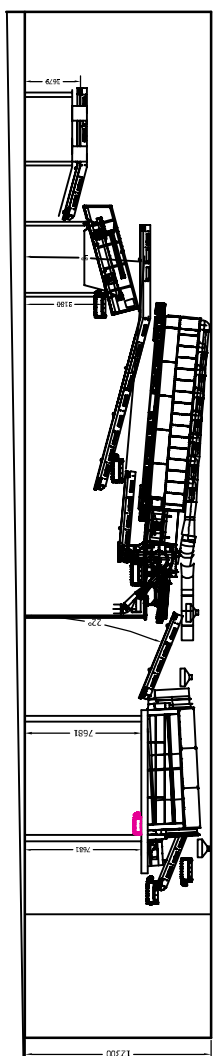
Consideration will be given on a regular basis for the potential to manufacture RDF at the facility. Currently there are no outlets for RDF within Ireland but this situation may change in the near future. The light waste fraction, comprising of small fractions of plastic and paper

will be targeted for RDF. A windshifter will be installed close to the picking station to extract these materials. The light fractions extracted from the double drum separator and the single drum separator, both on the C&D line will also be ideal for use as RDF.

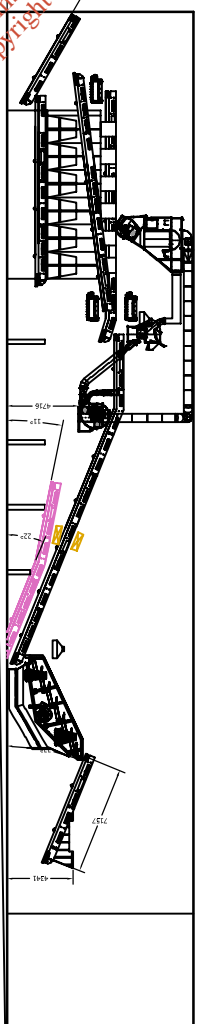
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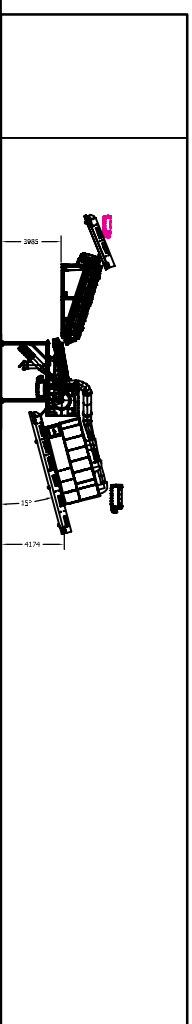
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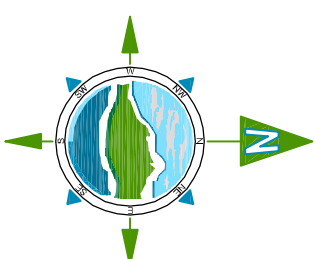
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ELEVATION 2-2
Scale 1:250



ELEVATION 3-3
Scale 1:250



Issue	Date	Description	By	Checked
A	12.1.07	ISSUED FOR ESR	IAN	AA

Client: MCR ENVIRONMENTAL

Project: MRF BALLYCOOLIN

Title: WASTE PROCESSES

Scale @ A1: AS SHOWN

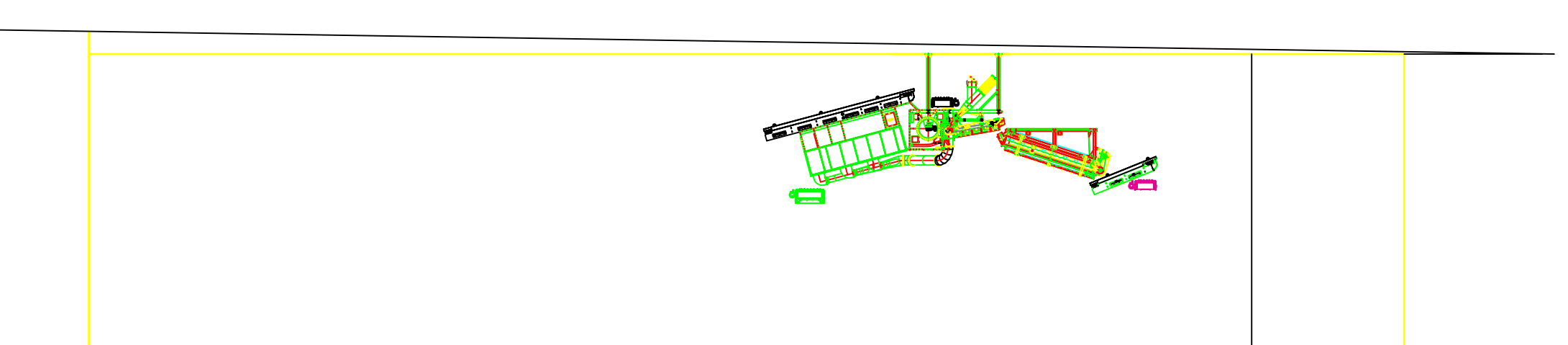
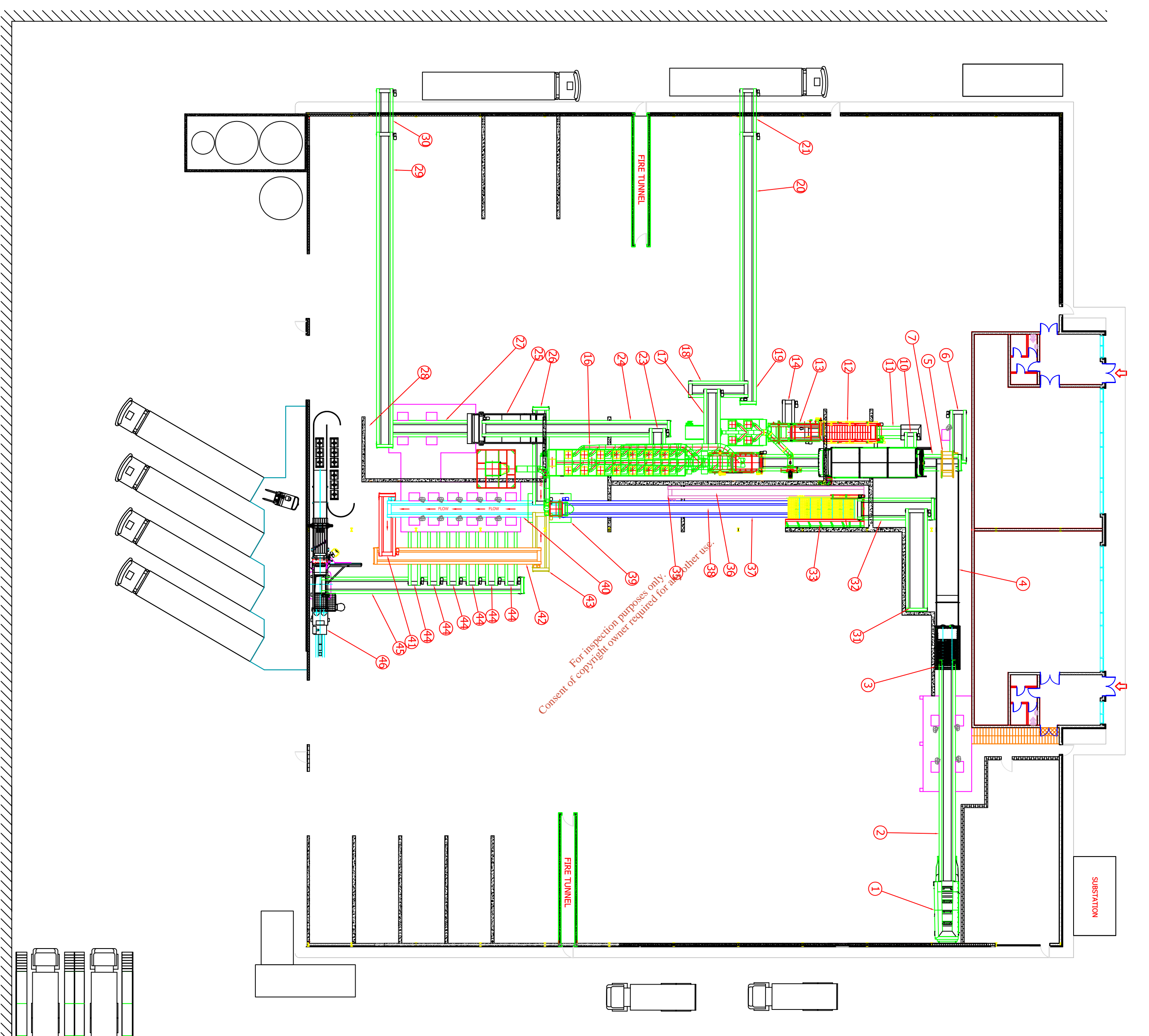
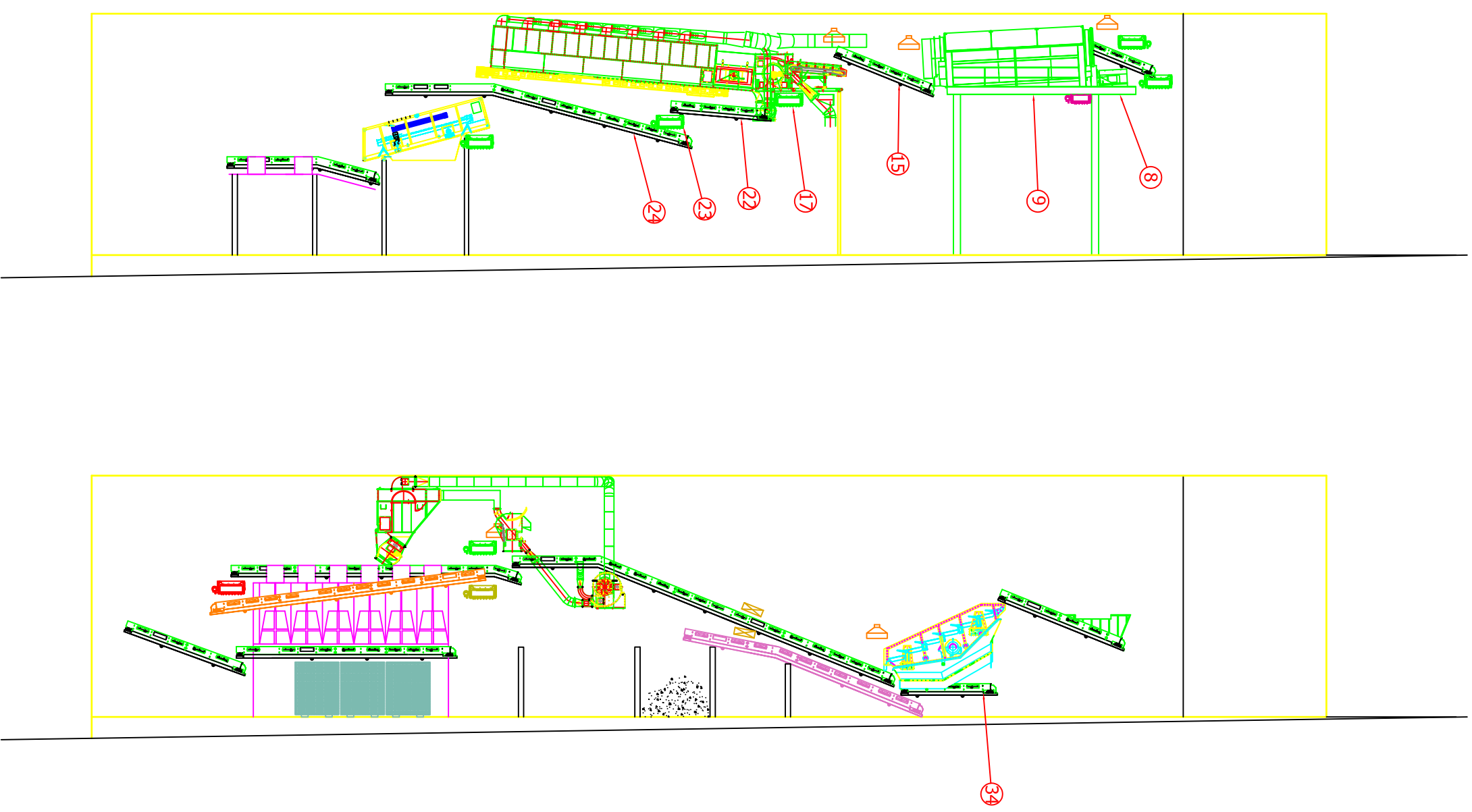
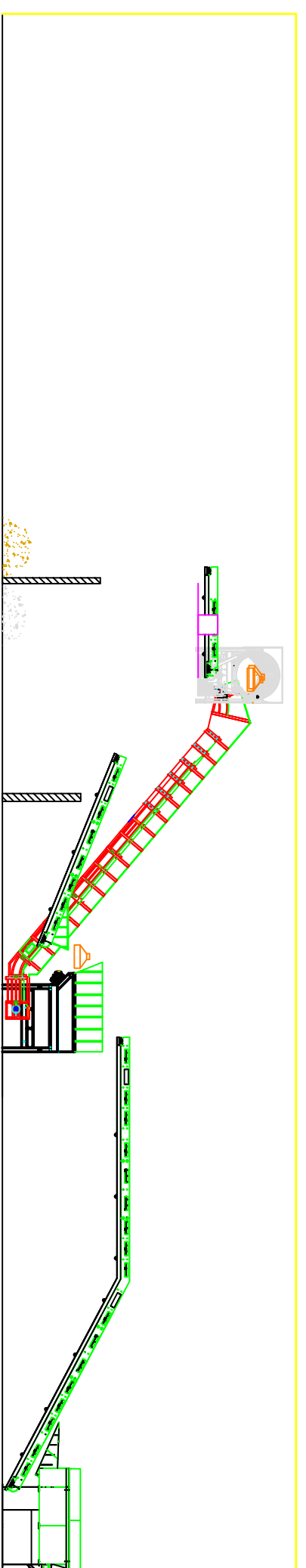
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Drawing No.: **FIGURE 2.2**
Issue: **A**

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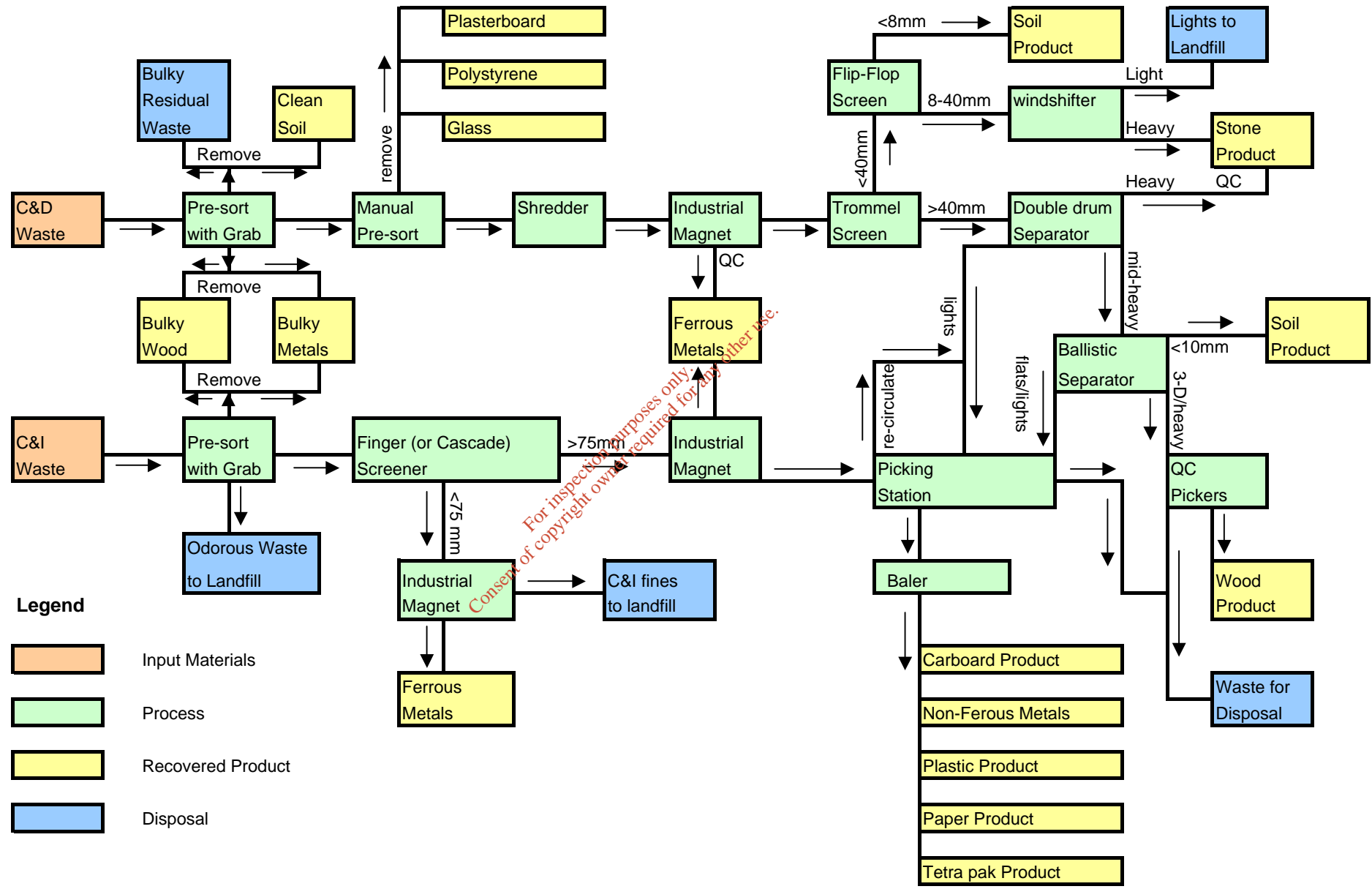


- Motor List:
1. Belt Feeder Conveyor
 2. Incline Conveyor
 3. Sizer
 4. Incline Slat Conveyor
 5. Overband Magnet
 6. Metals Conveyor
 7. Trommel Feeder Conveyor
 8. Series 3 Trommel
 9. Trommel Collection Conveyor
 10. Fines Discharge Conveyor
 11. Flip Flop Feeder Conveyor
 12. Flip Flop
 13. Single Drum Separator
 14. SDS Heavy Discharge Conveyor
 15. Trommel Discharge Conveyor
 16. Double Drum Separator
 17. Heavy Discharge Conveyor
 18. Heavy Transfer Conveyor
 19. Bucket Elevator Conveyor
 20. Stone Transfer Conveyor
 21. Stone Discharge Conveyor
 22. Mid-Heavy Discharge Conveyor
 23. Mid-Heavy Transfer Conveyor
 24. Ballistic Feeder Conveyor
 25. Ballistic Separator
 26. Lights Discharge Conveyor
 27. Ballistic Picking Conveyor
 28. Timber Bucket Elevator
 29. Timber Transfer Conveyor
 30. Timber Discharge Conveyor
 31. Waste Screen Conveyor No.1
 32. Waste Screen Conveyor No.2
 33. Waste Screen
 34. Fines Collection Conveyor
 35. Fines Discharge Conveyor
 36. Fines Overband Magnet
 37. Oversize Discharge Conveyor
 38. Oversize Overband Magnet
 39. Windstifter (Combi-Separator)
 40. Picking Station Conveyor
 41. Loop Conveyor No.1
 42. Loop Conveyor No.2
 43. Loop Conveyor No.3
 44. Picking Station Slat Conveyor (x6)
 45. Baler Feeder Conveyor
 46. Baler

THIRD ANGLE PROJECTION		THIS DOCUMENT CONTAINS PROPRIETARY INFORMATION AND SUCH INFORMATION MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT WRITTEN PERMISSION.		TITLE:-	
DIMENSIONS MILLIMETRES	CHECKED/DATE	BT	12-12-2007	EQUIPMENT DESCRIPTION	
INSPECTION DIMENSION	APPROVED/DATE			MCR ENVIRONMENTAL	
	TOLERANCES EXCEPT AS NOTED			SCALE:-	NTS
	XXX+0.1			DWG.No.	ERS 2.2.1
	XXX+0.31			REV	
	<+/- 1/2 DEGREE				
	BREAK ALL EDGES, REMOVE ALL BURRS				



Figure 2.3 Process Flow Diagram



2.2.7 Site Equipment

The site equipment is expected to consist of the following items:

Fixed plant

- Weighbridges (2No.)
- Feed hopper.
- Shredder
- Industrial magnets (3 No.)
- Trommel screen
- Flip-flop screen
- Windshifter
- Single drum separator
- Double drum separator
- Ballistic separator
- Baler
- Picking stations (2 No.)
- Cascade screener (or similar)
- Conveyor belts (approximately 30 No.)

Mobile Plant

- Grab machines (3 No.)
- Loading Shovels (2 No.)
- Bobcat
- Teleporter
- Forklift
- Shunter (for moving trailers)

2.2.8 Health & Safety

The MCR Group's current safety statement does not extend to the operation of a Materials Recovery Facility, so a specific health and safety management system will be devised and operated prior to the commencement of operations at the site. A Health and Safety Officer will be appointed by the Group and will have responsibility for these matters.

In general terms, the key health and safety issues that have been incorporated into the design of the facility are as follows:

- Traffic will flow in a one-way system through the site to minimise the potential for collisions.
- Reversing of vehicles will be minimised as the vehicles will drop their load and drive forward through the building.
- Some reversing will be inevitable and reverse warning alarms will be fitted on all plant and trucks operating in or using the facility.
- Platforms with handrails will be provided to facilitate the manual removal of covers or nets from skip lorries.
- Grab machines and loading shovels that will operate constantly inside the recovery building will be fitted with air-conditioning to ensure clean air for the operators.
- Grab machines, operating in the vicinity of large volumes of flammable materials such as cardboard, plastic, woodchips, etc. will be fitted with fire suppression systems that will be designed to quench a fire before it has a chance to spread.
- Fire extinguishers will be located at strategic points in the materials recovery building and the offices.
- More comprehensive fire extinguishing equipment will be installed proximal to areas where flammable materials such as cardboard, plastic and wood will be stockpiled.
- Fire escape routes have been incorporated into the design of the materials recovery building and the offices and these routes are subject to approval by the fire officer with responsibility for the area. The building cannot be constructed prior to the granting of a fire certificate by the local fire officer.
- Smoke vents will be incorporated into the design of the roof. These will be opened remotely to vent smoke (in an emergency) or diesel fumes from the materials recovery building. The building will be adequately vented to ensure clean air for all personnel.
- Dust extraction and containment at appropriate locations is incorporated into the design of the plant.
- All personnel on the site will be issued with PPE appropriate to their job function and all employees and visitors will be required to wear appropriate PPE.
- All manual pickers will operate in secure areas off the floor of the building and where practicable, in air-conditioned picking cabins.

- Access to picking stations from the office building, lockers and toilet facilities, will be via stairs and walkways that are protected from mobile plant and traffic. All high level walkways will be fitted with handrails and will be protected from moving parts on the processing lines.
- All personnel likely to come into physical contact with waste materials will be vaccinated against potential ailments such as tetanus.
- Hazardous materials such as asbestos, contaminated soil or volatile compounds will be rejected prior to entry to the facility. In the event that such materials escape the attention of the initial checks and enter a process line, the plant will be shut down immediately and the hazardous material removed in an appropriate and safe manner.
- Emergency stop buttons will be strategically placed around the facility.
- All personnel will receive appropriate health and safety training prior to working on the site.
- Appropriate health and safety signage will be strategically placed around the facility.
- Load-bearing pillars will be protected from impact by concrete and steel bollards and other appropriate structures.

2.2.9 Fuel Storage

Fuel will be stored in diesel tanks in a bunded area in the yard area to the back of the site. This will consist of two cylindrical steel road diesel tanks (55,000 litres each) and a smaller steel gas-oil tank (10,000 litres) for the mobile plant. Initially only one road diesel tank will be installed. The second will be added as the company's fleet of trucks grows.

The tanks will be contained in a mass concrete bund, with 110% the volume of the largest tank, i.e. minimum 60.5m³. The internal dimensions of the bund will be 11m long, 5m wide and 1.5m high. Tarpaulin sheeting will be used to minimise rainwater entry to the bunded area.

Fuel will be dispensed to vehicles and plant via fuel pumps located adjacent to the tanks in bunded areas. The nozzles from the pumps will require active hand pressure and will not dispense fuel unless the handle is actively squeezed. In the event of severance or other damage, the pumps will not dispense fuel.

The inlet valves for the tanks will be contained within the bunded area. Run-off from the fuel dispensing area will be directed to a Class 1 full-retention interceptor.

2.2.10 Water Supply

Water will be supplied to the facility via Fingal County Council watermains from the Ballycoolin High Level Water Supply Scheme.

Rainwater falling on the roof of the Materials Recovery Facility will be directed to a water tank where it will be available to supply the localised fire suppression system.

2.2.11 Power Supply & Telecommunications

The equipment in the Materials Recovery Facility will require between 600 and 1000 KW of electricity and this will be supplied via a designated 10KVA line, transformer and an on-site substation.

The power requirements for the office, lighting, weighbridge hut, etc. will be minor in comparison and will feed off the substation.

The office will be supplied with a full range of telecommunications services, including telephone, fax and email.

2.2.12 Sewerage & Wastewater Treatment

The office canteen, showers and toilets will be connected to the sewerage system that services the industrial estate, which in turn feeds into Fingal County Council's sewerage network.

There will be no trade effluent discharged from the site. The floor of the building and the yard will be cleaned with a mobile roadsweeper. A dust extraction system will be incorporated into the process at all points where dust could be generated.

Given that all floors in the building and yards will be comprised of concrete surfaces and given the dust control system, there will be no requirement for a wheelwash on site.

2.2.13 Material Recovery Building

Phase 1 will be undertaken in Block L, which will have a ground floor area of 4,765m² and a maximum external height of 16.5m. Minimum internal height will be approximately 13m. The Materials Recovery Facility will be constructed as a two-bay portal steel frame. The bays will each be 39m wide and the columns will be generally 6m apart.

The perimeter walls of the building will be mass concrete to a height of 4.0m in locations where material will be stockpiled against them and blockwork to a height of 2.4m at other locations. Kingspan cladding will be installed from ground level to roof height outside the perimeter walls.

There will be a series of internal walls along the central row of steel columns between the two portal frames. The internal walls will be constructed of mass concrete and their height will be generally 4m but may vary to facilitate the positioning of recycling equipment over them.

The floor of the building will be designed to a specification suitable for the plant and for stockpiles of soil, stone, wood and C&D waste (approximately 72KN). All door openings will be ramped to a height of 250mm to ensure adequate containment of spillages or fire-water.

The roof will contain 10% clear panels to allow infiltration of natural light. The roof will also contain smoke vents that will be controlled from the control room and other appropriate remote locations. The smoke vents will be used to vent diesel fumes from the building as well as for clearing smoke in the event of a fire.

Vehicular access to the Materials Recovery Facility will be from the yard area via four roller shutter doors, two for entering the building and two for exiting. The roller shutter doors will each be 6m wide and 8m high. A smaller roller shutter door (4.0m wide, 4.5m high) will be installed in the northeast corner of the building to directly access the spare parts storeroom. Fire doors and fire tunnels will be provided at regular intervals around the Materials Recovery Facility. These are subject to change at the request of the local fire officer during the fire certification process.

The front of the Materials Recovery Facility will contain a two-storey office block. Lockers, canteen, medical room, training room, toilets and wash facilities will be provided for the factory floor staff. Offices will be set aside for key facility management staff and a boardroom will be provided for meetings and presentations to regulatory authorities and others. Access will be provided from the offices to the high level walkways around the Materials Recovery Facility, so visitors can be given a tour of the site safely.

3 EXAMINATION OF ALTERNATIVES TO PROPOSED DEVELOPMENT BY THE OPERATOR

3.1 ALTERNATIVE OPTIONS

MCR Environmental collects household skips, construction and demolition waste and will shortly be collecting commercial and industrial wastes. These wastes are collected in the Greater Dublin Area incorporating counties Dublin, Meath, Louth, Kildare and Wicklow. The first alternative considered by the company for processing this waste was:

- a) To bring the waste to existing waste processing facilities, or
- b) For the company to develop its own processing facility.

MCR met with all the major waste management companies in the Greater Dublin Area to discuss the possibility of bringing waste materials to their sites for processing. In each case, access to the major Materials Recovery Facilities (MRFs) was denied due to either capacity problems or unwillingness to work with a potential competitor. Consequently, the company is proceeding with the leasing of two No. units at Premier Business Park with the intention to a phased development of a MRF to service its waste collection business.

The second alternative considered was the type of facility required to process the collected wastes. The potential options included:

- a) Separation for recovery and recycling (i.e. MRF)
- b) Biological treatment (composting or biogas)
- c) Mechanical Biological Treatment (MBT)
- d) Energy recovery
- e) Landfill disposal

Household and commercial waste (municipal waste) with high levels of biodegradable waste are considered suitable for biological treatment or MBT and the company has ambitions to construct an MBT plant in the future to cater for these wastes. However, initially the company is concentrating on the collection of construction and demolition waste with the secondary focus on dry commercial and industrial waste. The first waste facility to be developed by MCR needs to cater for these waste types.

Biological treatment is not suitable for C&D and dry C&I wastes as the biodegradable content in these wastes is low. Energy recovery in the form of thermal treatment is equally unsuitable for C&D waste as 65% to 75% of these wastes are expected to consist of non-

combustible materials such as soil, stones, concrete, masonry and metals. Disposal is the least favourable option in European and National policy.

Given the above analyses, material recovery in a purpose built MRF is clearly the most favourable environmental option for the treatment of the subject wastes.

3.2 ALTERNATIVE SITES

In locating the MRF, the following factors were considered by the operator:

- a) The source of the input materials.
- b) The destination of the products.
- c) The transport networks.
- d) The development zoning.
- e) Compliance with waste management plans.
- f) Building Specifications.
- g) Availability of infrastructure and services.

Each of these considerations has environmental implications. Locating a site as close as practicable to the input and output materials and within easy access of transport networks, reduces the environmental impact associated with both traffic and transport. Locating the facility in fully serviced industrially zoned lands reduces the impact of the facility on protected landscapes and the water environment. Building the MRF to appropriate specifications allows effective management and efficiencies of operation that minimise environmental impact.

a) Source of Input Materials

MCR's waste collection business is focussed on the Greater Dublin Area, so logically the search for a new site was restricted to that area. Construction and demolition waste is generated at many sites, both new and re-developed. Such development or re-development is expected in lands that are zoned for such purposes, therefore the search focussed on zoned lands and these are more prevalent in County Dublin rather than surrounding counties.

The commercial and industrial wastes that will be processed at the site are expected to be primarily sourced from commercial areas and industrial estates in Dublin City and County. C&I waste arisings from surrounding counties are expected to be minor in comparison.

Skip waste from household, commercial and industrial premises will be sourced primarily from densely populated areas in Dublin City and County. Lesser volumes of these materials are expected from surrounding counties.

In summary, based on the input materials the facility should be located close to the densely populated urban area of Dublin City and within lands zoned for development.

b) Destination of the Products

The products and waste materials generated at the site are equally important in terms of location. The likely destinations of these outputs are as follows:

- Recovered stone will be used for construction projects, drainage works and farm developments and most of these uses are expected to be outside Dublin City either in rural areas or new developments.
- Recovered soil will be used for restoration of quarries, landfill cover, restoration of mine tailings, etc. The quarries, mines and landfills are generally located rural parts of County Dublin and surrounding counties.
- Recovered wood will be used by chipboard manufacturing plants in Counties Clare, Derry, Tipperary, etc, and consideration will be given to animal bedding and similar uses that would be located in rural areas.
- Recovered metals will be sent to metal re-processors at a number of locations, but will ultimately be exported for smelting.
- Cardboard, paper, tetrapak and plastic products are also likely to be exported either directly or through third parties.
- Plasterboard is likely to go to Gypsum Recycling Ltd in County Kildare.
- Tyres are likely to go to Crumb Rubber in County Louth.
- Garden (green) waste will go to one or several existing composting plants located in counties Kildare, Meath and Wicklow or preferably to one of the two proposed composting plants in County Dublin (Kilshane Cross & Ballyogan).
- Residual waste for disposal will go to landfills in Counties Dublin, Louth, Meath, Kildare and/or Wicklow.

In summary, the products and waste materials will be transported to many locations within Ireland and to Dublin Port for export, so access to the National Road network is essential. Proximity to the Dublin Port Tunnel is clearly advantageous.

c) Transport Networks

The site ideally should be located within easy access of the M50, as this motorway links all areas of Dublin with both Dublin Port and the national primary routes serving the rest of Ireland.

d) Development Zoning

The zoning objectives of the Dublin local authority development plans were reviewed and considered in the siting of the MRF. The activity is industrial and clearly siting the plant in an industrial zone is preferable. The zoning terminology varies from plan to plan, but the most acceptable/ permissible zoning for an MRF was checked against the Acceptable Use tables in the development plans and identified as follows:

Fingal	Objective G1. To facilitate opportunities for general industrial employment and related uses in industrial areas.
Dublin City	Zoning Z7 and Z7A. Employment (Industry). To provide for the protection and creation of industrial uses, and facilitate opportunities for employment creation.
South Dublin	Zone E. To provide for enterprise and employment and related uses.
Dun Laoghaire-Rathdown	Zone E. To provide for economic development and employment.

Recycling centres are permitted in principle in these zones. They are open for consideration in other zones, but the first priority for MCR was to try to secure a site in one of the above zones to minimise planning risks.

e) Waste Management Plans

The Dublin regional waste management plan was also reviewed and considered in advance of siting the facility. Appendix I of the plan contains siting guidelines for Recycling Centre and Materials Recovery Facilities and states:

“There are no National or International guidelines on the siting of such facilities but the siting of such facilities should have regard to the following site selection criteria:

- *The facility to be placed within an urban area or as near as possible.*
- *Where practicable, consideration should be given to locating the facility in proximity to a strategic transport route.*
- *If development zoning exists an area zoned as industrial is preferable.*

- *Location of facility to be convenient to majority of householders.*
- *Particular regard to be had to traffic considerations.”*

The fourth criteria above, convenience to householders, is important for civic amenity sites but irrelevant for siting MRFs that are not open to the public, so this element of the guidance was ignored. The other criteria are relevant and the search for a site for the MRF took full account of these guidelines.

f) Building Specifications

An MRF requires a high ceiling to facilitate the type of plant and equipment used to segregate waste materials. Buildings with 12m to 16m internal clearance are considered ideal. Operation of the MRF involves moving materials with loading shovels, so reinforced concrete push walls are required.

Most of the older industrial buildings in Dublin have blockwork walls and have lower heights than that required for the MRF, so a new purpose built building represents the ideal scenario.

g) Availability of infrastructure and services.

The MRF requires good local infrastructure and services including roads, power, telecommunications, water, sewerage and stormwater drainage. A well-serviced industrial estate represents the ideal scenario for location of the facility.

Selection Process

The factors listed above were all considered in the search for a suitable site for the proposed development. The search was focused on industrial estates proximal to the M50, but other locations were considered as 'fall-back' options in the event that the ideal site could not be located. MCR engaged with a number of large estate agents that deal with industrial property in the Greater Dublin Area. Available sites that were considered by the company are listed overleaf in Table 3.1.

Table 3-1 Available sites that were considered

Site No.	Location	County	Existing/ New Building	Suitable	Reason if Unsuitable
1	Ballymount Road area	South Dublin	Existing	No	Building specifications are unsuitable
2	Kylemore Park West	Dublin City	Existing	No	Building specifications are unsuitable
3	Stadium Business Park, Ballycoolin	Fingal	Existing	No	Unsuitable zoning (Science & Technology)
4	North City Business Park	Fingal	New build	Yes	
5	North Road, Finglas	Fingal	Existing	No	Building specifications are unsuitable
6	Greenogue	South Dublin	New build	No	Location not ideal
7	Damastown Industrial Park	Fingal	Existing	No	Unsuitable zoning (Science & Technology)
8	Ashbourne Business Park	Meath	New build	No	Location not ideal
9	Naas Road, Clondalkin	South Dublin	Existing	No	Building specifications are unsuitable
10	Greenhills Industrial Estate	South Dublin	Existing	No	Building specifications are unsuitable
11	Premier Business Park, Ballycoolin	Fingal	New build	Yes	
12	Greenhills Road	South Dublin	Existing	No	Building specifications are unsuitable
13	Gateway Business Park, Clonshaugh	Dublin City	Existing	No	Building specifications are unsuitable
14	Western Industrial Estate	South Dublin	Existing	No	Building specifications are unsuitable
15	Ballyboughal, Co. Dublin	Fingal	Existing	No	Location not ideal
16	Dublin Airport Logistics Park	Fingal	New Build	No	Unsuitable zoning (distribution)
17	Cookstown Industrial Estate	South Dublin	Existing	No	Building specifications are unsuitable
18	Rosemount Business Park, Ballycoolin	Fingal	Existing	No	Building specifications are unsuitable

Site No.4 and Site No.11 are both considered to be ideal for the development of an MRF. Other sites in the list, whilst not ideal, could be considered as 'fall-back' options.

The two suitable sites are located on either side of the M50 in County Fingal to the northwest of Dublin City. Site No.4 is in Finglas, south of the M50 and Site No. 11 is by Ballycoolin Road, to the north of the motorway. Each site is located in a serviced industrial estate with the correct zoning and each has good access to the National Road network and Dublin Port via the Port Tunnel. They are both within the urban area of Dublin City and ideally located for servicing densely populated areas. As they are new developments they can be built to the required specifications, subject to planning constraints. Environmental controls and efficiencies can be included at the design stage to ensure minimal environmental impact.

Site No. 11, Premier Business Park, is the preferred site as the proposed building has an internal clear height of approximately 13 metres, whereas the proposed building at Site No. 4 has a lower internal clear height of 10 metres.

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4 POLICY, PLANNING AND DEVELOPMENT CONTEXT

4.1 INTRODUCTION

This chapter will examine the planning history and the planning and development context of the proposed Materials Recovery Facility at Premier Business Park, Ballycoolin Road, in the townland of Cappoge, Dublin 11.

This chapter describes the main planning policy statements and legislation that affects the proposed development and describes how the development is consistent with specific waste management policy objectives. A review of national legislation and policy, and local plans and policies including the Dublin Region Waste Management Plan and the Fingal County Council Development Plan 2005-2011 was undertaken to identify the key policies that underpin the need for the proposed facility.

4.2 PLANNING HISTORY OF THE EXISTING SITE

This Environmental Impact Statement refers to, the change the use of Warehouse Block L and K to develop a Materials Recovery Facility. This proposed facility has been designed to recover materials both from Construction and Demolition (C&D) waste and Commercial and Industrial (C&I) waste.

Planning Permission includes six large high-bay industrial units and 71 No. enterprise units. This Planning Permission was granted in May 2006. The development of a Materials Recovery Facility comprises two No. high-bay units within Premier Business Park, currently under construction along Ballycoolin Road. The development received planning permission as part of the Planning Application for the entire Business Park (Ref: F05A/1363).

Other relevant planning applications at the site include the following,

- Planning Permission (Ref: F04A/1044) was granted in 2004 for the demolition of a two-storey dwelling and other associated out buildings located on the site at the location of the former Cappoge Castle.
- An application has also been lodged with Fingal County Council (Ref F07A/0343) for six no. light industrial/ Warehouse units. This was lodged in March 2007 and Additional Information was submitted to Fingal County Council in August 2007.

Maps illustrating the location of these planning applications is provided in Appendix 4.1.

The proposed development site has been given the zoning objective GI in the current Fingal County Development Plan 2005-2011. The objective of this zoning is *'to facilitate opportunities for general industrial employment and related uses in industrial areas'*.

This indicates that the development of a Material Recovery Facility at this site is in accordance with Fingal County Development Plan.

There is an archaeological site present proximate to the northern boundary of the Premier Business Park. This is recorded as Item No 681 in the Record of Protected Structures in the Fingal County Development Plan 2005-2011. A number of archaeological investigations have been completed at this site (Refer to Chapter 14 for further information).

The Business Park within which the proposed development is located also features a number of specific objectives in the Fingal County Development Plan 2005-2011,

- To identify and protect a route for the proposed Orbital Metro (Refer to Appendix 4.2).
- Indicative Cycle Route.
- Road Proposal (along the Ballycoolin Road).

These issues are dealt with in the Socio Economic and Traffic Chapters of this Environmental Impact Statement.

4.3 GOVERNMENT POLICY AND LEGISLATION

4.3.1 National Waste Management Strategy

Since the publication of *Changing our Ways* in 1998, the policy framework has been firmly rooted in the “integrated waste management” approach, based on the internationally adopted hierarchy of options which places greatest emphasis on waste prevention, followed by minimisation, re-use, recycling, energy recovery and, finally, the environmentally sustainable disposal of residual waste. The targets set out in this document were for 50% recycling of C&D waste by 2003 with a progressive increase to at least 85% by 2013. The Department of the Environment, Heritage and Local Government in their 2006 Annual Report states that Ireland’s rate of recovery at nearly 87% is quite high. However 85% of the total amount recycled was accounted for by soil and stones and the recycling rates for core C&D waste materials is relatively low.

The 1998 *National Waste Database Report* published by the EPA in 2000 estimated that C&D waste accounted for 17.5% of the total volume of non-agricultural waste produced annually. This represented approximately 2.7 million tonnes in 1998. Commercial waste amounted to 754,797 for the same period.

This however has grown significantly; the 2005 National Waste Report by the EPA states that the total quantity of C&D waste collected in 2005, as reported by local authorities, is estimated at 14.9 million tonnes in 2005. An estimated 1.2 million tonnes of commercial waste was managed in Ireland in 2005.

The proposed Materials Recovery Facility will provide the necessary infrastructure that is required to reach recycling targets for 2013.

4.3.2 National Spatial Strategy 2002 - 2020

In 2002, the Government published the National Spatial Strategy (NSS) for Ireland 2002 to 2020. NSS is a coherent national planning framework, which covers Ireland's seven regions, and also provides the framework for spatial policy for the Greater Dublin Area. There is a strong emphasis placed upon securing Greater Dublin's vital national role through improved mobility, urban design, social mix and transport (both national and international).

This strategy states that waste management is a particular current priority and that efficient, effective and cost competitive waste management facilities are essential if industrial and enterprise activity is to thrive and develop in a balanced way across Ireland. The proposed Material Recovery Facility will contribute to, and support the requirements of the NSS.

4.3.3 Regional Planning Guidelines for the Greater Dublin Area (2004 –2016)

The Dublin Regional Authority and the Mid-East Regional Authority, are the two Regional Authorities that make up the seven counties of the Greater Dublin Region, have published the 'Regional Planning Guidelines (RPG) Greater Dublin Area (2004 – 2016)'. The document provides a strategic development and planning vision and the framework for the delivery of that vision.

Under the Planning and Development Act 2000, planning authorities must have regard to any regional guidelines in force for the area when making and adopting their development plans. The RPG structure consists of two parts:

- Part A – An overall regional development report for the region; and
- Part B – Regional Planning Guidelines.

Part A: Regional Development Report for the Region

This Report provides the key issues relevant to strategic planning and socio-economic and physical planning in terms of broad trends, housing, employment, provision of services, accessibility, environmental issues, social and cultural development, and overall goals for the region.

Part B: Regional Planning Guidelines (RPG)

The Guidelines reflect a shared vision and consensus for the future development of the region.

Section 3 of Part B of the RPG provides the goals and objectives for the Greater Dublin Area which include, *inter alia*:

- “Goal 2 – creating a region functioning well with regard to sustainability, attractiveness and quality of life which is cost effective and properly functioning in its physical, economic, social and cultural dimensions;
- Goal 4 – to promote sustainability in relation to waste management (objective – to co-ordinate settlement pattern with strategic plans for waste management and disposal); and
- Goal 5 – to provide sustainable infrastructure corridors.”

This proposed Material Recovery Facility would help ensure the efficient operation of a competitive recycling market.

4.3.4 Fingal County Development Plan 2005–2011

The Development Plan sets out Fingal County Council’s policies and objectives for the development of the County from 2005 to 2011. One of the main aims of this Plan is to plan for and support the sustainable development of Fingal as an integrated network of vibrant socially and economically successful settlements, separated by Greenbelt areas, supporting and contributing to the economic development of the County, of its neighbouring authorities and of the Region.

In this plan the proposed development site and the surrounding lands have been given a specific local zoning objective General Industrial (GI). The objective of this zoning is ‘to facilitate opportunities for general industrial employment and related uses in industrial areas’.

It is the vision of Fingal County Council as outlined in this zoning Objective that:

‘General Industrial Areas are intended to create, preserve, and enhance areas containing a full range of industrial uses within a well designed and attractive setting that would supply employment opportunities for the county. Non-industrial uses are limited to prevent land use conflicts and to preserve land for industry. In as far as is possible the mobility needs of businesses will be matched with the accessibility of different locations therefore increasing efficiency and reducing the need for public transport.’ (Refer to Section 4.3).

Table 4-1 Zoning Objectives Fingal County Development Plan 2005-2011

<p>Objective: To facilitate opportunities for general industrial employment and related uses in industrial areas. Vision: General Industrial Areas are intended to create, preserve and enhance areas containing a full range of industrial uses within a well designed and attractive setting that would supply employment opportunities for the county. Non- industrial uses are limited to prevent land use conflicts and to preserve land for industry. In as far as is possible the mobility needs of businesses will be matched with the accessibility of different locations therefore increasing efficiency and reducing the need for public transport.</p>
<p>Use Classes Related To Zoning Objective</p> <p>Permitted in Principle: Abattoir, Advertisements / Advertising Structures, ATM, Telecommunications Structures, Car Park / Commercial surface, Park and Ride, Cash & Carry / Wholesale Outlet, Childcare Facilities, Enterprise / Training Centre, Traveller Accomodation, Heavy Vehicle Park, Household Fuel Depot, General Industry, Light Industry, Office less than 100sq.m, Open Space, Petrol Station, Refuse Transfer Station, Alternative Energy Installations, Recycling Centre, Science and Technology Based Enterprise, Scrap Yard, Service Garage, Café / Restaurant ^D, Shop ^D, Special Industry, Transport Depot, Telecommunications Structure, Utility Installations, Warehousing ^E, Logistics ^E.</p>
<p>Not Permitted: Aerofrome / Airfield, Betting Office, Caravan Park – Holiday, Caravan Park-Residential, Burial Grounds, Hospital, Residential, Residential Institution, Residential Care Home, Holiday Home, Rural Industry –Cottage, Agri – Tourism, Shops – Major Sales Outlet, Golf Course, Hotel Conference Centre.</p>
<p>Key to Sub-script symbols:</p> <p>^D- To Service the local working population only</p> <p>^E – Not permitted on lands adjacent to the metro</p>

Table 4.1 above illustrates that the proposed Materials Recovery Facility is in line with the zoning objectives as outlined in the current County Development Plan.

The application site is positioned on the routing of a future orbital rail line that is intended to join the Blanchardstown area with the Airport/Swords Metro Line in the vicinity of Ballymun. This route has been included in the recently launched Department of Transport 'Transport 21' programme as a long-term project.

Consultation with the Railway Procurement Agency took place in August 2007 and they stated that they have no issues with regard to the proposed Materials Recovery Facility. They also stated that the final design of Metro West is likely to include a signalised junction

to replace the existing roundabout at the Premier Business Park/Stadium Business Park entrance.

4.3.5 Dublin Waste Management Plan 2005 – 2010

This Waste Management Plan includes Dublin City Council, South Dublin County Council, Fingal County Council and Dun Laoghaire-Rathdown County Council. The Dublin Region adopted a *Regional Waste Management Strategy* in 1997, which set out to replace a system that over-relied on landfill disposal with a new approach based on integrated waste management over a 20-year period. The Plan is based on EU and Irish national waste management policy, and sets out a policy to implement a balanced, sustainable and affordable waste management system in the Dublin Region.

In the Dublin Waste Management Plan 2005-2010 it states that;

'There has been rapid growth in the number of MRFs in the Region, handling mainly commercial waste but also some household recyclables. Throughput of commercial/ industrial recyclables in MRFs was in the Region of 230,000 tonnes in 2003. Since further growth in recycling is required under the Plan, it is envisaged that further expansion of MRF capacity will be required. Typically MRFs and transfer stations are located in industrial areas' (Ref Section 11.2.2).

While recycling of waste has improved dramatically over the past 6 years, the Region is still a long way from reaching its recycling and recovery goals. Waste growth is set to continue with increases in population and economic activity, so the infrastructure required must also expand to cope with these pressures. The following deficiencies have been identified:

Materials Recovery Facilities – *a reasonable level of capacity is available but further increase in recycling will require more MRF capacity* (Refer to Section 11.6).

'The development of further MRF capacity by the private waste management industry is encouraged by the Plan' (Refer to Section 18.6).

Appendix I of the Dublin Waste Management Plan 2005-2011 set out *'Siting Guidelines for Recycling Centres and Material Recovery Facilities'*. It states that there are no national or international guidelines on the siting of such facilities but the siting of such facilities should have regard to the following site selection criteria:

- The facility to be placed within an urban area or as near as possible.
- Where practical, consideration should be given to locating the facility in proximity to a strategic transport route.
- If development zoning exists an area zoned as industrial is preferable.

- Location of facility to be convenient to majority of householders.
- Particular regard to be had to traffic considerations.

This proposed Material Recovery Facility would provide recycling infrastructure, which will help meet current and future waste management objectives and is required to reach current and future recycling targets. The proposed Materials Recovery Facility also meets the siting guidelines as set out by the Dublin Waste Management Plan 2005-2011 with regard to its location in proximity to the M50, the site zoning as industrial and its proximity to the large population centre of Dublin City.

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5 SOCIO ECONOMIC

5.1 INTRODUCTION

TOBIN Consulting Engineers have prepared this report as part of “change of use” planning application for Warehouse Block L and K, which is located within the Premier Business Park, Ballycoolin Road, in the townland of Cappoge, Dublin 11. This Chapter will consider the socio economic impacts of the proposed Materials Recovery Facility.

5.1.1 Study Methodology

A desk study was carried out in order to examine all relevant information pertaining to planning and socio economic activity in the study area. The Fingal County Development Plan 2005-2010 was examined along with the Dublin Waste Management Plan 2005-2010 and relevant census data from the Central Statistics Office (CSO).

Fáilte Ireland tourist literature for Dublin was examined in relation to tourism amenity in conjunction with websites of relevant tourism sites and amenities in the area. In addition Ordnance Survey maps were used to identify landuse and possible amenity and tourist sites that may be located in proximity to the proposed development site.

5.2 EXISTING ENVIRONMENT

5.2.1 Landuse

The site is located approximately 2km to the northeast of Blanchardstown and approximately 2.5km west of Finglas, in Dublin. The M50 forms the southern boundary of the site.

This site forms part of the Premier Business Park in the townland of Cappoge, Dublin 11. Construction work within this Park is ongoing.

This Business Park received Planning Permission (Ref No. F05A/1363) in May 2006. The Premier Business Park, including the Warehouse Block L and K is currently under construction.

The proposed development site is located in an area that is zoned for industry (Refer to Planning Context Chapter). A number of business parks and industrial parks are located in close proximity to the proposed development site.

A number of scattered domestic dwellings are located in the area surrounding the subject site. The closest dwelling to the site is located approximately 70m to the northeast.

5.2.2 Population

To understand an area its population must be examined. This section will look at the population change over the period 1996-2006. The subject site is located within the townland of Cappogue and the District Electoral Division (DED) of Blanchardstown-Abbotstown. Table 5.1 below illustrates the population change between 1996-2006 in the State, Leinster, Dublin and in the DED of Blanchardstown-Abbotstown.

Table 5-1 Population Change 1996 -2006

	1996	2002	2006	% Change 1996-2006
State	3,626,087	3,917,203	4,239,848	17%
Leinster	1,924,702	2,105,579	2,295,123	16%
Dublin County	1,058,264	1,122,821	1,187,176	12%
Fingal	167,683	196,413	239,992*	43%
Blanchardstown-Abbotstown DED	1,531	2,537	4,122*	169%

Source: Central Statistics Office (CSO) 2002 and 2007 *Preliminary Results 2007

Table 5.1 above shows that the % change of population from 1996-2002 of Dublin County (12%) has increased at a lower rate than that of the State (17%), however in Fingal the population increased greatly in the period 1996-2006 (43%) and increased dramatically in Blanchardstown-Abbotstown DED (169%). From the table above it can be seen that in 2006, 20% of the population of Dublin live in Fingal, while in the same period 1.7% of Fingal's population live in the DED of Blanchardstown-Abbotstown.

Both the National Spatial Strategy (NSS) and the Regional Planning Guidelines (RPG's) for the Dublin Area set out the levels of population growth expected. The NSS provides population projections up to 2020 and gives a projection of between 1.9 and 2.2 million in the Greater Dublin Area (Dublin, Kildare, Meath and Wicklow). The RPG sets out population projections High (HI) and Low (LO) for the Greater Dublin Area (GDA) for the years 2010, 2016 and 2020. The favoured LO projection for the Greater Dublin Area 2010 is 1,696,581. The Guidelines forecast a population of 259,757 for Fingal for 2010.

The RPG for the Greater Dublin Area sets out the household numbers required and gives a provision requirement for Fingal to 2010 of 44,996 new dwellings. The Fingal County Development Plan 2005-2011 gives a target of 51,940 units up to the year 2011.

5.2.3 Employment

Employment is an important indicator of the economic standing of an area. This section examines unemployment levels, employment status and industrial groups in Finglas and Blanchardstown as these are the nearest towns to the proposed development site. The Quarterly National Household Survey (QNHS) provides details of unemployment on a regional level. Finglas and Blanchardstown are located in the Dublin Region therefore this Region will be used to illustrate unemployment in the area.

Table 5-2 Quarterly National House Survey (Q1 2007)

	Unemployment Rate	Participation Rate
State	4.2%	62.9%
Dublin Region	4.3%	65.2%

Source: CSO, 2007

Table 5.2 above illustrates the findings from the most recent QNHS quarter one (December-February 2006/7). The unemployment rate is the number of unemployed persons expressed as a percentage of the total labour force. The unemployment rate for the State was 4.2% while the unemployment rate for the Dublin Region, which contains the study area, was 4.3%. This indicates that the Dublin Region has a slightly higher unemployment rate than the State.

The participation rate is the number of persons in the labour force expressed as a percentage of the total population (over the age of 15 years). Currently the participation rate in the State is 62.9%. The Dublin Region's participation rate is 65.2%, which is higher than that of the State.

The CSO publishes figures relating to the live register. These figures are not strictly a measure of unemployment as they include persons who are legitimately working part time and signing on part time. However they can be used to provide an overall trend within an area.

Table 5-3 Live Register 2006-2007

	July 2006	July 2007	% Change
State	168,946	174,593	3.3%
Dublin Region	43,682	43,618	-0.1%
Finglas	2,420	2,478	2.4%
Blanchardstown	3,800	3,795	0.1%

Source: CSO 2007

The figures in Table 5.3 above show that over the period July 2006 - July 2007 the number of persons on the live register increased in Finglas (2.4%) and Blanchardstown (0.1%), in comparison to increases in the State (3.3%), and a decrease in the Dublin Region (-0.1%). This trend indicates that there are more person's unemployed in Finglas and Blanchardstown in July 2007 than in July 2006.

Statistics in relation to occupational group are not provided in the Census for the townland of Cappoge. Therefore the occupational group of the Greater Dublin Area will be used as an indicator for the townland of Cappoge. These occupational groups are from the 2002 Census.

Table 5-4 Occupational Group, Greater Dublin Area

Occupational Group	Percentage
Farming, fishing and forestry workers	0.18%
Manufacturing workers	9.03%
Building and Construction workers	5.11%
Clerical, managing and government workers	23.09%
Communication and transport workers	6.42%
Sales and commerce workers	15.41%
Professional, technical and health workers	18.80%
Service workers	9.01%
Other	12.95%

Source: CSO, 2002

Table 5.4 above illustrates the occupational group of persons living in the Greater Dublin Area. Clerical, managing and government workers represent the highest percentage of workers (23.09%), while farming, fishing and forestry workers represent the lowest percentage (0.18%). The Industrial Development Agency (IDA) Ireland has approximately 30 companies located in Dublin 15 and Dublin 11, the area in which the proposed Material Recovery Facility is located.

5.2.4 Tourism and Amenities

According to the Fingal County Development Plan, 2005-2011, '*Fingal is well placed to capture a large proportion of the market given its infrastructural, natural and man made advantages. The County holds the national airport, the busiest entry point for visitors to the country; it is also well placed to take advantage of through traffic on the M1, the main Dublin–Belfast corridor. Fingal boasts an attractive rural hinterland and coastline. Complimenting this natural heritage is its built heritage. Finally, demesne landscapes and golf courses make the County an attractive location for Environmental Impact Statement and tourism activities*' (Refer to Section 9.2).

The Fingal area, according to Fáilte Ireland, is located in the Dublin Tourist Region. The latest available statistics from Fáilte Ireland are preliminary results for the year ending December 2006. These statistics state that the number of over seas visitors to the Dublin Region was 5,676,000 in 2006. The total tourism revenue generated from these visits according to Fáilte Ireland was €1,670.2 million.

The proposed site of the Materials Recovery Facility is not currently utilised as a tourist or amenity site and is not located in proximity to any such sites. The nearest golf course is Elmgreen golf course and is located approximately 1.5km to the southwest of the development site.

There are no designated walking routes located in proximity to the proposed development site. The nearest walking route is the Royal Canal Way walking route, which is, located approximately 1.5km to the south.

It is an objective as indicated in Policy TP22 of the Fingal County Development Plan 2005-2011 to *'promote walking and cycling by securing the development of a network of safe cycle routes and footpaths on new and existing roads and on routes reserved exclusively for pedestrians and cyclists.'*

A cycleway has been proposed for the Ballycoolin Road, which runs north of the proposed development site.

5.2.5 Landscape

Policies in relation to landscape, which are outlined in the Fingal County Development Plan 2005-2011, include:

- **Policy HP34**, to ensure that development reflects and, where possible, reinforces the distinctiveness and sense of place of the character areas and landscape groups, including the retention of important features or characteristics, taking into account the various elements which contribute to their distinctiveness such as geology and landform, habitats, scenic quality, settlement pattern, historic heritage, local vernacular heritage, land-use and tranquillity.
- **Policy HP35**, to protect High Amenity Areas from inappropriate development and to reinforce their character, distinctiveness and sense of place.
- **Policy HP36**, to protect sensitive landscapes identified on the development plan maps from inappropriate development and to reinforce their character, distinctiveness and sense of place.

There are no protected views within the study area from which the proposed development will be visible.

5.2.6 Roads, Rail and Traffic

The application site is positioned on the routing of a future orbital rail line that is intended to join the Blanchardstown area with the Airport/Swords Metro Line in the vicinity of Ballymun. This route has been included in the Department of Transport 'Transport 21' programme as a long-term project, which was launched in 2005. Consultation with the Railway Procurement Agency (RPA) took place in August 2007 and details of this is provided correspondence is detailed in Appendix 1.1

The subject site will be accessed from the road network via Ballycoolin Road at an existing roundabout, which also serves as an entrance to Stadium Business Park.

5.3 POTENTIAL IMPACTS

5.3.1 Landuse

The proposed development forms part of the Premier Business Park, which has previously been granted planning permission. Premier Business Park is currently under construction. Therefore this development will not cause additional negative impact on the current land use.

5.3.2 Population

The development of the proposed facility would be in keeping with existing and proposed land use patterns as there are a number of waste facilities currently in operation in this area. These facilities include those operated by Panda Waste and Greenstar. The proposed Materials Recovery Facility will not result in the loss of amenities or rights of way.

Predictions for population and dwelling houses in the Fingal area all indicate increases for the period up to 2011, which will also result in an increase in the commercial sector. Therefore there will be increased need for C&D and C&I recycling facilities in the Fingal area. The proposed Material Recovery Facility would provide key recycling infrastructure for the North Dublin and Fingal area.

5.3.3 Employment

This project will create or support employment at local and national levels both directly and indirectly. The proposed facility will initially provide approximately 72 jobs and approximately

179 staff by Phase 2. Employment will also be created during the construction period of this facility.

5.3.4 Tourism and Amenities

The proposed development site is currently not utilised as a tourism amenity and is not located in proximity to any tourist amenity. A cycleway route is proposed in proximity to the site however the proposed Materials Recovery Facility will not impact on this.

5.3.5 Landscape

The proposed Material Recovery Facility will not impact on any protected views. Overall, the visual impact of the proposed development will be slight to moderate, permanent and neutral in its nature (Refer to Chapter 13 for further details).

5.3.6 Roads, Rail and Traffic

Analysis of the junctions with the Premier Business Park in place shows that the road network will have sufficient spare capacity to cater for the future traffic demands of the Business Park. The proposed Materials Recovery Facility will generate fewer trips per day than that allowed for in the original planning application at peak hour.

The impact of the construction period would be very minor and temporary in nature and would not constitute a significant traffic impact. (Refer to Chapter 12 for further details).

The proposed Material Recovery Facility will not impact on the proposed Orbital Metro Line.

5.4 MITIGATION MEASURES

The project is being developed in such a manner so that the impact on dwelling houses, landscape and traffic is minimised. No major mitigation measures are required, but some standard measures are included here. The following measures will ensure that the proposed facility will have a minimum effect on the receiving environment.

5.4.1 Landuse

The proposed Material Recovery Facility is located in Premier Business Park and on lands, which have been zoned with the objective to provide for Industrial Employment. No mitigation measures are therefore proposed.

5.4.2 Population

Odour and Dust

Refer to Chapter 10 of this Environmental Impact Statement for relevant odour mitigation measures. In general the waste will be non-odorous Construction and Demolition (C&D) and Commercial and Industrial (C&I) waste. However, if odorous waste is present the odour will be controlled by containing the odorous material in a bay enclosed with a retractable tarpaulin cover.

Dust extraction and containment at appropriate locations is incorporated into the design of the plant.

Noise

The design of the site has been laid out so as to minimise noise impact on the surrounding environment. All major noise producing plant associated with the proposed facility is to be located within the site buildings and not in the open air. Refer to Chapter 11 of this Environmental Impact Statement for relevant noise mitigation measures.

5.4.3 Employment

The operation of this facility will generate initially approximately 72 jobs during Phase 1 with approximately 179 employees during Phase 2. This impact is positive, therefore there are no mitigation measures proposed.

5.4.4 Tourism and Amenities

There is no public right of way through or near the proposed Material Recovery Facility and will not have a negative impact on amenities and tourism in the area.

5.4.5 Landscape

The proposed Warehouse was granted permission in 2006 as part of the application for all of Premier Business Park. The change of use of the building does not affect its dimensions and design and the location was therefore deemed appropriate and no other locations were considered. Refer to Chapter 13 for further details.

5.4.6 Roads, Rail and Traffic

Shift hours and break times will be organised so that vehicle movements to and from the facility would be kept to a minimum during the peak hours on the surrounding road network. The development includes for pedestrian routes to all areas within the site. The layout of the facility has been designed to avoid potential conflict between HGVs and pedestrians. Refer to Chapter 12 for further details.

5.5 CONCLUSION

In summary the proposed Material Recovery Facility will have a positive impact on the socio-economic standing of the area. This takes the form of direct and indirect job creation. All activities at the facility will be carried out with regard to strict environmental guidelines. When all mitigation measures are complied with there should be no significant impacts. It is anticipated that the development will not have a negative impact on the everyday activities and lifestyles of the people residing in the area.

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6 ECOLOGY

6.1 INTRODUCTION

This assessment was conducted in accordance with Environmental Protection Agency (EPA) *Guidelines on the Information to be contained in Environmental Impact Statements* (EPA, 2002), *EPA Advice Notes on Current Practice (in the preparation of Environmental Impact Statements)* (EPA, 2003), and also in general accordance with the *Guidelines for Ecological Impact Assessment in the United Kingdom* (Institute of Ecology and Environmental Management, 2006).

6.1.1 Study Methodology

This ecological assessment comprised both a desktop study and a field survey. The desk study comprised the following elements:

- Identification of all sites designated for nature conservation within 5km of the development site.
- Consultation with the relevant statutory and non-statutory bodies.
- Review of existing databases with information on the distribution of rare or protected species
- Review of Ordnance Survey maps and aerial photography in order to determine broad habitats that occur within the existing site.

TOBIN undertook site visits to carry out habitat and general mammal assessments in July 2007.

The habitat assessment was conducted in accordance with The Heritage Council's Draft methodology, *A Standard Methodology for Habitat Survey and Mapping in Ireland* (Natura Environmental Consultants, 2002) and habitats were classified according to The Heritage Council's *A Guide to Habitats in Ireland* (Fossitt, 2000). Plant identification and nomenclature principally follows Webb *et al.* (1996). Grass identification and nomenclature was further assisted by Rose (1989). The predominant plant species for each habitat type were recorded in order to accurately determine habitats present on the site. Habitats were rated according to the Site Evaluation Scheme contained in the National Roads Authority's *Guidelines for Assessment of Ecological Impacts of National Road Schemes* (National Roads Authority, 2006).

See Appendix 6.1 for qualifying criteria.

The general mammal survey primarily involved searching the site for evidence/signs of mammals (e.g. tracks, scats, dwellings and occasionally direct sightings). An assessment of the habitats in terms of their importance for mammals was also undertaken.

Survey Constraints

The habitat assessment took place in late July. It is possible that some plant species may have been overlooked or under-recorded due to seasonal factors.

A comprehensive faunal survey was not a practical proposition due to natural mammalian behaviour. Most mammals are small and shy of human presence. Therefore, it would take a more detailed study to confirm their presence. Also mammals often tend to be more active at night making their presence more difficult to detect.

6.2 EXISTING ENVIRONMENT

6.2.1 Consultation

Consultation letters were sent to the Department of Environment, Heritage and Local Government, Eastern Regional Fisheries Board, the Heritage Council and the Irish Wildlife Trust. To date no responses have been received.

6.2.2 Nature Designated Areas

The National Parks and Wildlife Services database of designated nature conservation areas was reviewed. The database was searched for designated sites within 5 km of the site. All Natural Heritage Areas (NHA) or proposed Natural Heritage Areas (pNHA) are of national importance. Table 6.1 and Figure 6.1 - Designated Conservation Areas, present the designated areas within 5km of the site.

Table 6-1 Nature Designated Areas within 5km of the site

Name	Site Code	Designation	Distance and direction from study area
Royal Canal	002103	pNHA	2.1km south
Liffey Valley	000128	pNHA	4.2km southwest

pNHA = proposed Natural Heritage Area

Site synopses from the National Parks and Wildlife Services (NPWS) database for sites proposed/designated for nature conservation are contained in Appendix 6.2.

6.2.3 Habitat Assessment

Overview

This small (less than two hectares) site forms part of the developing Business Park on the Ballycoolin Road. It is proposed to construct a Materials Recovery Facility on the site. Construction work within this Park is ongoing at the development site. The M50 forms the southern boundary. The site is low lying with a neutral aspect.

The site is essentially an area of abandoned grassland that has areas of weed invasion where the ground has been disturbed. One habitat type was identified within the site boundaries, Improved Agricultural Grassland (GA1).

Improved Agricultural Grassland (GA1)

The entire site has been classed as being of Improved Agricultural Grassland (GA1). This is due to the dominance of perennial rye-grass (*Lolium perenne*) within the sward, other grass species are present, notably creeping bent (*Agrostis stolonifera*), Yorkshire fog (*Holcus lanatus*), timothy (*Phleum pratense*) and meadow foxtail (*Alopecurus pratensis*) but rye-grass is the dominant species. The land has not been managed for agriculture in the recent past and has allowed some elements of coarser vegetation to develop such as cocks foot (*Dactylis glomerata*), false oat grass (*Arrhenatherum elatius*) and hogweed (*Heracleum sphondylium*), some of the 'weed' species that would be associated with agricultural

grassland are present at higher densities than would be expected in a well managed agricultural grassland. These species include creeping and meadow buttercups (*Ranunculus repens* and *R. acris*), creeping and spear thistle (*Cirsium arvense* and *C. vulgare*) and broad-leaved dock (*Rumex obtusifolius*). The cessation of agricultural management has also led to the development of a more diverse sward structure with tussocks of coarser vegetation occurring.

There are some small areas (less than five square metres) within the grassland site that are dominated by 'weed' species, chiefly creeping and spear thistles along with ragwort (*Senecio jacobaea*) and nettle (*Urtica dioica*). These patches occur close to the newly constructed access road that runs to the north of the development site and is part of the ongoing Business Park development. It is likely that disturbance to the soil or some deposition of spoil material has created the conditions to allow these species to flourish.

Elsewhere within the site, there are signs of vehicles having driven through the grassland in the past and creating trackways. These trackways are now vegetated but contain species typical of the bare earth conditions found alongside tracks such as knotgrass (*Polygonum* sp.), mayweed (*Tripleurospermum inodorum*), yarrow (*Achillea millefolium*), ribwort plantain (*Plantago lanceolata*), corn poppy (*Papaver rhoeas*) and burdock (*Arctium minus*).

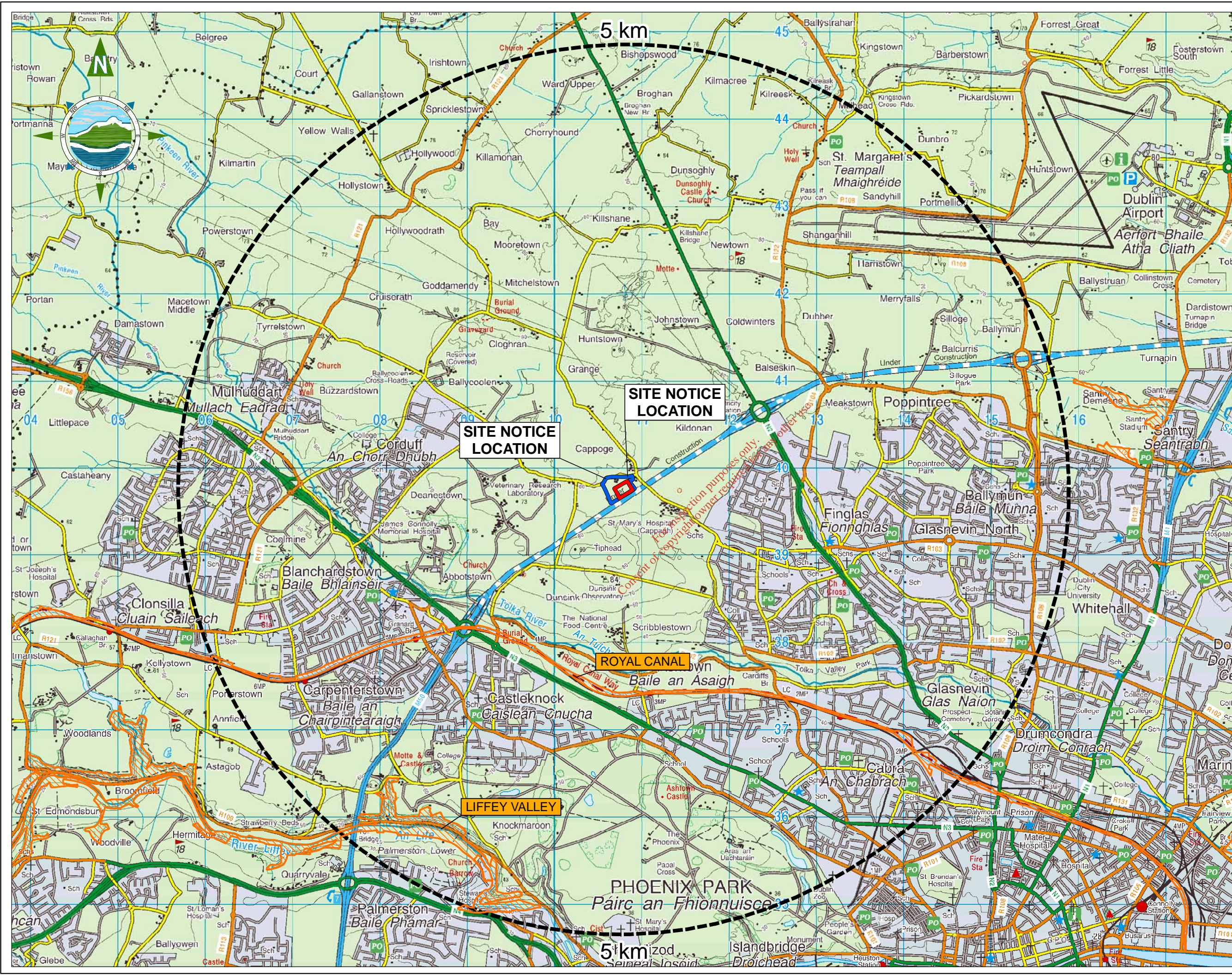
There are two areas of bare ground where the ground vegetation has been removed and soil exposed. These areas are presumed to have been created as part of site investigations work and neither area is considered large enough to be classed as a separate habitat category.

This habitat type appears to have been derived from an abandoned agricultural grassland and exhibits some diversity of plant species; it is classed as being of low to moderate ecological value.

Adjacent Habitats

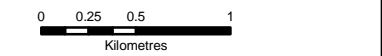
A tall hedgerow lies to the east of the site's eastern boundary. This hedgerow is dominated by an abundant growth of hawthorn (*Crataegus monogyna*) with occasional mature ash (*Fraxinus excelsior*). Blackthorn (*Prunus spinosa*) and bramble (*Rubus fruticosus* agg) are the other major components. This hedgerow contains native species and forms a mature hedgerow, and so is worthy of note.

A tall, metal railing fence and then a planted line of trees that screen the M50 forms the southern boundary of the site. The tree species planted are a mix of native; ash, holly (*Ilex aquifolium*), alder (*Alnus glutinosa*) and oak (*Quercus* sp) and non-native species; poplar (*Populus* sp) and sycamore (*Acer pseudoplatanus*). No ground layer has yet to develop under the planted trees.



LEGEND

- Site Activity Boundary
- Premier Business Park
- Designated Conservation Areas**
 - NHA (Natural Heritage Area)



- NOTES**
- FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
 - ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
 - ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
 - ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Issue	Date	Description	By	Chkd.
A	26-11-07	Issued	A.G.	M.H.

Client: **MCR ENVIRONMENTAL**

Project: **BALLYCOOLIN ROAD MATERIALS RECOVERY FACILITY**

Title: **DESIGNATED CONSERVATION AREAS MAP**

Scale @ A3: **1:40,000**

Prepared by: **A. Gruschka** Checked: **M. Hogan** Date: **Nov 2007**

Project Director: **D. Grehan**

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FIGURE 6.1 A

6.2.4 Faunal Assessment

Fox tracks were observed in mud alongside a track lying to the north of the site. There were no signs of runs through the site or any other indication that foxes regularly use the site. No other signs or trails of any other mammals were recorded on site. The mature hedgerow lying to the east of the site provides good feeding conditions for bats but there are no potential roost sites identifiable on the site or the immediate vicinity.

The grassland on site provides suitable conditions for the small rodents, pygmy shrew and wood mouse. Both species are common and widespread throughout Ireland (Hayden & Harrington, 2000).

During the walkover survey, family groups of pheasants and a single wren were recorded in the grassland area.

6.2.5 Rare and Protected Flora

The development site is located in the Ordnance Survey National Grid 10 km square O13. A plant species list for this 10 km square was generated from the CD-Rom version of the *New Atlas of British and Irish Flora* (Preston *et al.*, 2002). This list was then compared to the list of species protected under the Flora (Protection) Order, 1999 and that are included in the Irish Red Data Book (Curtis and McGough, 1988). Table 6.2 overleaf presents the protected or rare species with records occurring in this grid square.

Table 6-2 Rare and Protected Plant Species recorded in 10 km square O13

Species	Status	Category
Corncockle, (<i>Agrostemma githago</i>)		Extinct
Corn Chamomile (<i>Anthemis arvensis</i>)		Extinct
Shepherd's Needle (<i>Scandix pecten-</i> <i>veneris</i>)		Extinct
Divided Sedge (<i>Carex divisa</i>)	Protected	Critically Endangered
Nettle-leaved Bellflower (<i>Campanula</i> <i>trachelium</i>)		Endangered
Blue Fleabane (<i>Erigeron acer</i>)		Endangered
Red Hemp-nettle (<i>Galeopsis angustifolia</i>)	Protected	Endangered
Cornflower (<i>Centaurea cyanus</i>)		Endangered
Red Hemp-nettle (<i>Galeopsis angustifolia</i>)	Protected	Endangered
Round-leaved Crane's-bill (<i>Geranium</i> <i>rotundifolium</i>)		Endangered
Opposite-leaved Pondweed (<i>Groenlandia</i> <i>densa</i>)	Protected	Endangered
Meadow Barley (<i>Hordeum secalinum</i>)	Protected	Endangered
Hairy St John's-wort (<i>Hypericum hirsutum</i>)	Protected	Endangered
Sharp-leaved Fluellen (<i>Kickxia elatine</i>)		Endangered
Darnel (<i>Lolium temulentum</i>)		Endangered
Weasel's-snout (<i>Misopates orontium</i>)	Protected	Endangered
Small-white Orchid (<i>Pseudorchis albida</i>)	Protected	Endangered

Table 6.2 continued.

Green Figwort (<i>Scrophularia umorosa</i>)		Endangered
Hairy Violet (<i>Viola hirta</i>)	Protected	Endangered
Chives (<i>Allium schoenoprasum</i>)	Protected	Vulnerable
Smooth brome (<i>Bromus racemosus</i>)		Rare
Wood Small-reed (<i>Calamagrostis epigejos</i>)	Protected	Rare
Water Violet (<i>Hottonia palustris</i>)		Vulnerable
Henbane (<i>Hyoscyamus niger</i>)		Vulnerable
Borrer's Saltmarsh Grass (<i>Puccinellia fasciculata</i>)	Protected	Vulnerable
Wild Clary (<i>Salvia verbenaca</i>)		Vulnerable
Bee Orchid (<i>Ophrys apifera</i>)		Species not considered threatened in the Republic but protected in Northern Ireland
Ivy Broomrape (<i>Orobanche hederæ</i>)		Species not considered threatened in the Republic but protected in Northern Ireland
Cowslip (<i>Primula veris</i>)		Species not considered threatened in the Republic but protected in Northern Ireland

No rare or protected species were recorded during the site visit. The habitats present on site are not suitable for most of the species listed in Table 6.2 and so it is to be expected that none of these plants were recorded. Smooth brome (*Bromus racemosus*) is a plant of meadows and roadsides (Webb *et al*, 1996) and so conditions on site may suit this plant. However, the previous record for this 10km grid square was pre 1970 (Preston *et al*, 2002) and so it is unlikely that the plant occurs on site. Additionally, the field survey did not record this plant.

6.2.6 Overall Evaluation

The development site does not lie within or adjacent to any area that has been designated for nature conservation under Irish or European legislation. There are only two designated sites within 5km of the proposed development with the nearest being the Royal Canal pNHA, which lies some 2.1km to the south.

Only one habitat type was identified, Improved Agricultural Grassland (GA1) which was classed as being of low to moderate ecological value due to an increase in species and structural diversity following the abandonment of agricultural management.

No rare or protected species of plant or animal were recorded on site. The hedgerow lying to the east of the site provides good foraging conditions for bats but there are no suitable locations for potential bat roosts on site. All bats and their roosts are protected under the Irish Wildlife Acts.

6.3 POTENTIAL IMPACTS

6.3.1 Nature Designated Sites

The proposed development site does not lie within or adjacent to any area designated for nature conservation. There will be no direct or indirect impacts on any site designated for nature conservation.

6.3.2 Habitats

The proposed development will result in the permanent removal of the Improved Agricultural Grassland (GA1) habitat leading to a minor to moderate negative impact. The assessment of the impact follows NRA guidance (NRA 2006).

Indirect impacts may occur on the adjoining habitats through temporary deposition of spoil material or damage to extensive root systems.

6.3.3 Fauna

Removal of the Improved Agricultural Grassland habitat will lead to a loss of foraging habitat for birds such as pheasant and wren, both of which were observed on the site during the walkover survey. The coarse grassland present on site does not provide ideal nesting sites for birds although small scrub areas containing patches of bramble or tussocks of vegetation

would be suitable for breeding birds, such as wren and chiffchaff, however the impact on nesting birds is expected to be minor providing mitigation measures are implemented.

No protected species of mammals were recorded on site. The main impact on the mammalian fauna is likely to be to small rodent populations, however, the nearby hedgerows will continue to provide good habitat for these animals and local populations will be unaffected by the proposed development.

6.3.4 Rare or Protected Flora

There are no rare or protected species of flora present on site and therefore, this development will not impact on any rare or protected flora.

6.4 MITIGATION MEASURES

6.4.1 Habitats

There are no mitigation measures for the permanent removal of the existing habitat.

Any landscaping or screening proposals that involve planting vegetation should use native species of local provenance that complement the nearby hedgerow.

6.4.2 Fauna

Any lighting required during the operation of the proposed Materials Recovery Facility should avoid illuminating the hedgerow to the east to avoid any indirect impacts on feeding bats. This can be achieved by fitting hoods to direct light away from this hedgerow (www.bats.org.uk).

7 SOILS, GEOLOGY & HYDROGEOLOGY

7.1 INTRODUCTION

TOBIN Consulting Engineers have prepared this report for a proposed Materials Recovery Facility at the Ballycoolin Road, Cappoge, County Dublin as part of an Environmental Impact Statement.

The information contained within this Chapter is concerned with the description of the existing geological character of the site.

The geological material existing within the site has been generated by the deposition of detritus over millions of years. The geological material underlying the proposed site, both the glacial mineral subsoil and the bedrock are concealed below ground. The nature, extent and complexity of the geological material is detailed, from the surface downwards through the mineral subsoil to the bedrock.

7.1.1 Study Methodology

This report has been prepared using the recommendations set out in the Environmental Protection Agency (EPA) document 'Guidelines on Information to be contained in Environmental Impact Statements' (2002). The guidelines and recommendations of the Institute of Geologists of Ireland (IGI) publication 'Geology in Environmental Impact Statements – A Guide (September 2002)' was also taken into account in the preparation of this chapter.

The information contained in this chapter has been divided into sub-sections, so as to describe the various aspects pertaining to soil, geology and hydrogeology. In the preparation of this chapter, all available regional and site specific information was collated and assessed. The information sources are detailed further below.

The characterisation of the site is considered detailed and sufficient to adequately characterise the geological setting of the site. The information included in this section is considered to meet the data requirements suggested in the IGI publication 'Geology in Environmental Impact Statements - A Guide' (2002).

In this chapter the potential impact on the geological environment resulting from development of this site is assessed and mitigation measures are proposed to reduce any significant impacts. Based on the mitigation measures proposed the significance of the predicted impact on the geological environment is determined.

7.2 EXISTING ENVIRONMENT

7.2.1 Site Location

The area to which this Environmental Consideration Report refers forms part of the developing Premier Business Park on the Ballycoolin Road. The development site is situated approximately 2km to the northeast of Blanchardstown and approximately 2.5km west of Finglas, in County Dublin. The Premier Business Park site is bound to the south by the M50 motorway, and by agricultural lands and subsequent tertiary roads to the west and north east and by Ballycoolin Road to the north.

Planning Permission (Ref: F05A/1363) has been granted for the Premier Business Park, which includes permission for six large high-bay industrial units and 71 No. industrial units. This Planning Permission was granted in May 2006. The planning application to which this Environmental Impact Statement refers to, is to effectively change the use of two of these high-bay units to develop a Materials Recovery Facility. This proposed facility will be designed to recover materials both from Construction and Demolition (C&D) waste and Commercial and Industrial (C&I) waste.

7.2.2 Topography

The site itself is generally flat, with the local topography ranging from between 70 to 80m AOD. The topography of the surrounding area is similar to that of the subject site.

7.2.3 Soil

According to the EPA the subject site is underlain by two different types of tills. The first area, which covers the majority of the site, is soil described as a deep well drained mineral soil derived from mainly calcareous parent materials (BminDW). The soils in this category include Grey Brown Podzolics, Brown Earths (medium-high base status). The second till group, which lies to both eastern and western sides of the site, is classified as deep poorly drained mineral soil derived from mainly calcareous parent materials (BminPD). The soils in this category are classified as surface water gleys or groundwater gleys. Rocky patches were noted off site to the north western area of the site, described as shallow well drained mineral soil (BminSW) derived from mainly calcareous parent materials (RckCa). The soils in this category are classified as Renzinas, Lithosols.

7.2.4 Subsoil (Quaternary) Geology

General information concerning the Quaternary Geology is contained in the Geological Survey of Ireland (GSI) Sheet 16 1:100,000 map series “Geology of Kildare-Wicklow” publication. Most of the Quaternary sediments here were deposited during the Ice Age itself, either directly from the huge ice sheets that spread across the area (from the Midlands, the Irish Sea Basin and to a lesser extent, from the Wicklow Mountains), or from the meltwater following the slowly melting ice sheets.

According to the EPA, the subsoils in the area comprise primarily of Limestone till (TIs). The GSI describe the subsoil in a similar manner as mostly till derived chiefly from limestone. Bedrock at the surface was also noted by the EPA and the GSI, in small patches to the north of the site. The regional classification of the subsoil is consistent with the materials encountered during site specific intrusive investigations at the subject site.

7.2.5 Site Specific Subsoil Geology and Depth of Bedrock

Intrusive site investigations, comprising soil stripping, were carried out at the subject site to determine the nature and extent of the underlying subsoils.

The topsoil encountered was generally described as light brown gravelly clay, to dark brown stiff clay with cobbles and boulders, generally consistent with glacial till descriptions. This till was mechanically deposited by moving ice thus accounting for the unsorted mixture of particles of all sizes.

Furthermore, made ground (including some pieces of metal) was observed in areas during the site walkover undertaken on the 31st of July, 2007, by TOBIN. Foundations of an old building were excavated near the entrance of the Ballycoolin Road. This site is located north of the proposed Materials Recovery Facility.

Surface water was also observed on site during the site walkover. However, it should be noted that no surface water was reported at the site of the proposed Materials Recovery Facility development.

Standing water was observed leading from the archaeological area to the Ballycoolin Road and two No. ponds of standing water (sealed off) were noted towards the north of the Premier Business Park.

7.2.6 Bedrock Geology

The bedrock geology underlying the site is discussed in the Geological Survey of Ireland (GSI) publication entitled “Geology of Kildare-Wicklow”. The 1:100,000 scale bedrock

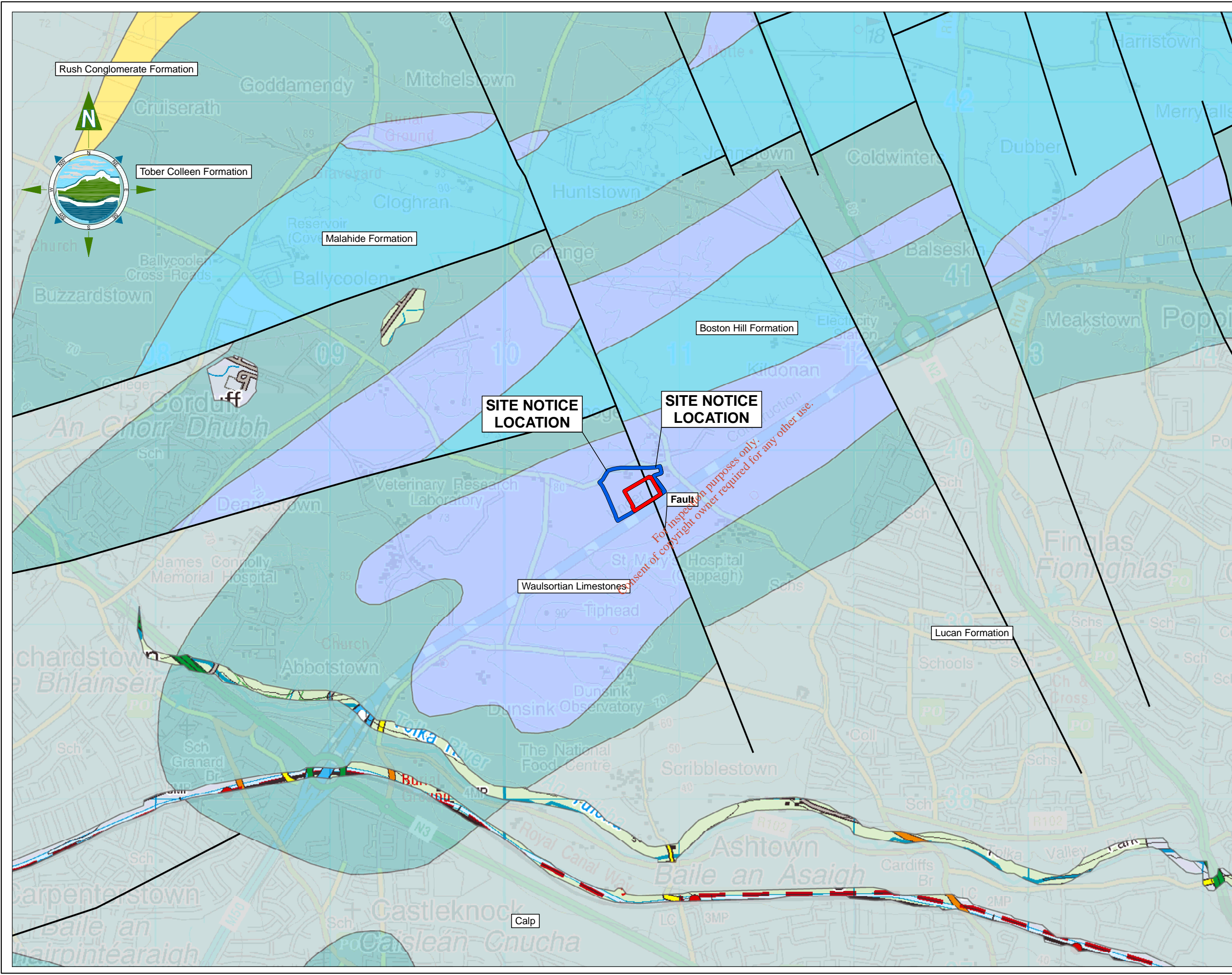
geology map of the area (Sheet 16) indicates that the subject site is underlain entirely by Waulsortian Limestones (WA) (Refer to Figure 7.1 - Bedrock Geology Map). A fault is also noted that traverses the underlying bedrock in a north-north-west to south-south-east direction. It should be noted that faults are common features of Irish bedrock. This fault is minor and inactive with no potential impact on the structural integrity of the site.

The Waulsortian Limestones are described as pale grey, commonly massive biomicrite with stromatactis in mound forms or complexes, with depositional dips less than 40° or more, and commonly dolomitised, by the GSI. The Waulsortian is said to reach a maximum thickness of over 400m in the area.

7.2.7 Aquifer Classification

An aquifer classification by the GSI describes the Waulsortian Limestone as a “Locally Important Aquifer, which is Moderately Productive only in Local Zones”(LI). According to the GSI, the Calp represents the basinal facies of the post Waulsortian/Ballysteen/Boston Hill succession, and this interval is very variable, but dominated by low permeability, fine grained and argillaceous limestones and shales. Therefore, the bedrock is said to be generally unproductive. Most groundwater circulation in these rocks is in the upper weathered zone, along more permeable beds of limited extent and along fracture or fault zones. The flow is generally in localised zones with little or no continuity between them.

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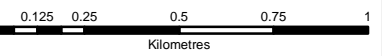


LEGEND

- Site Activity Boundary
- Premier Business Park

Bedrock Geology

- Boston Hill Formation
- Lucan Formation
- Tober Colleen Formation
- Waulsortian Limestones



- NOTES**
- FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
 - ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
 - ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
 - ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Issue	Date	Description	By	Chkd.
A	26-11-07	Issued	A.G.	S.T.

Client: **MCR ENVIRONMENTAL**

Project: **BALLYCOOLIN ROAD MATERIALS RECOVERY FACILITY**

Title: **BEDROCK GEOLOGY MAP**

Scale @ A3: **1:20,000**

Prepared by: **A.Gruschka** Checked: **S. Tinnelly** Date: **Nov 2007**

Project Director: **D. Grehan**

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FIGURE 7.1 A

7.3 POTENTIAL IMPACTS

As the building is already under construction, there will be no potential impacts on the soil or geology of the site due to construction works at the site. The soil and subsoil at the site of the proposed Materials Recovery Facility has been disturbed to create a level platform for the construction of the warehouse.

Huntstown Quarry is located approximately 1.3km north of the facility and is an established quarry in this region. It is not envisaged that the quarry operations will have any impact on the subject site at the Premier Business Park, Ballycoolin.

Potential impacts include contamination of the soil, subsoil and underlying geology as a result of spillages in the surrounding area of the Materials Recovery Facility. However, with mitigation measures put into place, no significant impact is predicted on the geology of the area as a result of the proposed Materials Recovery Facility.

7.4 MITIGATION MEASURES

The Warehouse, which will house the Materials Recovery Facility, is currently under construction under the conditions of planning permission Reg. No. F05A /1363. Therefore this chapter addresses any potential mitigation measures, which may be recommended as part of the change of use of the proposed Materials Recovery Facility.

Correct storage of all materials within the proposed Materials Recovery Facility is recommended in order to mitigate against potential spillages which might result in run-off to nearby surface waters and contamination of underlying geology.

8 WATER

8.1 INTRODUCTION

TOBIN Consulting Engineers have prepared this report for the development of the proposed Materials Recovery Facility at the Ballycoolin Road, Cappoge, County Dublin as part of an Environmental Impact Statement.

This Chapter addresses the surface water and groundwater aspects of the environment and assesses the impacts of the proposed development on the existing water environments.

8.1.1 Study Methodology

This report has been prepared using the recommendations set out in the Environmental Protection Agency (EPA) document 'Guidelines on Information to be contained in Environmental Impact Statements' (2002).

This chapter describes the hydrological and hydrogeological setting of the site and refers to the information available from a number of published sources.

The information contained in this chapter has been divided into sub-sections, so as to describe the various aspects pertaining to water environment. In the preparation of this chapter the following protocols were used in order to assess the hydrological and hydrogeological context and character of the site: -

- The site was assessed using published information and regional hydrological data;
- All available information was collected from the Environmental Protection Agency (EPA) with respect to historical water quality in this region;
- All available information from the Geological Survey of Ireland (GSI) was assessed and collated;
- All available information from the Office of Public Works (OPW) was assessed and collated;
- Site specific information with respect to the existing services; and
- This Water Report (Surface Water and Groundwater) was prepared following the interrogation and collation of all available information.

The characterisation of the site is considered detailed and sufficient to adequately assess the hydrological and hydrogeological setting of the site.

In this chapter the potential impact on the surrounding water environment resulting from the operation of a Materials Recovery Facility at the proposed site is assessed and appropriate mitigation measures are submitted.

8.2 EXISTING ENVIRONMENT

The area to which this Environmental Impact Statement refers to forms part of the developing Premier Business Park adjacent the Ballycoolin Road. The development site is situated approximately 2km to the northeast of Blanchardstown and approximately 2.5km west of Finglas, in County Dublin. The site is bound to the south/southeast by the M50 motorway, and by agricultural lands and by Ballycoolin Road to the north.

Planning Permission (Ref: F05A/1363) has been granted for the Premier Business Park, which includes permission for six large high-bay industrial units and 71 No. industrial units. This Planning Permission was granted in 2006. The proposed facility will be designed to recover materials both from Construction and Demolition (C&D) waste and Commercial and Industrial (C&I) waste.

The setting of the site in relation to the surface water environment is shown on Figure 8.1 - Regional Surface Water.

8.2.1 Surface Water Drainage

The site is located in the Tolka River Catchment, in the Eastern River Basin District. The Tolka River flows to the south of the site, less than 2km away, in an easterly direction towards Dublin Bay. Two unnamed tributaries feeding the River Tolka to the south are the nearest primary surface water features to the subject site. One flows to the west of the site approximately 2km away at Cloghran entering the Tolka river at Abbotstown, and one is situated approximately 2km to the east of the site at the Finglas N2 roadway roundabout feeding into the Tolka River near Tolka Valley Park.

There are no surface water features noted at the site of the Materials Recovery Facility. However, during a site walkover there was a surface water pond to the north of the overall Premier Business Park (near the archaeological dig area), with surface water flowing from the pond during rainfall events, draining into gravel near the roadside of the Ballycoolin Road. Standing water was noted in puddles across the area adjacent to the site, but no land drains were noted.

8.2.2 Surface Water Quality

The EPA monitors the quality of Ireland's surface waters and assesses the quality of watercourses in terms of 4 No. quality categories; 'unpolluted', 'slightly polluted', 'moderately polluted', and 'seriously polluted'. These water quality categories and the water quality monitoring programme are described in the EPA publication 'Water Quality in Ireland, 2001-2003'.

The water quality assessments are largely based on biological surveys. Biological Quality Ratings or Biotic Indices (Q values) ranging from Q1 to Q5 are defined as part of the biological river quality classification system. The relationship of these indices to the water quality classes defined above, are set out in Table 8.1 below.

Table 8-1 Relationship between Biotic Indices and Water Quality Classes

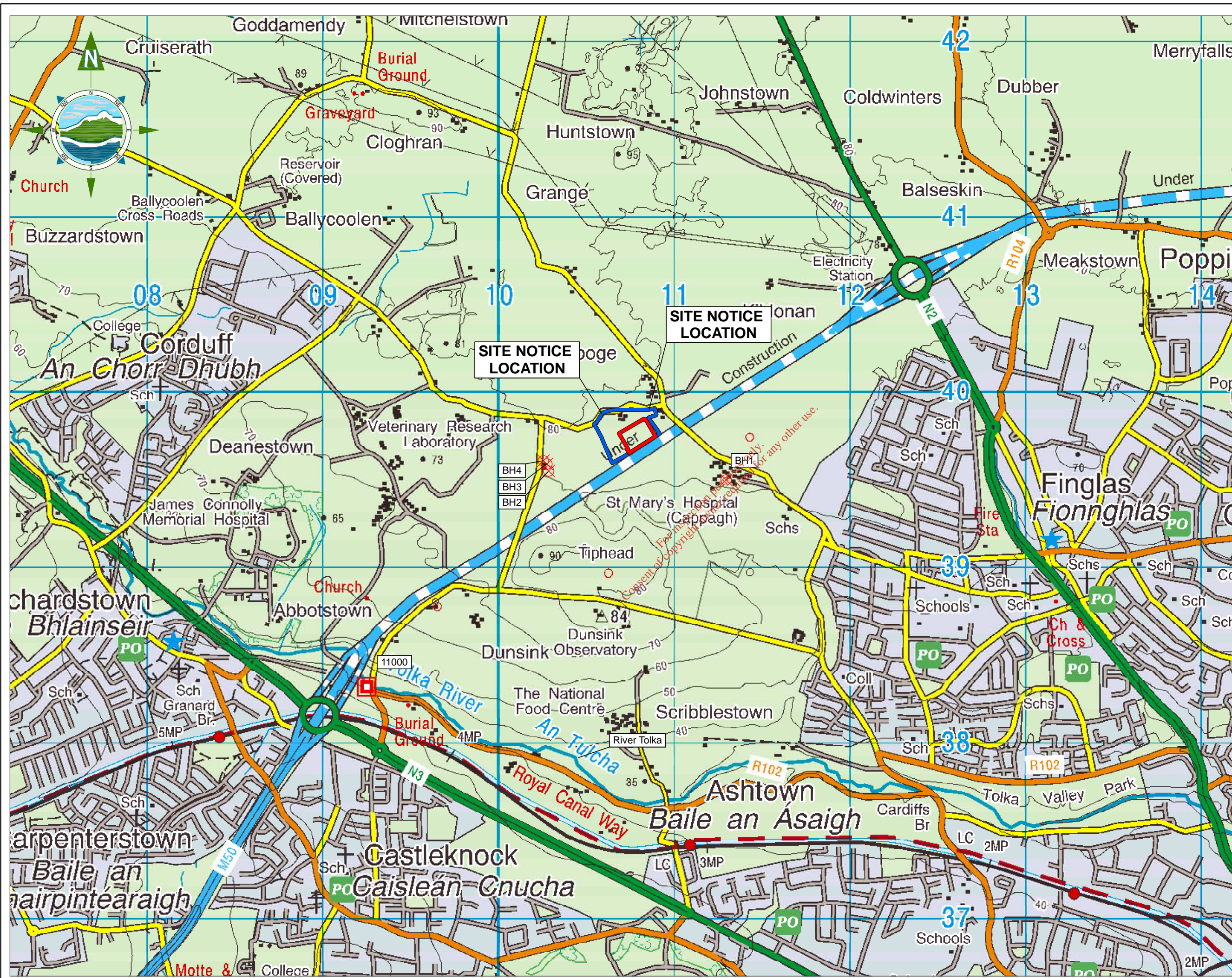
Biotic Index	Quality Status	Quality Class
Q5, 4-5, 4	Unpolluted	Class A
Q3-4	Slightly Polluted	Class B
Q3, 2-3	Moderately Polluted	Class C
Q2, 1-2, 1	Seriously Polluted	Class D

Three No. water quality monitoring stations are located on the Tolka River. The locations of these monitoring stations are shown on Figure 8.1 - Regional Surface Water. The monitoring stations are identified and summarised in the table overleaf.

Table 8-2 Biotic Indices for the Tolka River

	Station Code	Location	2002	2005
River Tolka	09T010800	Mulhuddart Bridge	3	3
River Tolka	09T011000	R102 bridge near M50	2-3	3
River Tolka	09T011100	Glasnevin, adjacent to N2 roadway.	2-3	2/0

The EPA Water Quality Database indicates that the biotic water quality in the river near the subject site varies from “Moderately Polluted” to ‘Seriously Polluted’, as shown in Table 8.2 above. The historical water quality ratings based on biological data for all of the monitoring stations discussed above are presented in Appendix 8.1.

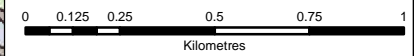


LEGEND

- Site Activity Boundary
- Premier Business Park

Environmental Monitoring Points

- EPA Monitoring Station
- GSI Borehole



- NOTES**
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Issue	Date	Description	By	Chkd.
A	26-11-07	Issued	A.G.	M.H.

Client: MCR ENVIRONMENTAL

Project: BALLYCOOLIN ROAD MATERIALS RECOVERY FACILITY

Title: REGIONAL SURFACE WATER MAP

Scale @ A3: 1:20,000

Prepared by: A.Gruschka
Checked: M.Hogan
Date: Nov 2007

Project Director: D. Grehan

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FIGURE 8.1 A

8.2.3 Hydrometrics Data

The OPW maintain 1 No. hydrometric station in North County Dublin. This station, No. 08008, is located on the Broadmeadow River Catchment area, whose boundary is located approximately 3km to the north of the subject site. All data obtained from the OPW Hydrometrics Section is included in Appendix 8.1.

The EPA have documented surface water levels and flows for both the Broadmeadow and Tolka Rivers. The Tolka Rivers summary information is presented in Table 8.3 below.

Table 8-3 EPA Surface Water Levels and Flow

Station Number	Location	DTM* Area [Km ²] 01_09_2006	Long Average Rainfall 41-60 (mm/yr)	Long Average Rainfall 71-00 (mm/yr)	DWF** (m ³ /s)	95 percentile (m ³ /s)
09003	CLONEE	65.546	-	856.7	0.0030	0.0050
09018	BATTERSTOWN	9.641	-	872.4	0.0004	0.0010
09019	DRUMCONDRA	141.938	820.0	839.2	0.0080	0.0140
09037	BOTANIC GARDENS	137.888	820.0	841.6	0.0075	0.0130

* DTM: Digital Terrain Model

** DWF: Dry Weather Flow

Overall, the Batterstown location has the smallest catchment area and also has the lowest dry weather flow. The Drumcondra Station has the largest catchment area and the highest dry weather flow. However, any impact on these surface water locations will not be as a result of the proposed development, as the development site is a considerable distance from the above stations and the operation of the Materials Recovery Facility is not adjacent to any surface water features. The proposed development will not interfere with either the water levels or the flow of the Tolka River, therefore the impact will be negligible.

8.2.4 Groundwater

The assessment of the groundwater environment is concerned with water contained below the ground surface, within the soil and bedrock environment.

8.2.5 Groundwater Flow Direction

In general terms it would be expected that the groundwater gradient would follow the topographic variation in an area. An assessment of the topographic contours displayed on the Ordnance Survey 1:50,000 scale Discovery Map for the region, indicates a southeasterly dip from approximately 80m MOD at the site to approximately 30m MOD at the Tolka River, running down the river valley. The topographic gradient across the subject site area is slight, dipping towards the south east, also towards the Tolka River Valley.

On this basis, the predominant groundwater flow direction across the subject site is likely to be in a south-southeasterly direction, towards the Tolka River, which subsequently enters Dublin Bay.

8.2.6 Evidence of Regional Karstification

The GSI reports no karst features within a 2km radius of the site.

8.2.7 Recharge and Discharge Zones

It is considered that the subject site currently behaves as a recharge zone. There are no discharge zones at the subject site. The principal discharge zone for groundwater is considered to be the Tolka River and its tributaries, as mentioned previously. The Tolka River would receive significant groundwater baseflow.

8.2.8 Groundwater Usage On – site and Off –site

There are no existing groundwater abstraction points at the subject site, nor are there any proposed. The business park is supplied by water from the local Fingal County Council mains water supply.

A formal search of the GSI Well Database was undertaken to identify wells located within a 2km radius of the site of the proposed development, within the same water catchment. A total of 4 No. records of groundwater boreholes were identified. Details of these boreholes are presented in Table 8.4 and are included in Figure 8.1 - Regional Surface Water.

Table 8-4 Details of wells within 2km radius of Subject Site

	Townland	Easting	Northing	Depth Drilled (meters)	Yield (m ³ /day)	Water Strike (meters below surface)
BH1	Cappoge	31130	23950	76.2	109.1	-
BH2	Cappoge	31026	23961	3.8	-	1.9
BH3	Cappoge	31028	23959	3.2	-	1.9
BH4	Cappoge	31029	23955	3.6	-	2.6

The groundwater wells listed above were drilled to depths ranging from 3.2m bgl to 76.2m bgl. The depth to bedrock in this region is unavailable.

The yield in the first listed borehole was described as good, as indicated in Table 8.5 and is said to be used for agricultural and domestic use. The other 3 No. listed wells are belonging to Euro-Recycles Ltd. and are located within the company/industry boundaries.

Table 8-5 GSI Classification of Well Yield Categories

Well Yield Category	Yield Range (m ³ /day)	Yield Range (gallons per hour)
Poor	<40 m ³ /day	<367 gph
Moderate	40-100 m ³ /day	367-917 gph
Good	100-400 m ³ /day	917-3669 gph
Excellent	>400 m ³ /day	>3669 gph

8.2.9 Aquifer Classification

The dominant aquifer unit underlying the proposed Materials Recovery Facility is considered to be the bedrock unit.

The bedrock underlying the proposed site is classified by the GSI as the Waulsortian Limestone Formation, and is described by as a “Locally Important Aquifer, which is Moderately Productive only in Local Zones” (LI).

The Quaternary sediments play an important role in the groundwater flow regime of the region. The permeability of the glacial tills, which occur at the site of the proposed development, is variable but generally high. The high permeability gravels and sands of till allow a recharge of the bedrock unit and provide additional storage to the underlying bedrock aquifer.

8.2.10 Groundwater Vulnerability

The Department of the Environment, Heritage and Local Government (DoEHLG), EPA and GSI have produced guidelines on groundwater vulnerability mapping that aim to represent the intrinsic geological and hydrogeological characteristics that determine how easily groundwater may be contaminated by human activities. Vulnerability depends on the quantity of contaminants that can reach the groundwater, the time taken by water to infiltrate to the water table and the attenuating capacity of the geological deposits through which the water travels. These factors are controlled by the types of subsoils that overlie the groundwater, the way in which the contaminants recharge the geological deposits (whether point or diffuse) and the unsaturated thickness of geological deposits from the point of contaminant discharge.

For vulnerability assessments with regard to bedrock aquifers the relevant geological layer is the subsoil between the release point of contaminants and the top of the bedrock. Any unsaturated bedrock layer is not considered as it is assumed that bedrock has little or no attenuation capacity due to its fissure flow characteristics. Groundwater encountered in low permeability glacial tills, or other non-aquifer subsoils, is not considered to be a target. Therefore, where low permeability subsoils overlie the bedrock it is the thickness of subsoil between the release point of contaminants and bedrock that is considered when assessing vulnerability of bedrock aquifers, regardless of whether the low permeability materials are saturated or not.

The DoEHLG, EPA and GSI vulnerability mapping guidelines allow for the assignment of vulnerability ratings from “extreme” to “low”, depending upon the subsoil type and thickness. With regard to sites where low permeability subsoils are present, the following thicknesses of unsaturated zone are specified:

Extreme	0 to 3 m
High	3 to 5 m
Moderate	5 to 10 m

Low >10 m

The GSI have mapped the subject site as being mostly of extreme vulnerability, giving it a potential soil cover of 0-3m deep from the surface. An interim study was undertaken by the GSI for the east of the subject site and describes the vulnerability as ranging between High and Low. As a precaution, the entire site should be classified as extreme vulnerability, giving it the “worst-case” vulnerability.

8.2.11 Resource Protection

The DoEHLG, EPA and GSI guidelines for Groundwater Protection Schemes allow for the combination of aquifer classification and vulnerability rating giving classifications of groundwater protection zones. The purpose of these zones is to place a control on the activities practised within a zone and thus provide protection to any underlying groundwater resources.

Therefore, it is possible to assign a worst-case scenario classification of Extreme Vulnerability to the entire subject site - LI/E (Locally Important Aquifer with Extreme Vulnerability).

The GSI have not yet defined the activities that must be controlled in relation to the type of development in question. However, given that the underlying bedrock is only classified as a locally important aquifer and that there are no existing or proposed abstractions at the subject site, the development should be considered acceptable within the assigned resource protection zones subject to normal good practice.

8.3 POTENTIAL IMPACTS

Increased Runoff and Reduced Recharge

As discussed above, the Warehouse proposed to house the Materials Recovery Facility is currently under construction and as such there are no potential construction impacts included herein.

It is estimated that runoff would be generated from the portion of the site that is covered with impermeable surfaces. All surface water runoff will be treated within Premier Business Park. The generation of additional runoff is a direct, long-term effect but is not considered to be a significant negative impact.

There is also reduced recharge to the ground in the area of the proposed Materials Recovery Facility due to impermeable surfaces. However, this reduction of potential recharge to underlying groundwater resources is not considered to be a significant negative impact given

the location of this area within a wider rural setting where most rainfall will percolate to the underlying watertable, and because the area of the subject site is extremely small when compared with the catchment of the Tolka River.

Surface Water Protection

One temporary surface water feature was noted during the site visit in July 2007 and is located to the north of the subject site. The "change of use" of the Warehouse to which this Environmental Impact Statement refers will not impact on any surface water within the Business Park if mitigation measures are implemented as described below.

The type of waste to be handled within the Materials Recovery Facility will not generate leachate and will not come into contact with rainfall. The floor of the facility will be cleaned regularly with a roadsweeper and this will not generate effluent. However, the units are designed so that any runoff from incoming material will be captured within the building. The building will be designed to contain 250mm of water throughout and there will be a sump near the exit door from where the effluent can be pumped if necessary.

A Class 2 by-pass interceptor will be used to treat surface run-off from all yards in the business park.

A Class 1 full retention interceptor will be used to treat water discharging from the fuel dispensing area (located adjacent to the bunded diesel storage area) to the surface water system.

There is the potential for roof runoff to result in surface runoff in the area of the facility. However, rainwater falling on the roof of the Materials Recovery Facility will be directed to a water tank where it will be available to supply the localised fire suppression system.

It is not envisaged that the proposed development will have any adverse impact on the water quality of the Tolka River.

Groundwater Resource Protection

It is not envisaged that the use of the Warehouse units for a Materials Recovery Facility will have an adverse impact on groundwater resources, as the subject site is not located on subsoils and bedrock that are highly valuable in terms of groundwater potential or supply.

Diesel tanks on site would have the potential to cause groundwater contamination due to accidental leakages. All fuel tanks will be adequately bunded. Run-off from the fuelling area will be directed to a Class 1, full retention interceptor.

In summary the potential impact on the surface water and groundwater environment is assessed as low as a result of the development of a Materials Recovery Facility.

8.4 MITIGATION MEASURES

The design of the Materials Recovery Facility has taken into account the potential impacts associated with the operation of the development on the water environment.

Increased Runoff and Reduced Recharge

As the Materials Recovery Facility is currently under construction an inevitable consequence of the development is the increase in runoff. Measures should be taken to ensure adequate drainage for surface water runoff is in place if the proposed Materials Recovery Facility is developed.

This is mitigated against by attenuating the surface water run-off from the site. All surface water runoff, for example from impermeable surfaces will be diverted to surface water drains and managed within the site. Rainwater falling on the roof of the Materials Recovery Facility will be directed to a water tank where it will be available to supply the localised fire suppression system. As mentioned above, a Class 1 interceptor will be used to treat water discharging from the fuel dispensing area (located adjacent to the bunded diesel storage area) to the surface water system.

The reduction of recharge to underlying groundwater resources is insignificant in the context of the overall Tolka Catchment area and is an inevitable consequence of the development. No reasonable measures could be implemented to mitigate against the reduction.

Groundwater Resource Protection

It is not envisaged that the groundwater supply from the regionally located boreholes mentioned previously will be disrupted during the operational phase of development, as the development is not planned to physically interact with the groundwater environment.

The correct design of bunded areas for the storage of Diesel tanks will be used to prevent groundwater contamination as a result of accidental spillages from the Materials Recovery Facility.

Surface Water Protection post-Construction

In terms of surface water run off, in order to prevent potential contamination of soil/surface water/ groundwater media with water that may be contaminated with oil/ solids, an appropriately sized Class 2 by-pass interceptor will be installed to treat surface water runoff from all yards in the business park.

Storage of Raw Materials, Products and Wastes during Construction

As mentioned above, with regard to on-site storage facilities and activities, any raw materials, fuels and chemicals, will be stored within designated bunded areas to guard against potential accidental spills or leakages. All equipment and machinery will have regular checking for leakages and quality of performance.

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9 CLIMATE

9.1 INTRODUCTION -CLIMATE

In this section a general overview of the climate in the Dublin region and more specific meteorological data for the proposed Materials Recovery Facility at Ballycoolin Road is outlined. Information on rainfall and potential evapotranspiration for the area is provided. This is based on information obtained from the Meteorological Service. Wind speed and orientation is also detailed.

9.1.1 Study Methodology

All meteorological data contained in this report has been received from Met Éireann. This information is adjusted when necessary to take into account the proposed site location and elevation. All calculations detailed in the report are advised methods as described by Met Éireann personnel.

9.2 EXISTING ENVIRONMENT -CLIMATE

9.2.1 General

Over the summer months the influence of anti-cyclonic weather conditions on the Western and North-western region results in dry continental air interspersed by the passage of Atlantic frontal systems. During much of the winter period the climate is characterised by the passage of Atlantic low-pressure weather systems and associated frontal rain belts from the west. Occasionally the establishment of a high-pressure area or anticyclone over Ireland results in calm conditions and during the winter months these are characterised by clear skies and the formation of low-level temperature inversions with light wind conditions at night time. If anticyclonic conditions become established for a few days or more during the summer months, high temperatures during the day might be recorded, especially at inland locations. Long spells of dry weather are relatively rare but should continental air masses or anticyclones persist over Ireland a period of drought conditions may occur which could last up to two or three weeks.

9.2.2 Weather Observation Stations

Rainfall Stations

There are a number of rainfall measuring stations throughout the country. These stations measure the daily rainfall in millimetres (mm). A number of these also measure additional parameters such as soil moisture, temperature, humidity, etc.

Synoptic Stations

Synoptic stations are those, which observe and record all the surface meteorological data. These observations include rainfall, temperature, wind speed and direction, relative humidity, solar radiation, clouds, atmospheric pressure, sunshine hours, evaporation and visibility. They report a mixture of snapshot hourly observations of the weather known as synoptic observations, and daily summaries of the weather known as climate observations. There are 15 synoptic stations located throughout Ireland.

9.2.3 Rainfall

There is no meteorological data specific to the existing site. In order to give reliable climatic data on a particular area a weather station should be within 10km of the site and in operation for at least 30 years. A climate station in Phoenix Park, Dublin has been in operation since 1829. This measuring station is located approximately 4km south of the development site. The nearest synoptic station is at Dublin Airport Synoptic Station and this is located approximately 7.5km north east of the proposed development.

Specifics of these measuring stations relative to the proposed Materials Recovery Facility at Ballycoolin are outlined in Table 9.1.

Table 9-1 Designated Meteorological Station for Ballycoolin

Location	Grid Reference	Elevation (m O.D. MH)	Height Difference (m)
MRF Ballycoolin	O108398	75	-
Dublin (Phoenix Park)	O100361	49	26
Dublin Airport	O169434	71	4

The elevation of the rainfall gauge at Dublin (Phoenix Park) measuring station is 49m OD. The elevation of the development site is approximately 75m OD. The average monthly and annual precipitation recorded at the Phoenix Park measuring station is detailed in Table 9.2 overleaf. According to Met Éireann, annual precipitation levels increase by 200 – 300 mm per 100m elevations. The height difference between the rainfall gauging station and the development site is approximately 26m. Therefore, the annual precipitation due to the elevation of the Materials Recovery Facility shall be adjusted by 65mm. Table 9.2 below shows the calculated average monthly and annual precipitation for the proposed development site.

Table 9-2 Average Monthly and Annual Precipitation (mm)

Location	Dublin (Phoenix Park)	MRF Ballycoolin
Ht. m O.D.	49	75
January	72	78.7
February	55	59.7
March	57	61.9
April	53	57.5
May	57	61.9
June	57	61.9
July	50	54.3
August	73	79.2
September	68	73.8
October	70	76.0
November	69	74.9
December	82	89.0
Annual mm	763	828

In the area of proposed development, approximately 53% of the total annual rainfall is recorded during the winter period (October – March). This amount of precipitation (including snow) will normally be associated with more prolonged Atlantic frontal weather depressions passing over the region compared to the summer.

9.2.4 Evapotranspiration and Effective Rainfall

The nearest Meteorological Station with evapotranspiration measuring equipment is located at Dublin Airport Synoptic Station. Evapotranspiration is the return of water vapour to the atmosphere by evaporation from land and by the transpiration of plants, generally measured from a short-grass covered surface (such as a permanent pasture) adequately supplied with water. Evaporation is the return of water vapour to the atmosphere by evaporation from a free water surface such as a pan of water, known as a “Class A Pan”, fitted with a depth measuring gauge. The evapotranspiration figures for the Dublin Airport Synoptic Station are detailed in Table 9.3 overleaf.

It can be noted that evapotranspiration is very low during winter months, when plant growth is minimal. The vast majority of evapotranspiration during winter months is attributable to direct evaporation from ground surfaces. During summer months the rate of evapotranspiration increases and often exceeds the monthly rainfall. This is due to increased free evaporation from the surface and from transpiration from leaves and plants.

Using the rainfall data calculated for the proposed site in Table 9.2 and the potential evapotranspiration data for the nearest synoptic station, i.e. Dublin Airport Synoptic Station, the effective rainfall for the subject site can be calculated. Table 9.3 also details the effective rainfall to the site. Any rain falling on the site will infiltrate to the ground, evaporate from the surface or become surface water runoff.

Table 9-3 Hydrological Data for the Site

Month	Rainfall (mm)	Potential Evapo-transpiration (mm)	Actual Evapo-transpiration (mm) (PE x 0.92)	Effective Rainfall (mm)
January	78.1	9.1	8.4	69.8
February	59.7	20.9	19.2	40.5
March	61.9	39.1	36.0	25.9
April	57.5	60.8	55.9	1.6
May	61.9	82.7	76.1	-14.2
June	61.9	93.8	86.3	-24.4
July	54.3	90.5	83.3	-29.0
August	79.2	73.0	67.2	12.1
September	73.8	59.1	46.1	27.7
October	76.0	25.0	23.0	53.0
November	74.9	9.9	9.1	65.8
December	89.0	5.2	4.8	84.2
Total	828	560.1	515.3	312.7

The surface water runoff drainage system is discussed in more detail in Chapter 8.

9.2.5 Wind

The closest synoptic weather station with the capability of measuring wind and that has been in operation for at least 30 years is Dublin Airport Synoptic Station, which is approximately 7.5km north east of Ballycoolin.

The wind rose for Dublin Airport Synoptic Station shows that the prevailing winds are from the southwest (Refer to Appendix 9.1). The mean wind speed at Dublin Airport Synoptic

Station is 10.0 knots (5.1m/s). This value is also applied to the proposed Materials Recovery Facility at Ballycoolin Road.

9.3 POTENTIAL IMPACTS – CLIMATE

There is a potential for impacts to climate as a result of any development that requires fuel and energy. These impacts are the generation of greenhouse gas emissions (principally carbon dioxide and oxides of nitrogen) from traffic and electrical supply. Since traffic generated as part of the collection of C&I and C&D waste would occur anyway, the overall impacts of this proposed development on climate are considered negligible.

The potential effects of climate change on a global scale have been investigated by the Intergovernmental Panel on Climate Change (IPCC). The resulting impacts in Ireland are outlined in the National Climate Change Strategy and recently by the EPA and include the following:

- Significant increases in winter rainfall, of the order of 10% in the southeast, with a corresponding increase in the water levels in rivers, lakes and soils. Serious flooding more frequent than at present.
- Lower summer rainfall, of the order of 10% in the southern half of the country. Less recharge of reservoirs in the summer leading to more regular and prolonged water shortages than at present. Loss of bog land due to regular water deficits.
- Increased agricultural production, with new crops becoming more viable and potentially reduced agricultural costs. Grass growth could enjoy beneficial effects with an increase in 20% possible with higher temperatures and changes in rainfall patterns.

It is recognised that Ireland cannot, on its own, prevent or ameliorate the impacts of climate change. However, the National Climate Change Strategy states that Ireland must meet its responsibilities with regard to reducing CO₂ emissions in partnership with the EU and the global community.

9.4 MITIGATION MEASURES –CLIMATE

The effect of the proposed Materials Recovery Facility is not considered to be significant in comparison to the existing impact from use of the lands as a Business Park and since overall decreases in traffic movements will occur in general. Improvements in the road network should improve overall air quality due to the reduction in idling events.

As there will be no significant impact on the local or global climate, there are no mitigation measures proposed.

10 AIR AND ODOUR

10.1 INTRODUCTION

Odour Monitoring Ireland were commissioned to undertake a baseline air quality survey in order to assess the potential impact to air quality from the proposed Materials Recovery Facility to be located at Ballycoolin Road, Dublin 11. This study will identify, describe and assess the impact of the development in terms of its impact on air quality.

A baseline air quality assessment has been carried out in the area between the time periods 21st August to 17th September 2007 in the vicinity of the proposed development. The purpose of this survey was to identify existing pollutant trends in the vicinity of the proposed development, and to assess the potential impact of the proposed development. This will establish sufficient spatial information in order to determine compliance with relevant ambient air quality legislation. Additionally, comparison with longer period limit values can be used to establish trends and are important in defining baseline air quality.

10.1.1 Study Methodology – Assessment Criteria

The EU has introduced several measures to address the issue of air quality management. In 1996, Environmental Ministers agreed a Framework Directive on ambient air quality assessment and management (Council Directive 96/62/EC). As part of the measures to improve air quality, the European Commission has adopted proposals for daughter legislation under Directive 96/62/EC. The first of these directives to be enacted, 1999/30/EC, has set limit values which replaced existing limit values under Directives 80/779/EEC, 82/884/EEC and 85/203/EEC in April 2001. The new directive, as relating to limit values for sulphur dioxide, lead, PM₁₀ and nitrogen dioxide, is detailed in Table 10.1 overleaf. EU Council Directive 2000/69/EC defines limit values for both carbon monoxide and benzene in ambient air and is presented in Table 10.2.

The National Air Quality Standards Regulations 2002 (S.I. No. 271 of 2002) transpose those parts of the “Framework” Directive 92/30/EC on ambient air quality assessment and management not transposed by Environment Protection Agency Act 1992 (Ambient Air Quality Assessment and Management) Regulations 1999 (S.I. No. 33 of 1999). The 2002 Regulations also transpose, in full, the 1st two “Daughter” Directives 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air and 2000/69/EC relating to limit values for benzene and carbon monoxide in ambient air.

Table 10-1 Irish and EU Ambient Air Standard (SI 271 of 2002 and 1999/30/EC)

Pollutant	Regulation	Limit Type	Margin of Tolerance	Value
Nitrogen Dioxide	1999/30/EC SI 271 of 2002	Hourly limit for protection of human health - not to be exceeded more than 18 times/year-1 hour average	50% until 2001 reducing linearly to 0% by 2010 for 199/30/EC 40% from the date of entry into force of these Regulations, reducing on 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by 1 January 2010 for SI 271 2002	200 $\mu\text{g}/\text{m}^3$ NO ₂
		Annual limit for protection of human health- Annual	50% until 2001 reducing linearly to 0% by 2010 for 1999/30/EC 40% from the date of entry into force of these Regulations, reducing on 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by 1 January 2010 for SI 271 2002	40 $\mu\text{g}/\text{m}^3$ NO ₂
		Annual limit for protection of vegetation- Annual	None	30 $\mu\text{g}/\text{m}^3$ NO + NO ₂
Lead	1999/30/EC	Annual limit for protection of human health- Annual average	100% until 2001 reducing linearly to 0% by 2005	0.5 $\mu\text{g}/\text{m}^3$
Sulphur Dioxide	1999/30/EC SI 271 of 2002	Hourly limit for protection of human health – not to be exceeded more than 24 times/year-1	43% until 2001 reducing linearly until 0% by 2005 for 199/30/EC 90 $\mu\text{g}/\text{m}^3$ from the date of entry into force of these Regulations, reducing on 1 January 2003 and every 12 months	350 $\mu\text{g}/\text{m}^3$

		hour average	thereafter by 30 µg/m ³ to reach 0 µg/m ³ by 1 January 2005 for SI 271 of 2002	
		Daily limit for protection of human health – not to be exceeded more than 3 times/year-24hr average	None	125 µg/m ³
		Annual & Winter limit for the protection of ecosystems- Annual	None	20 µg/m ³
Particulate Matter Stage 1	1999/30/EC	24-hour limit for protection of human health - not to be exceeded more than 35 times/year-24 hour average	50% until 2001, reducing linearly to 0% by 2005 for 1999/30/EC 30% from the date of entry into force of these Regulations, reducing on 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by 1 January 2005 for SI 271 of 2002	50 µg/m ³ PM ₁₀
	SI 271 of 2002	Annual limit for protection of human health- Annual	20% until 2001 reducing linearly to 0% by 2005 for 1999/30/EC 12% from the date of entry into force of these Regulations, reducing on 1 January 2003 and every 12 months thereafter by equal annual percentages to reach 0% by 1 January 2005	40 µg/m ³ PM ₁₀

<p>Particulate Matter</p> <p>Stage 2</p>	<p>1999/30/EC</p> <p>SI 271 of 2002</p>	<p>24-hour limit for protection of human health - not to be exceeded more than 7 times/year-24 hour average</p>	<p>To be derived from data and to be equivalent to Stage 1 limit value for 1999/30/EC</p> <p>Not to be exceeded more than 28 times by 1 January 2006, 21 times by 1 January 2007, 14 times by 1 January 2008, 7 times by 1 January 2009 and zero times by 1 January 2010 for SI 271 of 2002</p>	<p>50 µg/m³</p> <p>PM₁₀</p>
		<p>Annual limit for protection of human health- Annual</p>	<p>50% until 2005 reducing linearly to 0% by 2010 for 1999/30/EC and SI 271 of 2002</p>	<p>20 µg/m³</p> <p>PM₁₀</p>

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Table 10-2 Irish and EU Ambient Air Standard (SI 271 of 2002 and 2000/69/EC)

Pollutant	Regulation	Limit Type	Margin of Tolerance	Value
Benzene	2000/69/EC SI 271 of 2002	Annual limit for protection of human health	100% until 2003 reducing linearly to 0% by 2010 for 2000/69/EC 100% from the date of entry into force of these Regulations, reducing on 1 st January 2006 and every 12 months thereafter by 1 $\mu\text{g}/\text{m}^3$ to reach 0 $\mu\text{g}/\text{m}^3$ by 1 st January 2010	5 $\mu\text{g}/\text{m}^3$
Carbon Monoxide	2000/69/EC SI 271 of 2002	8-hour limit (on a rolling basis) for protection of human health	50% until 2003 reducing linearly to 0% by 2005 for 2000/69/EC 6 mg/m^3 from the date of entry into force of these Regulations, reducing on 1 st January 2003 and every 12 months thereafter by 2 mg/m^3 to reach 0 mg/m^3 by 1 st January 2005	10 mg/m^3

10.2 EXISTING ENVIRONMENT

The proposed development is located in the townland of Cappoge, Dublin 11. The site will form part of the Premier Business Park and is located approximately 2km to the northeast of Blanchardstown and approximately 2.5km west of Finglas. The M50 forms the southern boundary of the site while the Ballycoolin Road forms the northern boundary to the Premier Business Park development site. Premier Business Park will be accessed off the roundabout at the entrance to Stadium Industrial Estate along the Ballycoolin road. Large parts of the surrounding area are made up of large industrial estates, business parks and other commercial buildings with attendant road networks.

The planning boundary for the proposed development site comprises an area of approximately 1.16 ha, within a total landholding for the Premier Business Park of approximately 7.88 ha.

The site is located close to the populated areas of Blanchardstown and Finglas. The proposed development site does not lie within or adjacent to any area that has been designated for nature conservation under Irish or European legislation, the nearest being the Royal Canal pNHA, which lies some 2.1km to the south. The land to which this application applies has received full planning permission (Ref No. F05A/1363). The development of Premier Business Park is currently under construction. The proposed Materials Recovery Facility will not involve any change to the physical environment i.e. no additional buildings will be required.

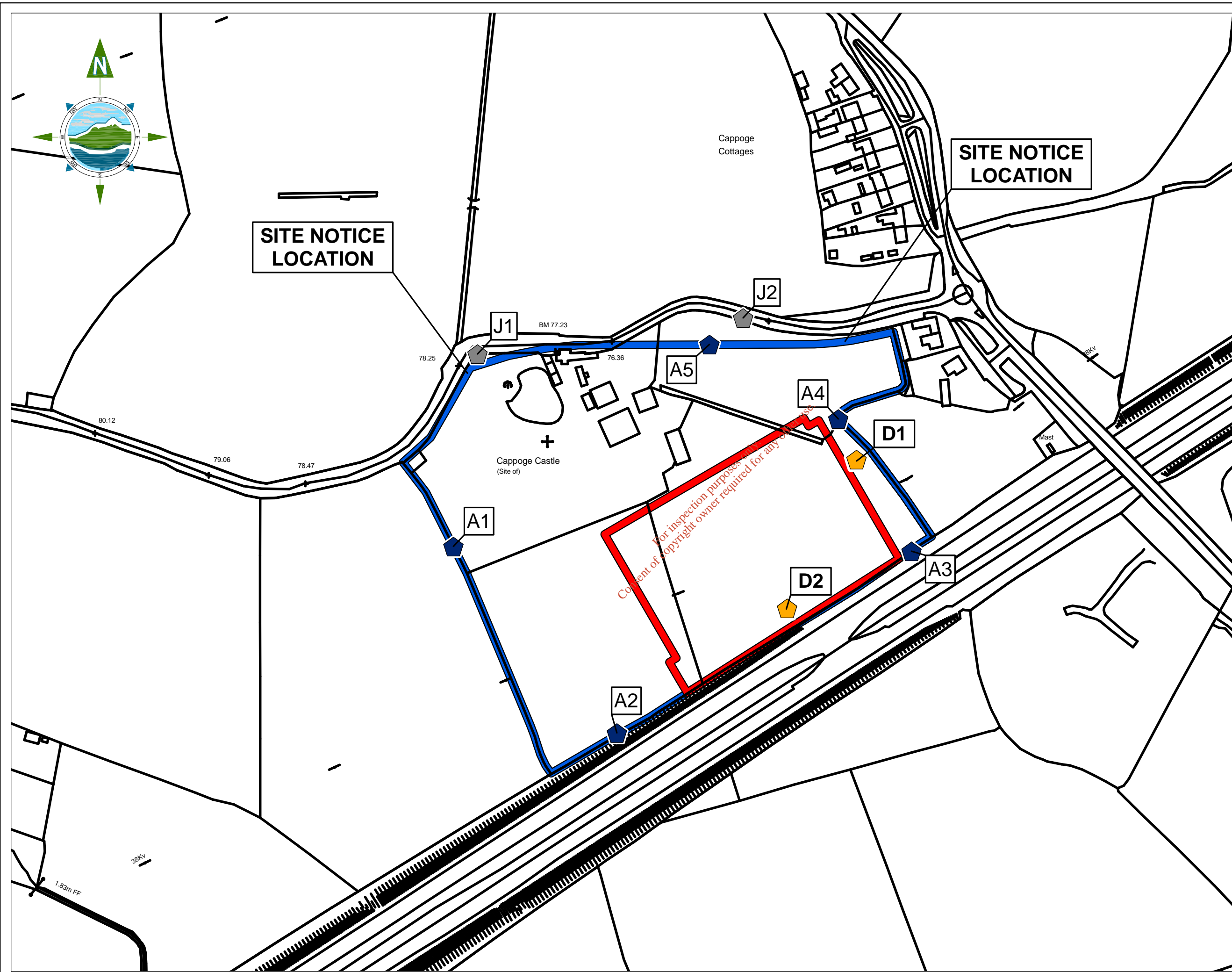
10.2.1 Baseline air quality

A total of five sample locations were chosen to represent the baseline air quality in the vicinity of the proposed development. These locations are listed in Table 10.3. overleaf and presented in Figure 10.1 – Air Monitoring Locations.

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Table 10-3 Description of air monitoring locations

Reference	Monitoring parameters	Description and monitoring location
A1	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide and PM ₁₀	Monitored using passive diffusion tubes, Partisol PM10 analyser and Bergerhoff gauges.
A2	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide and Sulphur dioxide	Monitored using passive diffusion tubes.
A3	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide and total depositional dust.	Monitored using passive diffusion tubes and Bergerhoff gauges.
A4	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide and Sulphur dioxide	Monitored using passive diffusion tubes, and Partisol gravimetric analyser.
A5	Benzene, Toluene, Ethyl benzene, p & o-Xylene, Nitrogen dioxide, Sulphur dioxide and total depositional dust.	Monitored using passive diffusion tubes and Bergerhoff gauges.



LEGEND

- Site Activity Boundary
- Premier Business Park
- ▾ Dust Monitoring Point
- ▾ Receptor Location
- ▾ Air Monitoring Location



- NOTES**
1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
 2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
 3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
 4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Issue	Date	Description	By	Chkd.
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Project: **BALLYCOOLIN ROAD MATERIALS RECOVERY FACILITY**

Title: **AIR MONITORING LOCATIONS**

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FIGURE 10.1 A

As a result of the existing site conditions and the potential for traffic, residential and amenity-derived pollution, the following parameters were monitored:

Benzene, Toluene, Ethyl benzene and ortho and para Xylene (BTEX)

The sources associated with individual volatile organic compounds (VOCs) tend to be dependent on the nature of industries in the sample region. Methane is a naturally occurring volatile organic carbon (VOC) from plants and animals but is also generated as a by-product of certain industries. Benzene, Toluene, Ethyl benzene, p/o xylene (BTEX) and other aromatic/alkanes are most likely derived from petrol driven vehicle exhausts. Heavier semi-volatile organic compounds are frequently derived from diesel-powered engines. Benzene is a known carcinogen, poisonous by inhalation and a severe eye and moderate skin irritant.

At each of the five monitoring locations (A1 to A5) (Refer to Figure 10.1 and Table 10.3), the air quality was monitored for BTEX, over a 26-day period, using BTEX diffusion tubes. The sample tubes were analysed for BTEX at a UKAS accredited laboratory (ISO 17025) using gas chromatography flame ionisation detector. The results are presented in Table 10.4 overleaf.

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Table 10-4 Average BTEX concentrations at each location as measured by passive diffusion tubes.

Location	Benzene ($\mu\text{g}/\text{m}^3$) ^{1,3}	Toluene ($\mu\text{g}/\text{m}^3$) ^{1,3}	Ethyl benzene ($\mu\text{g}/\text{m}^3$) ^{1,3}	p-Xylene ($\mu\text{g}/\text{m}^3$) ^{1,3}	o-Xylene ($\mu\text{g}/\text{m}^3$) ^{1,3}
A1 ²	0.617	1.902	0.916	1.970	0.644
A2 ²	0.582	1.854	0.634	1.844	0.563
A3 ²	0.597	1.024	0.609	1.382	0.322
A4 ²	Stolen ⁶	Stolen ⁶	Stolen ⁶	Stolen ⁶	Stolen ⁶
A5	0.440	1.152	0.361	0.982	0.308
EPA value- Rathmines Annual mean 2005 ⁷	0.50	-	-	-	-
Limit Value	5⁴	4700⁵	10,875⁵	5525⁵	5525⁵

Notes: ¹ denotes the lower limit of detection was 5.91 ng of sorbed compound per tube;

² denotes sampling period 21st August to 17th September 2007;

³ denotes Lower limit of detection 2.88 ng;

⁴ denotes Irish and EU Ambient Air Standard (SI 271 of 2002 and 1999/30/EC);

⁵ denotes No specific ambient air limits. Rule of thumb is using 1/40th of the 8-hour Occupational Exposure Limit as stated in the National Authority for Occupational Safety and Health 2002 "Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations".

⁶ denotes no result due to vandalism.

⁷ denotes Air Quality Monitoring Report, 2005-Rathmines station;

The results illustrated in Table 10.4 for BTEX at A1 to A5 are all in compliance with Irish and EU limit values (i.e. SI 271 of 2002 and EU Directive 2000/69/EC) for Benzene. Average Benzene concentrations were up to 87% lower than the Irish and EU directive limit values. The rule of thumb for guidelines for ambient air quality of volatile organic compounds without legislative limit values is using 1/40th of the 8-hour Occupational Exposure Limit as stated in the National Authority for Occupational Safety and Health 2002 "Code of Practice for the Safety, Health and Welfare at Work (Chemical Agents) Regulations". Toluene, Ethyl benzene and Xylene isomers are well within their respective fractional exposure limit values.

Nitrogen dioxides (NO₂)

Nitrogen is a constituent of both the natural atmosphere and of the biosphere. When industrial metabolism releases nitrogen to the environment it is considered a "pollutant" because of its chemical form: NO, NO₂, and N₂O. These oxides of nitrogen can be toxic to humans, to biota, and they also perturb the chemistry of the global atmosphere. In the transportation sector, the NO_x emissions result from internal combustion engines. In power plants and industrial sources, NO_x is produced in boilers. The overwhelming fraction of nitrogen oxide emissions arises from the high temperature combustion of fossil fuels; emissions from metal-processing plants and open-air burning of biomass are insignificant.

Nitrogen dioxide is classed as both a primary pollutant and a secondary pollutant. As a primary pollutant NO₂ is emitted from all combustion processes (such as a gas/oil fired boiler or a car engine). Potentially, the main sources of primary NO₂ for the proposed development will be from vehicle exhausts.

As a secondary pollutant NO₂ is derived from atmospheric reactions of pollutants that are themselves, derived mainly from traffic sources (e.g. volatile organic compounds). Secondary pollution is usually derived from regional sources and may be used as an indicator of general air quality in the region. Nitrogen dioxide has been shown to reduce the pulmonary function of the lungs. Long-term exposure to high concentrations of NO₂ can cause a range of effects, primarily in the lungs, but also in the liver and blood.

At each of the five monitoring locations (A1 to A5) (Refer to Figure 10.1 and Table 10.3), levels of NO₂ were measured using diffusion tubes, which were left on site for a 26-day period. The tubes were then analysed using UV spectrophotometer, at a UKAS accredited laboratory (ISO 17025), giving an average concentration over the 26-day period. The results are presented in Table 10.5 overleaf.

Table 10-5 Average NO₂ concentrations at each location as measured by passive diffusion tubes.

Location	Sampling Period	Average NO ₂ conc. (µg/m ³) ²
A1	21 st Aug to 17 th Sept 2007	20.33
A2	21 st Aug to 17 th Sept 2007	20.16
A3	21 st Aug to 17 th Sept 2007	29.47
A4	21 st Aug to 17 th Sept 2007	Damaged ³
A5	21 st Aug to 17 th Sept 2007	15.24
EPA Rathmines 2005 annual mean	2005	22
EPA Rathmines 2005 max hourly value	2005	121
Limit value-Annual average	-	40
Limit value 1 hour average	-	200

Notes:¹ denotes Lower limit of detection 0.01 µg/m³;

² denotes Air Quality Monitoring Report, 2005-Rathmines station;

³ denotes no result due to vandalism.

The dominant source of NO₂ 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 measured concentrations of NO₂ at all monitoring locations are within the Irish and EU Ambient Air Standards. Monitoring locations A1 to A5 are an average 26% lower than currently established Irish and European ambient air regulatory levels for annual averages.

Sulphur dioxide (SO₂)

Sulphur dioxide is a colourless gas, about 2.5 times as heavy as air, with a suffocating faint sweet odour. Sulphur dioxide occurs in volcanic gases and thus traces of sulphur dioxide are present in the atmosphere. Other sources of sulphur dioxide include smelters and utilities, electrical generation, iron and steel mills, petroleum refineries, pulp and paper mills, metallurgical processes, chemical processes and the combustion of the iron pyrites, which are contained in coal. Small sources include residential, commercial and industrial space heating.

SO₂ can be oxidised to sulphur trioxide, which in the presence of water vapour is readily transformed to sulphuric acid mist. SO₂ is a precursor to sulphates, which are one of the main components of respirable particles in the atmosphere. Health effects caused by exposure to high levels of SO₂ include breathing problems, respiratory illness, changes in the lung's defences, and worsening respiratory and cardiovascular disease. People with asthma or chronic lung or heart disease are the most sensitive to SO₂. It also damages trees and crops. SO₂, along with nitrogen oxides, are the main precursors of acid rain. This contributes to the acidification of lakes and streams, accelerated corrosion of buildings and reduced visibility. SO₂ also causes formation of microscopic acid aerosols, which have serious health implications as well as contributing to climate change.

At each of the five monitoring locations (A1 to A5) (Refer to Figure 10.1 and Table 10.3), levels of SO₂ were measured using diffusion tubes, which were left on site for a 26-day period. The tubes were then analysed using Ion chromatography, at a UKAS accredited laboratory (ISO 17025), giving an average concentration over the 26-day period. The results are presented in Table 10.6 overleaf.

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Table 10-6 Average SO₂ concentrations at each location as measured by passive diffusion tubes.

Location	Sampling Period	Average SO ₂ conc. (µg/m ³) ¹
A1	21 st Aug to 17 th Sept 2007	Damaged ³
A2	21 st Aug to 17 th Sept 2007	0.94
A3	21 st Aug to 17 th Sept 2007	0.56
A4	21 st Aug to 17 th Sept 2007	Damaged ³
A5	21 st Aug to 17 th Sept 2007	1.13
EPA Rathmines, maximum 24 hour period	2005	50.60 ²
EPA Rathmines, maximum 1 hour period	2005	25 ²
Limit value-Annual average	-	20
Limit value-24 hour average	-	350
Limit value-1 hour average	-	125

Notes:¹ denotes lower limit of detection 0.04 µg/m³;

² denotes Air Quality Monitoring Report, 2005-Rathmines station;

³ denotes no result due to vandalism.

The dominant source of SO₂ in the area appears to be from motor vehicle exhausts and the burners/boiler/solid fuel heating local single residences and industrial units. The measured concentrations of SO₂ at all monitoring locations are within the Irish and EU Ambient Air Standards. Monitoring locations A1 to A5 are an average 94% lower than currently established Irish and European ambient air regulatory levels.

Carbon monoxide (CO)

Carbon monoxide is produced as a result of incomplete burning of carbon-containing fuels including coal, wood, charcoal, natural gas, and fuel oil. It can be emitted by combustion sources such as un-vented kerosene and gas heaters, furnaces, woodstoves, gas stoves,

fireplaces and water heaters, automobile exhaust from attached garages, and tobacco smoke. Carbon monoxide interferes with the distribution of oxygen in the blood to the rest of the body. Depending on the amount inhaled, this gas can impede coordination, worsen cardiovascular conditions, and produce fatigue, headache, weakness, confusion, disorientation, nausea, and dizziness. Very high levels can cause death. The symptoms are sometimes confused with the flu or food poisoning. Foetuses, infants, elderly, and people with heart and respiratory illnesses are particularly at high risk for the adverse health effects of carbon monoxide. Due to power and equipment safety issues existing baseline monitoring data from EPA monitoring sites was used for assessment of baseline Carbon monoxide air quality. The EPA monitoring location and results are presented in Table 10.7 below.

Table 10-7 Average ambient baseline CO concentrations for the proposed site development.

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
Limit Value	-	10 ¹

Notes: ¹denotes Irish and EU ambient air standard (SI 271 of 2002 and 2000/69/EC) as an 8 hour running average;

CO monitoring is also very limited in Ireland. Data sets developed by the EPA indicate 8 hour running average CO levels of 0.38 and 0.60mg m⁻³, respectively for Dublin city locations. The dominant source of CO in this area would appear to be vehicle emissions, boilers (i.e. Home heating and Industrial heating), industrial processes and construction activities. The CO emissions measured in Dublin City would be considered worst case in comparison to the proposed site location. CO emissions are on average 82% lower than Irish and EU ambient air limit values at the monitoring locations within Ballycoolin environs (Refer to Table 10.7).

Particulate matter (PM₁₀)

Major sources of particulates include industrial/residential combustion and processing, energy generation, vehicular emissions and construction projects. The particulate matter created by these processes is responsible for many adverse environmental conditions including reduced visibility, contamination and soiling, but also recognised as a contributory factor to many respiratory medical conditions such as asthma, bronchitis and lung cancer. PM₁₀ (Particulate Matter 10) refers to particulate matter with an aerodynamically diameter of 10 µm. Generally,

such particulate matter remains in the air due to low deposition rates. It is the main particulate matter of concern in Europe and has existing air quality limits. In order to obtain a baseline PM₁₀ for the proposed work area, a PM₁₀ analyser was used to monitor the PM₁₀ ambient concentration levels at one location (A1) within the vicinity of the proposed works. Continuous monitoring was performed over a 24-hour period. The monitoring location is presented in Figure 10.1 and Table 10.3. Results are presented in Table 10.8 below.

Table 10-8 Average ambient PM₁₀ concentrations in the vicinity of the proposed development

Location	Sampling Period	Ambient PM ₁₀ conc. (µg/m ³)
A1-24 hour average	22 nd Aug 2007	31
EPA measured conc. – Rathmines, annual mean value ⁴	2005	17
Limit Value at 98.07 th percentile		50 ^{1, 2}
Limit Value-annual mean Stage 1		40
Limit value-annual mean Stage 2		20 ³

Notes: ¹ denotes Irish and EU ambient air standard (SI 271 of 2002 and 1999/30/EC) as a 24-hour average;

² denotes maximum number of exceedence 7 times in a one-year period;

³ denotes annual limit value for Stage 2 implementation;

⁴ denotes Air quality Monitoring Report, 2005-Rathmines.

PM₁₀ monitoring in Ireland is limited to continuous monitoring stations operated by the Local Authorities and the Irish EPA, mainly in large urban centres. Average 24-hour ambient air concentrations monitored in the Phoenix Park and Whitehall, respectively by Dublin Corporation are in the range of 16 µg m⁻³ and 17 µg m⁻³ for an annual mean in 1999. The EPA measured an annual mean of 15 µg m⁻³ at a monitoring station located within the Phoenix Park. The dominant source of PM₁₀ in the area appears to be vehicle emissions, boilers (i.e. Home heating and Industrial heating), industrial processes and construction activities. The average ambient PM₁₀ concentrations are comparable to those monitored by Dublin Corporation. Maximum-recorded ambient PM₁₀ concentrations were on average 22% lower than the Irish and EU 24 hour ambient air quality limit value.

Total depositional dust

Total dust deposition was measured at the site using Bergerhoff gauges specified in the German Engineering Institute VDI 2119 entitled "Measurement of Dustfall Using the Bergerhoff Instrument (Standard Method)." Samples were collected at two locations (i.e. D1 and D2), as shown in Figure 10.1. The purpose of these monitors is to assess the baseline total depositional baseline dust impact in the vicinity of the site. The glass jars containing the dust were submitted to an accredited test house for analyses. The results are presented in Table 10.9.

Table 10-9 Total depositional dust levels at each monitoring location

Sample Reference	Sampling period	Total Dust Deposition (Summer sampling period) (mg/m ² day)
D1	21 st Aug to 17 th Sept 2007	71
D2	21 st Aug to 17 th Sept 2007	182
EPA recommended Limit value	-	350

Notes: ¹ denotes Tobins Consulting Engineers set-up and sent all Bergerhoff gauges for analysis to Alcontrol Laboratories Ireland.

Currently in Ireland, there are no statutory limits for dust deposition, however, EPA guidance suggest, "a soiling of 10mg/m²/hour is generally considered to pose a soiling nuisance" (TA Luft 2002). This equates to 240mg/m²/day of Total Depositional Dust. The EPA recommend a maximum level of 350mg/m²day of dust deposition when measured according to TA Luft standard, which includes both soluble and insoluble matter (i.e. EPA compliance monitoring is based on the TA Luft Method). This value was not exceeded at any of the sample locations with all measured values at least 48% lower than the maximum recommended limit value.

Appendix 10.1 contains the Alcontrol Laboratories Certificate of Analysis.

10.2.2 Odour

In order to take account of the potential impact associated with odour from the proposed development, an odour dispersion model was performed in accordance with the guidance received in two publications to include:

1. EPA, (2001). Odour impacts and odour emission control measures for intensive agriculture. Commissioned by the Environmental Protection Agency (Ireland).
2. Environment Agency, (2002). Technical Guidance Notes IPPC H4-IPPC, Horizontal Guidance for Odour, Part 1-Regulation and Permitting. Environment Agency, Bristol, UK.

Since the proposed development will handle primarily C&D and C&I waste which traditionally are not odourous, the overall generation of odours from the proposed facility is limited. Waste received at the facility will be manually sorted first in order to separate large items from the waste. In addition to this manual sorting, the waste loads received at the facility will be inspected for organic contaminated waste, which will be separated and placed within an enclosed bay specifically dedicated for holding such wastes. This bay will be covered with a retractable roof, which will be operated in the closed position. A negative air extraction system will be fitted to the headspace of the bay in order to provide approximately 3-air changes/hr negative extraction when in operation (i.e. waste in bay). The carbon filter-polishing unit will consist of a container with approximately 350 kg of general-purpose carbon. The unit will be self contained and fitted to the wall of the building over the bay (i.e. if structural integrity allow such fitting). The total volumetric airflow rate to be treated by this odour control unit will be 400 m³/hr of odourous air. The clean exhaust air will be directed out of the building at a height of approx 7m above ground level. The total outlet odour threshold concentration will be less than 300 O_{uE}/m³. In order for completeness of this assessment, an odour dispersion model was examined to demonstrate no ground level impacts of odours from the operation of the odour control unit.

The general description of the odour dispersion model and odour impact criterion are provided below. Results of the odour dispersion model are presented in graphical format in Appendix 10.2.

Dispersion modelling of odours

Any material discharged into the atmosphere is carried along by the wind and diluted by wind turbulence, which is always present in the atmosphere. This process has the effect of producing a plume of air that is roughly cone shaped with the apex towards the source and can be mathematically described by the Gaussian equation. Atmospheric dispersion modelling has been applied to the assessment and control of odours for many years, originally using Gaussian form ISCST 3 and more recently utilising advanced boundary-layer physics models such as ADMS and AERMOD (Keddie et al. 1992). Once the odour emission

rate from the source is known, (O_{uE} s⁻¹, g/s), the impact on the vicinity can be estimated. These models can effectively be used in three different ways:

- Firstly, to assess the dispersion of odours and to correlate with complaints,
- Secondly, in a “reverse” mode, to estimate the maximum odour emissions which can be permitted from a site in order to prevent odour complaints occurring and,
- Thirdly, to determine which process is contributing greatest to the odour impact and estimate the amount of required abatement to reduce this impact within acceptable levels (McIntyre et al. 2000).

In this latter mode, models have been employed for imposing emission limits on industrial processes, odour control systems and composting processes (Sheridan *et al.*, 2002).

Any dispersion modelling approach will exhibit variability between the predicted values and the measured or observed values due to the natural randomness of atmospheric environment. A model prediction can, at best, represent only the most likely outcome given the apparent environmental conditions at the time. Uncertainty depends on the completeness of the information used as input to the model as well as the knowledge of the atmospheric environment and the ability to represent that process mathematically. Good input information (emission rates, source parameters, meteorological data and land use characteristics) entered into a dispersion model that treats the atmospheric environment simplistically will produce equally uncertain results as poor information entered into a dispersion model that seeks to simulate the atmospheric environment in a robust manner. It is assumed in this discussion that odour emission rates are representative of maximum odour events, source parameters accurately define the point of release and surrounding structures, meteorological conditions define the local atmospheric environment (specified by client) and land use characteristics describe the surrounding natural environment. These conditions are employed within the dispersion modelling assessment therefore providing good confidence in the generated predicted exposure concentration values.

AERMOD Prime

The AERMOD model was developed through a formal collaboration between the American Meteorological Society (AMS) and U.S. Environmental Protection Agency (U.S. EPA). AERMOD is a Gaussian plume model and replaced the ISC3 model in demonstrating compliance with the National Ambient Air Quality Standards (Porter et al., 2003) AERMIC (USEPA and AMS working group) is emphasizing development of a platform that includes air turbulence structure, scaling, and concepts; treatment of both surface and elevated sources; and simple and complex terrain. The modelling platform system has three main components: AERMOD, which is the air dispersion model; AERMET, a meteorological data pre-processor; and AERMAP, a terrain data pre-processor (Cora and Hung, 2003).

AERMOD is a Gaussian steady-state model which was developed with the main intention of superseding ISCST3 (NZME, 2002). The AERMOD modeling system is a significant departure from ISCST3 in that it is based on a theoretical understanding of the atmosphere rather than depend on empirical derived values. The dispersion environment is characterized by turbulence theory that defines convective (daytime) and stable (nocturnal) boundary layers instead of the stability categories in ISCST3. Dispersion coefficients derived from turbulence theories are not based on sampling data or a specific averaging period. AERMOD was especially designed to support the U.S. EPA's regulatory modeling programs (Porter *et al.*, 2003).

Special features of AERMOD include its ability to treat the vertical in-homogeneity of the planetary boundary layer, special treatment of surface releases, irregularly-shaped area sources, a three plume model for the convective boundary layer, limitation of vertical mixing in the stable boundary layer, and fixing the reflecting surface at the stack base (Curran *et al.*, 2006). A treatment of dispersion in the presence of intermediate and complex terrain is used that improves on that currently in use in ISCST3 and other models, yet without the complexity of the Complex Terrain Dispersion Model-Plus (CTDMPLUS) (Diosey *et al.*, 2002).

Meteorological data

Three years of hourly sequential meteorology data (Dub 2004 to 2006 inclusive) was used for the operation of AERMOD Prime. This allowed for the determination of the worst-case odour impact in the vicinity of the proposed facility.

Commonly used odour annoyance criteria utilised in dispersion models

An odour impact criterion defines the odour threshold concentration limit value above baseline in ambient air, which will result in an odour stimulus capable of causing an odour complaint. There are a number of interlinked factor, which causes a nearby receptor (i.e. resident) to complain. These include:

- Odour threshold concentration, odour intensity and hedonic tone-defined measurable parameters at odour source,
- Frequency of odour-how frequently the odour is present at the receptor location,
- Duration of odour-how long the odour persists at the receptor location,
- Physiological-previous experiences encountered by receptor, etc.

By assessing these combined interlinked factors, the ability for a facility to cause odour complaint can be determined. As odour is not measurable in ambient air due to issues in sampling techniques, limit of detections for olfactometers and the inability to monitor continuously, therefore dispersion models become useful tools in odour impact assessments

and odour risk analysis. Dispersion modelling also allows for the assessment of proposed changes in processes within the WWTP without actually having to wait for the processes to be changed (i.e. predictive analysis).

When utilising dispersion models for impact assessment, specific impact criterion (odour concentrations) need to be established at receptors. For odour assessment in general terms, this is called an odour impact criterion, which defines the maximum allowable ground level concentration (GLC) of odour at a receptor location for a particular exposure period (i.e. $\leq 1.50 \text{ Ou}_E \text{ m}^{-3}$ at the 98th percentile of hourly averages). In the case of this development, all sensitive receptors should adhere to the following criterion:

- All sensitive locations and areas of amenity should be located outside the $3.0 \text{ Ou}_E \text{ m}^{-3}$ at the 99.5th percentile of hourly averages.
- All sensitive locations and areas of amenity should be located outside the $1.50 \text{ Ou}_E \text{ m}^{-3}$ at the 98th percentile of hourly averages.

These proposed odour impact criterion are sufficiently conservative to provide protection to the community at large taking into account latest suggested odour impact criterion by environmental agencies in Ireland, UK and Netherlands.

10.3 CHARACTERISTICS OF THE PROPOSAL

Premier Businesses Park has already received full planning permission (Ref No. F05A/1363), in May 2006. The Planning Application consists of six No. industrial high-bay units (approximately 2500 m^2 each) and 71 No. small enterprise units. Planning Permission is being sought from Fingal County Council due to a change in use at the proposed development.

This Planning Application will be for a change of use for two No. high-bay industrial units. This will involve the development of two units to facilitate the processing of approximately 95,000 tones per annum of Construction and Demolition (C&D) waste and Commercial and Industrial (C&I) waste.

Construction activities on site related to the change of use will be restricted to setting up processing equipment and materials handling and storage facilities. Ancillary facilities such as weighbridge infrastructure, loading platform and bunded diesel tanks will be constructed in the yard area to the back of the site.

The construction of this ancillary infrastructure will consist of relatively minor works in the context of the already approved major construction works. No significant impacts are expected from this minor construction activity in the context of the overall construction activity.

10.4 POTENTIAL IMPACTS

10.4.1 Construction Phase

There is the potential for a number of emissions to atmosphere during the construction of the development with wind blown dust been most significant. Wind blown dust emissions may arise during the construction phase of the proposed development, which may impact upon the surrounding environment. The deposition of dust and mud on the local roads is both unsightly and dangerous. Dust may be a particular problem during periods of dry windy weather. There is no anticipated impact from dust emissions when the development has been constructed, as all activities will be carried out indoors. Localised dust abatement will be provided upon recycling equipment as required, thereby minimising the quantity of dust emitted to the building headspace.

Potential sources of dust from construction and operation include the following:

- Vehicles carrying dust on their wheels,
- Un-vegetated stockpiles of construction materials,
- The handling of construction materials for the construction phase of the development,
- The generation of dust from the recycling activities to be carried out indoors within the facility.

The construction vehicles, generators, etc., will also give rise to petrol and diesel exhaust emissions, although this is of minor significance compared to dust.

10.4.2 Operational Phase

Scheduled Emissions

Regarding operations at the proposed development, the activities to be located in the development are indoor recycling activities. Recycling equipment will contain localised dust abatement equipment in order to prevent the release of dust to the headspace of the building. No scheduled emission point will occur to atmosphere from this equipment with all air recycled within the building. Odourous waste stored within the self-contained odourous waste bay will contain a negative ventilation odour control unit. The output of treated air from the unit will circulate within the facility building. The quantity of treated gas to be emitted will be 400 m³/hr. This will provide approximately 3 air changes per hour negative extraction. This will be operated only when odourous material is contained within the odourous waste storage bay.

10.4.3 “Do-nothing” Scenario

The baseline survey results suggest that air quality in the vicinity of the proposed development is average and shows typical levels for an urban area with all pollutants within the relevant Irish and EU limits. The air quality may improve slightly in future years due to improvements in engine technology and greater controls on petrol, diesel, coal and gas composition and purity. If the proposed development were not to take place, the current air pollutant concentrations will remain unchanged followed by potential decreases in future years for the reasons outlined above. In relation to dust, non-development of the site would result in no movement of soils/sands and no construction activity and therefore no dust creation as a result of construction works.

10.4.4 Remedial or Reductive Measures

Construction Phase

Construction activities are likely to generate some dust emissions. The potential for dust to be emitted depends on the type of construction activity being carried out in conjunction with environmental factors including levels of rainfall, wind speed and wind direction. In order to ensure that no dust nuisance occurs, a series of measures will be implemented. Site roads shall be regularly cleaned and maintained as appropriate. Hard surface roads shall be swept to remove mud and aggregate materials from their surface as a result of the development. Any un-surfaced roads shall be restricted to essential site traffic only. Furthermore, any road that has the potential to give rise to fugitive dust may be regularly watered, as appropriate, during extended dry and/or windy conditions.

Vehicles using site roads shall have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road and on hard surfaced roads that site management dictates speed shall be restricted to 20 km per hour.

Material handling systems and site stockpiling of materials shall be designed and laid out to minimise exposure to wind. Water misting or sprays shall be used as required if particularly dusty activities are necessary during dry or windy periods.

In relation to the completion of the proposed development, the hard standing surface, and all roads will be tarmacadamed/concreted. In periods of dry weather when dust emission would be greatest, a road sweeper, which would also dampen the road, may be employed in order to prevent the generation of dust.

Operation Phase

It is not anticipated that dust will be a significant problem during the operation of the development. All recycling activities will be carried out in doors while localised dust extraction and abatement will be provided on recycling plant and equipment with air recirculated internally.

Emissions of pollutants from road traffic can be controlled by either controlling the number of road users or by controlling the flow of traffic. For the majority of vehicle-generated pollutants, emissions rise as speed drops. Emissions are also higher under stop-start conditions when compared with steady speed driving. The free flow of the traffic in the vicinity of the proposed development is essential in order to minimise the generation of traffic related pollutants.

Emissions of odours will be mitigated through the storage of any odorous waste within a dedicated enclosed storage bay. Negative extraction will be employed to this storage bay to ensure no escape of odours. The total extraction rate will ensure approximately 3 AC/hr negative extraction. The carbon filtration system will achieve an odour threshold concentration of less than 300 O_{uE}/m³.

It is envisaged that the proposed development will not have a significant impact on the surrounding air quality. However, as discussed previously a number of mitigation measures have been suggested. Moreover, dust monitoring could be carried out during the construction phase of the development if deemed necessary by the planning authority. If the level of dust is found to exceed 350 mg/m²/day in the vicinity of the site, further mitigation measures will be incorporated into the construction and operation of the proposed development. In terms of odours, the carbon filtration media will be changed frequently as required.

10.5 MITIGATION MEASURES

10.5.1 Predicted Impacts of the development

Construction Phase

The effect of construction of the facility on air quality will not be significant following the implementation of the proposed mitigation measures. The main environmental nuisance associated with construction activities is dust. However, it is proposed to adhere to good working practices and dust mitigation measures to ensure that the levels of dust generated will be minimal and are unlikely to cause an environmental nuisance. A series of such good working practices and mitigation measures are outlined earlier in this chapter.

Operation Phase

Traffic

The predicted increases in traffic volumes as a result of the development along the existing road network are expected to be lower than if the facility were to be operated solely as a

business park. The detailed information on traffic provided in the traffic section of this report has been used to identify whether any significant impact on sensitive receptors will occur. The traffic information has been input into the Design Manual for Roads and Bridges (DMRB), Volume 11 (February 2003) model. This model was prepared by the United Kingdom Department of Transport, the Scottish Office of Industrial Development, the Welsh Office and the Department of Environment for Northern Ireland as a screening tool to assess worst-case air quality impact associated with roads developments.

The screening model uses a worst-case scenario in calculating emissions. The emission factors used for each pollutant are 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} nearest Met stations (Dublin met station)). In addition to this, the background concentrations incorporated into the model are worst-case scenario concentrations. For these reasons, it can be assumed with confidence that a project will not produce air pollution from traffic if this model identifies none.

Traffic figures have been assessed using the Annual Average Daily Traffic (AADT) figures. The Heavy Goods Vehicle (HGV) percentage was calculated to be 2.7% from actual traffic counts. In order to take account of worst-case assessment an average HGV incorporation rate of 5% will be used. As the average speed of vehicles has a significant effect on the generation of pollutants, calculations are carried out for two different traffic speed scenarios. The speeds are 20 km hr^{-1} , to represent gridlock conditions and 50 km hr^{-1} , to represent free-flowing traffic conditions.

Traffic flow predictions are made for three scenarios:

- 2007-Existing Baseline Scenario,
- 2008-“Do-nothing” Scenario (proposed development proceeded as a business unit)
- 2008-“Do-something” Scenario (proposed development proceeded as Materials recovery facility),
- 2023-“Do nothing” scenario
- 2023-“Do something” Scenario (proposed development proceeds as Material recovery facility without Bulking station),
- 2023-“Do something” Scenario (proposed development proceeds as Material recovery facility with Bulking station),

The DMRB only assesses the potential impacts from traffic up to and including the year 2023. This is not considered significant since impacts are expected to be even lower beyond this date due to improvements in engine technology etc. The impacts associated with the

proposed development are well within the ground level impact concentrations in year 2023 (as predicted by the model).

Using the model, concentrations of Carbon Monoxide, Benzene, Oxides of Nitrogen and PM₁₀ (particulate matter with an average 10 µm aerodynamic diameter), have been determined for a receptor point J1 to the west of the Ballycoolin Rd, J2 to the east of Ballycoolin Rd. The location of the receptor points is presented in Figure 10.1. The results of these calculations are presented in Tables 10.10 (J1) and 10.11 (J2) overleaf.

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Table 10-10 Screening Air Quality Assessment, MCR Environmental Materials Recovery Facility-Receptor at location J1.

Scenarios	Traffic Speed Km hr ⁻¹	Carbon Monoxide (mg/m ³)	Benzene (µg/m ³)	Oxides of Nitrogen (µg/m ³)	Particulates (PM ₁₀) (µg/m ³)
	-	Annual Average-Traffic component	Annual Average- Traffic component	Annual Average NO ₂ - Traffic component	Annual Average-Traffic component
Existing Scenario 2007	20	0.14	0.15	22.14	2.92
	50	0.07	0.08	17.07	1.82
2008 "Do Nothing" Scenario	20	0.15	0.16	22.87	2.92
	50	0.08	0.08	17.62	1.83
2008 "Do Something" Scenario	20	0.15	0.15	22.80	2.91
	50	0.08	0.08	17.56	1.82
2023 "Do nothing" Scenario	20	0.17	0.26	16.30	2.14
	50	0.08	0.14	13.24	1.38
2023 "Do Something" Scenario without bulking	20	0.17	0.26	16.29	2.14
	50	0.08	0.14	13.24	1.38
2023 "Do Something" Scenario with bulking	20	0.17	0.26	16.30	2.14
	50	0.08	0.14	13.24	1.38
Irish and EU Standards	-	-	5	40	40

Table 10-11 Screening Air Quality Assessment, MCR Environmental Materials Recovery Facility-Receptor at location J2.

Scenarios	Traffic Speed Km hr ⁻¹	Carbon Monoxide (mg/m ³)	Benzene (µg/m ³)	Oxides of Nitrogen (µg/m ³)	Particulates (PM ₁₀) (µg/m ³)
		Annual Average-Traffic component	Annual Average- Traffic component	Annual Average NO ₂ - Traffic component	Annual Average-Traffic component
Existing Scenario 2007	20	0.14	0.15	22.06	2.91
	50	0.07	0.08	17.01	1.82
2008 "Do Nothing" Scenario	20	0.15	0.15	22.77	2.91
	50	0.08	0.08	17.54	1.82
2008 "Do Something" Scenario	20	0.15	0.15	22.67	2.90
	50	0.07	0.08	17.47	1.81
2023 "Do nothing" Scenario	20	0.17	0.26	16.26	2.14
	50	0.08	0.14	13.21	1.37
2023 "Do Something" Scenario without bulking	20	0.17	0.26	16.25	2.14
	50	0.08	0.14	13.20	1.37
2023 "Do Something" Scenario with bulking	20	0.17	0.26	16.27	2.14
	50	0.08	0.14	13.21	1.38
Irish and EU Standards	-	-	5	40	40

For carbon monoxide (CO) under all traffic scenarios at both speeds, the predictions indicate that even under worst-case scenario conditions the maximum CO level will not breach the EU limit at locations J1 and J2. The model predicts that under the 2008 "Do-nothing" and "Do something" scenarios, the ambient carbon monoxide concentrations will slightly increase at location J1 and J2. In comparing the 2023 "Do-nothing" and "Do something" scenarios, there is a small net increase in CO concentrations in general but not significant.

The predicted results for benzene at the two speed scenarios indicate that the concentrations are below the relevant Irish and EU limit at both locations. Again, the predicted levels drop with increases in speed. As with the CO results, the predicted levels at all receptors actual remain relative equal in 2008. There are overall net increases in ambient air concentrations of Benzene at receptor locations J1 and J2 in year 2023 due to increases in traffic movements. All concentration levels are well within the Irish and European limit values.

The predicted levels of nitrogen dioxide (NO₂) at the two speed scenarios indicate that the development of the proposed facility will not increase the overall impact of NO₂ on the surrounding area. The relative concentrations of NO₂ stay relatively constant whether the proposed development proceeds or not. There is a general overall improvement in the NO₂ levels as the development proceeds from 2008 to 2023 due to improvements in engine technology.

For particulate matter (PM₁₀) the predictions indicate that even under worst-case scenario conditions the annual average will not breach the Irish and EU limit at either location. The predictions show a variation with speed resulting in lower levels of particulates produced under normal traffic conditions (50 km/hr). Predicted decreases in PM₁₀ will occur at locations J1 and J2 for year 2023 because of improvements in engine technology. There is no significant difference on air quality impact whether the development proceeds or not.

The computer model predictions indicate the following findings:

- 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 a net decrease in NO₂ and PM₁₀ concentrations at J1 and J2 as the development phases are implemented over time due to improvements in engine technology.
- The net impact of the proposed development will be a slight negative for CO but will not increase air quality impacts whether the development proceeds or not.

10.5.2 Odour

The operation of the proposed facility could give rise to odour impacts if proper management and mitigation structures are not implemented as part of the proposed development.

In terms of the proposed development the following management and mitigation measures will be implemented. These include:

- All waste entering the facility will be checked visually for odourous waste contamination,
- Odourous waste will be removed immediately from the floor and transported to the odourous waste storage bay, which will be enclosed.
- The negative air extraction will be switched on to remove and clean approximately 400 m³/hr of odourous air. This will provide 3 AC/hr negative extraction on the storage bay.
- Every 2 days or sooner as required, when sufficient odourous waste has been collected, the odourous waste enclosed bay will be emptied and bulk transported off site to another licensed facility for suitable disposal.
- All surfaces contaminated with odourous waste will be washed down thoroughly while the storage bay will receive a wash down with disinfectant every week following usage.
- The odourous waste storage bay will always be operated in a covered manner to ensure containment of odours.

In order to ascertain the impacts or odour associated with the propose odour control system, an odour dispersion model was completed for the proposed operation of the odour control unit.

The output data from the dispersion model was compared with the assessment criterion presented in Section 10.2.2.

As can be observed in Appendix 10.2 all ground level concentrations of odours are greater than 90% lower than the assessment criterion for odour impact. Therefore it can be concluded that the Materials Recovery Facility operating the proposed odour containment system and odour control unit will not cause any odour impacts. All activities will be carried out indoors and access doors will be operated closed.

10.5.3 “Worst Case” Scenario

For traffic-derived pollutants, the “worst-case” scenario consists of gridlock conditions with large volumes of traffic on the road simultaneously. This has been accounted for within the model whereby it is predicted that traffic movements will occur simultaneously on the road network. In addition gridlock is also assessed.

The DMRB predictive model employed is a screening model that is used to generate worst-case scenario predictions for air quality. If this model indicates that pollutant levels will not breach the Irish and EU limits, then it can be assumed with some confidence that a project will not produce air pollution problems if none are identified by this method. There are no predicted breaches of Irish and EU legislation for all future years, speeds and receptors. As a result of these model predictions it may be concluded that the worst-case impact of the traffic alterations associated with the proposed development are predicted to be a slight negative.

In order to mitigate against any negative impacts, the facility will be operated in a shift mode of operation therefore minimising contribution to peak hour traffic events.

10.5.4 Monitoring

Construction Phase

It is envisaged that the proposed development will not have a significant impact on the surrounding air quality. However, as discussed previously a number of dust mitigation measures have been suggested. Moreover, dust monitoring could be carried out during the construction phase of the development if deemed necessary by the Planning Authority. If the level of dust is found to exceed 350mg/m²day in the vicinity of the site, further mitigation measures will be incorporated into the construction of the proposed site.

In terms of odours, the carbon filtration system may be monitored using both onsite subjective assessment and biannual monitoring, if this is deemed necessary.

Internal closed loop dust abatement equipment fitted to the materials recovery equipment will be continuously monitored using differential pressure sensor, which will alarm if requiring service.

Operational phase

In terms of odours, the carbon filtration system may be monitored using both onsite subjective assessment and biannual monitoring, if this is deemed necessary.

Internal closed loop dust abatement equipment fitted to the materials recovery equipment will be continuously monitored using differential pressure sensor, which will alarm if requiring service.

Dust monitoring will be carried out during the operation phase of the development if deemed necessary by the regulatory authority. If the level of dust is found to exceed 350mg/m²day in the vicinity of the site, further mitigation measures will be incorporated into the operation of the proposed site.

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11 NOISE & VIBRATION

11.1 INTRODUCTION

This Chapter of the Environmental Impact Statement shall explore the potential Noise and Vibration impacts associated with the proposed Materials Recovery Facility at Ballycoolin Road, County Dublin.

11.2 EXISTING ENVIRONMENT

The site situated between the M50 and an operational Industrial Estate. The noise climate in the area is characterised by commercial activities in the industrial estate across the road and by the road traffic noise principally on the M50 and secondarily on the adjacent local road network.

The Warehouse building that will house the proposed facility is already subject to full planning permission and the Business Park is under construction at the time of writing.

The term “Baseline noise” refers to the existing noise environment in an area that may be affected by the demolition/construction and/or operation of the proposed development. A baseline noise survey was conducted to provide a context for the production of predicted future noise levels and to demonstrate the acoustic suitability of the site for the proposed development.

In order to assess the surrounding environmental noise levels, a daytime and night time noise survey was carried out on the 9th August 2007 at three locations. Attended 15-minute measurements were recorded during the day and the night periods at each monitoring location. The measurements taken were deemed to be representative of typical noise levels in the vicinity of the proposed development site during daytime. The equipment used during this survey was a Larson Davis 824 Type 1, sound level meter.

All measurements were carried out in general accordance with ISO 1996: *‘Acoustics-Description and measurement of environmental noise’*. Measurements were made placing the microphone at a height of 1.5m above ground level and were free field, measured >2m from reflecting surfaces. Before and after the survey the measurement apparatus was checked and calibrated to an accuracy of +/- 0.3dB. Weather conditions during the surveys were in line with the conditions described within ISO 1996, *Acoustics ‘Description and Measurements of Environmental Noise’*.

The measurement results were noted onto survey record sheets immediately following each measurement and also stored in the instrument’s internal memory for subsequent analysis, notes were taken in relation to the primary contributors to noise build-up at each location.

Five principal environmental noise parameters were measured which are defined below.

L_{Aeq} is the A-weighted equivalent continuous steady sound level during the measurement period and effectively represents an average ambient noise value.

L_{Amax} is the maximum A-weighted sound level measured during the measurement period.

L_{Amin} is the minimum A-weighted sound level measured during the measurement period.

L_{A90} is the A-weighted sound level that is exceeded for 90% of the measurement period and is used to quantify background noise level.

A-weighting is the process by which noise levels are corrected to account for the non-linearity of human hearing. All noise levels quoted are relative to a sound pressure of 2×10^{-5} Pa.

Typical ranges of noise levels are presented in Table 11.1 below to compare against the baseline noise levels measured:

Table 11-1 Typical Noise Levels in our Environment

Sound levels in decibels dB (A)	Description of Activity
0	Absolute silence
25	Very Quiet room
35	Rural night time setting with no wind
55	Day time, busy roadway 0.5km away
70	Busy Restaurant
85	Very busy pub, voice has to be raised to be heard
100	Disco or rock concert
120	Uncomfortably loud, conversation impossible
140	Noise causes pain in ears

Source: Guidance Note for Noise in relation to Scheduled activities, 2nd Edition, EPA 2006.

A description of the noise monitoring locations is presented in Table 11.2 overleaf. The locations of these measurement positions are presented in Figure 11.1 - Noise Monitoring Locations.

Table 11-2 Noise Monitoring Locations

Position No.	Description
N1	House at the head of Cul de Sac, 530m north east of site
N2	House at roundabout, 100 north east of site
N3	Warehouse site

11.2.1 Survey Results

The baseline noise measurement locations were chosen to represent as best as practicable, the nearest noise sensitive locations to the development site that may be affected during the installation of equipment and operational phase of the site and to represent typical noise levels, which would be experienced by new residences. A description of these locations and the noise levels measured are detailed in Tables 11.3 –11.5.

Table 11-3 Summary of Baseline Measurements recorded at N1

Location	Time	L _{Aeq}	L _{Amin}	L _{AMax}	L _{A90}	Notes
N1 – Residence in cul de sac to north east of site	10:08	59.0	77.6	47.2	50.0	Heavy traffic on Ballycoolin Road, occasional commercial traffic in cul de sac due to scrap HGV business at end, some jet aircraft over flight
	09:42	58.5	73.2	52.2	55.4	As Above
	14:02	59.6	73.4	53.1	56.2	As Above
	22:40	56.6	71.3	50.2	53.0	M50 traffic noise dominant, occasional passing traffic on Ballycoolin Road.

Location N1 is in a cul de sac located approximately 530m to the north east of the proposed site. There are houses at both ends of the cul de sac, and there is a scrap Heavy Goods Vehicle (HGV) business at the end of the road, with several scrapped HGV’s lying in the road. The noise climate at this location is characterised by significant road traffic noise from the Ballycoolin Road, which the cul de sac opens onto, and from the M50 Motorway. Aircraft over-flight and foliage noise were other noise sources observed at this location. There is an

existing Industrial Estate directly opposite the head of the cul de sac, where it meets the Ballycoolin Road.

Table 11-4 Summary of Baseline Measurements recorded at N2

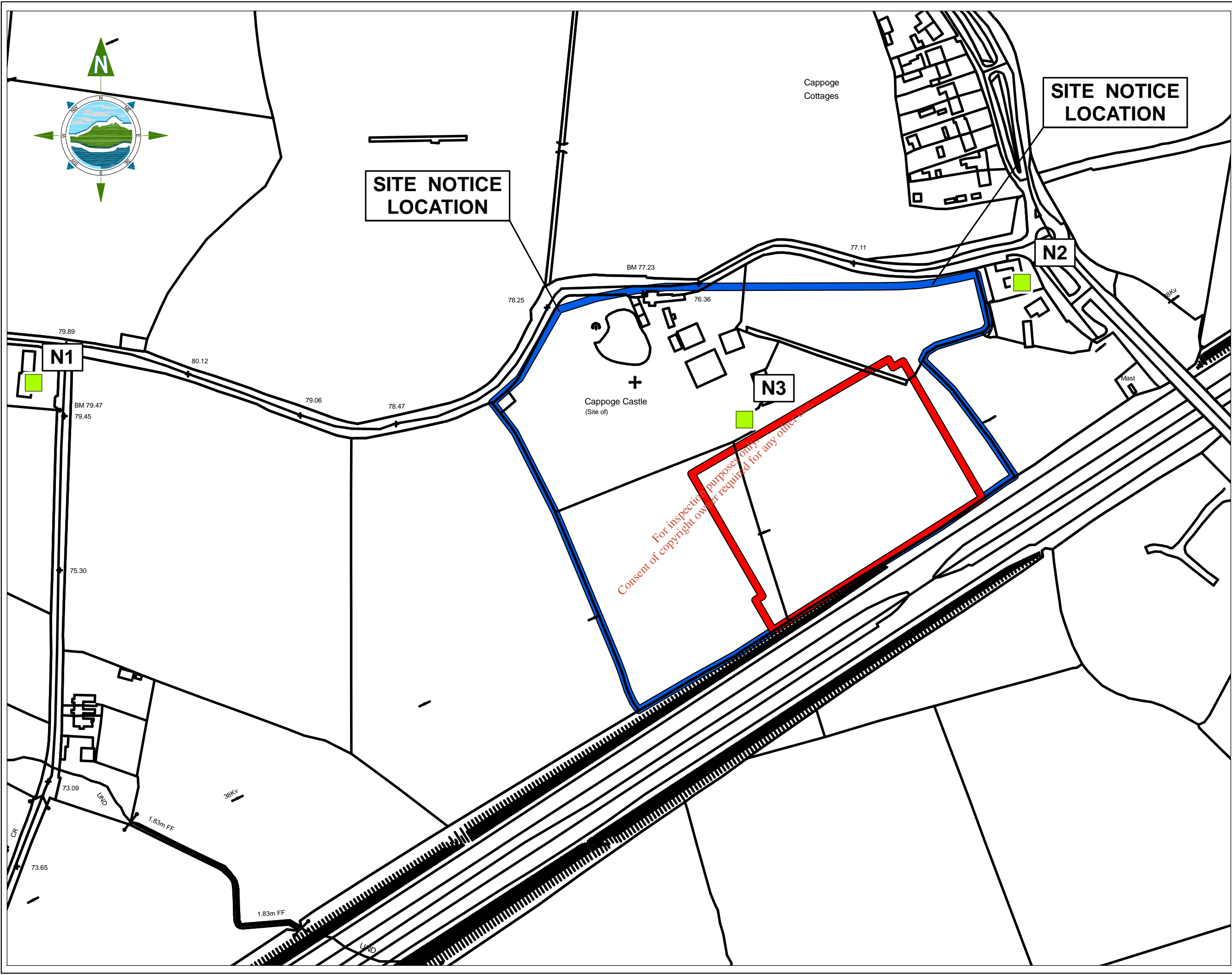
Location	Time	L _{Aeq}	L _{Amin}	L _{AMax}	L _{A90}	Notes
N2 – House at roundabout north west of site.	09:06	69.0	93.6	52.8	59.2	Heavy traffic on Ballycoolin Road, Excavator and dump truck in operation in Abbotstown business park across the road.
	10:20	67.9	90.0	55.6	58.9	As Above
	13:20	67.1	85.4	57.0	59.9	As Above
	22:22	62.3	76.9	53.9	56.4	M50 motorway dominant, occasional traffic on Ballycoolin Road

N2 is located some 70m from the boundary of the site. The noise climate at this location is characterised in the daytime by heavy road traffic on the Ballycoolin Road and by construction works on the Abbotstown Business Park. Night time noise is dominated by the M50 motorway and by occasional traffic on the Ballycoolin Road.

Table 11-5 Summary of Baseline Measurements recorded at N3

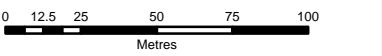
Location	Time	L _{Aeq}	L _{Amin}	L _{AMax}	L _{A90}	Notes
N3 – site of warehouses on the proposed site	11:20	65.9	79.7	59.8	62.8	M50 completely dominant, excavator audible in distance in traffic lulls.
	11:55	64.7	71.7	58.5	61.9	As Above
	12:35	65.0	74.1	58.7	61.8	As Above
	22:00	63.8	71.2	57.3	61.3	M50 completely dominant, no other sources audible.

The noise climate of the proposed site is characterised almost completely by road traffic noise from the M50 motorway. This was almost incessant throughout both the day and the night time monitoring period. An excavator was audible in the distance in traffic lulls, no other sources were audible during the day or night time period.



LEGEND

- Site Activity Boundary
- Premier Business Park
- Noise Monitoring Point



- NOTES**
1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
 2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
 3. ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
 4. ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Issue	Date	Description	By	Chkd.
A	23-11-07	Issued	A.G.	M.H.

Client: **MCR ENVIRONMENTAL**

Project: **BALLYCOOLIN ROAD MATERIALS RECOVERY FACILITY**

Title: **NOISE MONITORING LOCATIONS**

Scale @ A3: **1:2,500**

Prepared by: A. Gruschka Checked: M. Hogan Date: Nov 2007

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FIGURE 11.1 4039 A

11.3 POTENTIAL IMPACTS

The potential noise and vibration impacts associated with the proposed Material Recovery Facility are divided between the construction and operational phases of the development.

11.3.1 Construction Phase

The term construction phase for this project relates to the installation of equipment. The construction phase of the development has minimal potential to increase noise levels at noise sensitive locations surrounding the development site. The nearest noise sensitive locations are both on the Ballycoolin Road, one to the north of the proposed development entrance, and the other to the south west at the head of a cul de sac.

Impact from the construction phase will depend on the number and type of equipment used during the plant installation phase of the development. Construction noise sources will result in a temporary impact on the noise climate in the area. The construction phase should not give rise to excessive noise levels as the buildings will already be constructed, and the construction phase will essentially consist of the installation of plant within these buildings. As such there will be minimal noise impact, from road lorries delivering said plant to the site. These levels are outlined in Table 11.6 below.

Table 11-6 Construction Phase Noise Levels

Construction Phase Predictions		
BS5228 Calculations	Estimated Construction noise levels at varying distances LAeq 1 hour	
Distance to Receptor	N1 (530m)	N2 (100m)
Road Lorry	29	47
Wheeled Crane	35	53
Combined LAeq 1 hour	36dB	54dB

Predicted noise levels have been estimated using the methodology described in *BS: 5228: Noise and control on construction and open sites, 1997*. Predictions are based on typical equipment used during various constructive stages of the development. Predictions are based on a L_{Aeq} 1 hour value with all machinery listed below operating for a continual period of 1 hour. This may be considered a worst-case scenario as machinery may operate for shorter

periods and may not work simultaneously. Additionally, calculations are based on minimum distances between site activities and the nearest noise sensitive locations.

In Ireland, there are no statutory guidelines relating to noise limits for construction activities. These are generally controlled by local authorities and commonly refer to limiting working hours to prevent a noise nuisance. The National Roads Authority (NRA) report entitled ‘*Guidelines for the treatment of noise and vibration in national road schemes*’ 2004, has outlined recommended noise levels for construction noise during road works. Although these refer to road projects, they have been developed in line with typical construction noise limits on general construction projects used previously in Ireland.

The limits outlined represent a reasonable compromise between the practical limitations during a construction project and the need to ensure an acceptable ambient noise level for local residents. As a result, these limits have become the most acceptable standard for construction noise limits to date. The National Roads Authority (NRA) does note however that where pre-existing noise levels are particularly low, more stringent levels may be more appropriate. Table 11.7 below details these recommended limits. The recommended levels presented in Table 11.7 are considered reasonable when compared against existing baseline levels.

Table 11-7 Typical Maximum permissible noise levels at the façade of dwelling during construction activities (NRA Draft guidelines for the treatment of noise and vibration in national road schemes 2004)

Day & Times	L _{Aeq} (1hr) dB	L _{Amax} dB
Monday – Friday (07:00 to 19:00 hrs)	70	80
Monday – Friday (19:00 to 22:00 hrs)	60 ¹	65 ¹
Saturday (08:00 to 16:30 hrs)	65	75
Sundays and Bank Holidays (08:00 to 16:30 hrs)	60 ¹	65 ¹

¹ Construction activities at these times, other than that required in respect of emergency works, will normally require the explicit permission of the relevant local authority.

The predicted construction noise levels in Table 11.7 are in full compliance with the recommended noise levels for construction projects. As the predicted values are a worst-case assessment the impact is likely to be slight to moderate on noise sensitive locations, when the ambient noise levels are taken into account. The temporary nature of the construction period and the variety of machinery used should ensure that no construction activity is operational for long periods. This phase will therefore result in short term impacts, and will in all probability not be as loud as the worst-case predictions in Table 11.7.

11.3.2 Operational Phase

The proposed Materials Recover Facility is intended to operate on a 24 hour basis and as such shall be operated in a manner so as to ensure adherence to the EPA *Guidance Note For Noise In Relation To Scheduled Activities* which outlines a limit of a free-field L_{Ar,T} value of 55dB by daytime (08:00 – 22:00), at any noise sensitive location. During night-time (22:00 – 08:00), the noise attributable to on-site activities should not exceed a free-field L_{Aeq, T} value of 45 dB. Rigorous efforts shall be made to avoid clearly audible tones and impulsive noise at all sensitive locations, particularly at night.

The existing ambient noise levels in the area are some 10dB above the daytime 55dB L_{Aeq} value, and some 18dB above the 45dB L_{Aeq} nighttime value. It is considered highly unlikely that the proposed facility would reach these levels, even in a worst-case scenario.

All of the major noise producing plant associated with the proposed development will be situated within the purpose built buildings associated with the development. A very conservative 25dB attenuation value has been used in all calculations for plant situated inside buildings.

The noise sources associated with the proposed development in the operational phase will consist of:

- Noise generated by site operations; and
- Noise generated by road traffic to and from the site.

With regard to noise generated from on site activity this will be composed of typical Material Recovery Facility machinery as described in Table 11.8 overleaf.

Table 11-8 Plant Operational noise at closest receptors

Operational Phase Noise Predictions (sources within buildings)		
BS5228 Calculations	Estimated Operational noise levels at varying distances LAeq 1 hour	
	N1	N2
Distance to receptor (m)	530m	100m
Sizer	20	38
Series 3 Trommel	14	32
Flip-flop	-	17
Single Drum Separator	2	20
Ballistic separator	9	27
Waste Screen	9	27
Double Drum Separator	4	22
Windshifter	-	12
Bailer	19	37
Combined Level LAeq 1hour	23dB	42dB

Traffic Noise

The Clifton Scannell Emerson Associates Limited (CSEA) road traffic assessment provided the input data for the traffic noise assessment of the proposed Materials Recovery Facility. Heavy road traffic on the Ballycoolin Road and the M50 motorway, both of which the site is bordered by, were noted to be the completely dominant noise sources at the proposed Materials Recovery Facility location, and for surrounding, noise sensitive receptors.

An assessment of the effects of a potential noise impact due to road traffic noise was carried out using a road traffic noise model built on the UK's Department of Transport (Welsh Office) 'Calculation of Road Traffic Noise' Document (1988). This took the form of an assessment of the road traffic for the base year (2007) the proposed opening year (2008) and the design year (2023), and their effects on sensitive receptors closest to the proposed development.

The results of the road traffic noise model are presented in Table 11.9 overleaf.

Table 11-9 Predicted Road Traffic noise impacts

N1	Do Minimum	Do Something	Variation
Base Year	73.3 dB	n/a	n/a
Opening Year	74.3 dB	74.3 dB	-0.03 dB
Design Year	77.1 dB	77.1 dB	-0.02 dB
N2	Do Minimum	Do Something	Variation
Base Year	68.6 dB	n/a	n/a
Opening Year	74.1 dB	74.0 dB	-0.04 dB
Design Year	76.9 dB	76.9 dB	-0.02 dB

There is no predicted increase in Road traffic derived noise due to the proposed development at the nearest sensitive receptors, as the peak hour traffic numbers are predicted to decrease. Hence road traffic impact is not considered to be significant.

11.4 MITIGATION MEASURES

11.4.1 Construction Phase

Noise from the construction phase of the project has minimal potential to increase noise levels at the nearest noise sensitive properties. This phase of the development will not require proprietary noise mitigation.

Noise levels during the operational phase of the development are not anticipated to significantly increase noise levels in the surrounding environment, and are predicted to be within guidance criteria.

As a matter of Best Practice it is proposed that various practices be adopted during the fit out of the Materials Recovery Facility including:

- Selection of plant with low inherent potential for generation of noise and/or vibration; and
- Siting of noisy plant as far away from sensitive properties as permitted by site constraints.

11.4.2 Operational Phase

The design of the site has been laid out so as to minimise noise impact on the surrounding environment. All major noise producing plant associated with the proposed Materials Recovery Facility is to be located within the site buildings and not in the open air.

This design in itself provides significant noise mitigation advantages in that the noise reaching sensitive receptors and indeed the site boundaries is much curtailed due to this design. Worst case operational noise levels are predicted to comfortably comply within the EPA *Guidance Note For Noise In Relation To Scheduled Activities* which outlines a limit of a free-field LAr, T value of 55dB by daytime (08:00 – 22:00), at any noise sensitive location and one of 45dB for night operations.

These limit values in themselves are significantly below the existing ambient noise levels as shown by the day and night period baseline surveys. As such, no further mitigation is required for the operational phase of the development.

11.5 RESIDUAL IMPACT

On completion of all construction/installation works and full commissioning of the proposed facility it is anticipated that there will be a slight permanent noise impact to the local noise climate as a result of the proposed Materials Recovery Facility.

The operational noise output from the facility will not be significant in terms of the existing ambient baseline noise levels, and shall be in full accord with all relevant criteria. Road traffic noise associated with the operational phase of the proposed facility is not expected to be significant in terms of a predicted decrease in overall existing heavy road traffic volumes on the surrounding road network. The total residual noise impact is predicted to be slight and permanent.

12 TRAFFIC

12.1 INTRODUCTION

Full planning permission was granted in 2006 for Premier Business Park development consisting of six No. large high-bay units (approximately 2,500m² each) and 71 small enterprise units (Planning Permission Register Reference: F05A/1363).

It is proposed to develop the units into a Materials Recovery Facility over two phases. The first phase will involve the development of the 2 units (Blocks L1 and L2) to facilitate the processing of 95,000 tonnes per annum of construction/demolition and commercial/industrial waste. The second phase will involve the intensification of activities within these units to approximately 300,000 tonnes per annum. The current planning application relates to Phase 1 only. As part of this report an assessment has been made of the traffic impacts of the likely future development of Phase 2.

12.2 EXISTING ENVIRONMENT

12.2.1 Existing Road Network

The proposed facility is located within Premier Business Park, which is bounded to the south by the M50 Motorway and to the north by Ballycoolin Road. The site will be accessed from the road network via Ballycoolin Road at an existing 60m ICD (Inscribed Circle Diameter) roundabout, which also serves as an entrance to Stadium Business Park.

The site is in close proximity to the junction of Ballycoolin Road and Cappagh Road. The existing junction is a 3-arm, 30m ICD roundabout.

In order to establish existing traffic patterns, manual traffic classification counts were carried out at two number locations on the surrounding road network. The counts were carried out over a 6-hour period (7:00am – 10:00am and 4:00pm – 7:00pm) on the 3rd of March 2005 at the following locations:

- Junction of Cappagh Road – Ballycoolin Road Roundabout; and
- Junction of Ballycoolin Road – Stadium Business Park Roundabout.

The peak hour on the existing road network occurred between 5:00pm – 6:00pm.

The current traffic flow on Ballycoolin Road is approximately 14,000 AADT (Annual Average Daily Traffic). Cappagh Road (north of Cappagh Road – Ballycoolin Road Roundabout) has approximately 13,000 AADT. The local road network has approximately 4% heavy goods vehicle (HGV) usage.

There is currently a lack of existing cyclist and pedestrian facilities on the surrounding road network. As a result pedestrian and cyclist numbers are very low on the existing road network.

12.2.2 Existing Developments

Stadium Business Park, which is fully developed, has access onto Ballycoolin Road at a 60m ICD roundabout. Approximately 120 vehicles enter and exit the site in the pm peak hour. The access road to Premier Business Park will join Ballycoolin Road at this roundabout.

Premier Business Park was given full planning permission in May 2006. The development consists of six large high-bay units (approximately 2,500m² each) and 71 small enterprise units. The Business Park is currently under construction and is expected to be open in late 2008. Approximately 162 vehicles will be added to the road network in the pm peak hour when development is complete.

The proposed development by Stadium Investments Limited east of the Ballycoolin Road – Cappagh Road roundabout is subject to planning approval. This development is expected to be fully operational by 2016. Approximately 1,140 vehicles would be added to the road network in pm peak hour when development is complete.

12.2.3 Future Developments

A 15-hectare area of zoned industrial land lies to the west of the proposed development. These lands will be serviced by the access road, some of which will be constructed as part of the Premier Business Park Development. It has been assumed that these lands will generate a similar level of vehicular traffic per hectare as the surrounding developments. It has been assumed that these lands will be fully developed by 2016. The traffic flows to and from these lands will be approximately 405 vehicles in a peak hour.

12.2.4 Future Transport Improvements

Ballycoolin Road – Cappagh Road Realignment Scheme

The proposed Scheme provides a high-quality 10m wide carriageway along with bus priority facilities, cyclist and pedestrian facilities. The Scheme will incorporate the existing 60-metre ICD roundabout at the new Premier Business Park access road. The Scheme also provides for an upgrade of the Ballycoolin Road – Cappagh Road junction. The existing 30-metre ICD

roundabout will be upgraded to a 70m ICD roundabout. The Scheme is currently under construction and will be complete in 2008.

M50 – N3 Interchange Upgrade

The proposed M50-N3 Interchange upgrade forms part of the M50 PPP Contract identified in the Government's transportation strategy – *Transport 21*. The contract includes for the upgrade of the junction at the N3 from its current grade-separated junction type to a free-flow interchange. The upgrade works are due to be completed by 2010.

Metro West

In July 2007 the Railway Procurement Agency (RPA) selected the Emerging Preferred Route Corridor for Metro West. The indicative route within the Emerging Preferred Route Corridor runs along the northern boundary of the Premier Business Park. A future proposed stop at Ballycoolin Road – Cappagh Road Roundabout is shown on the indicative route. Metro West is expected to be in operation by 2014.

12.3 POTENTIAL IMPACTS

12.3.1 Proposed Development

Description of Proposed Development

This current planning application will be for a change of use of two of the high-bay industrial units (approximately 2,500m² each), which form part of the development granted permission in 2006. It is proposed to develop the units into a Materials Recovery Facility.

Hours of Operation

It is proposed to operate the facility 24 hours per day, with operations staff working on a shift basis. Two 10-hour shifts would operate: 5am to 3pm and 3pm to 1am. An additional shift of office day staff will operate from 8am to 6pm.

It is expected that the facility will employ 72 staff during Phase 1 and approximately 179 staff in Phase 2. Table 12.1 overleaf shows the breakdown of staff numbers.

Table 12-1 Employee Numbers

Phase	Time Period	Shift	Operations		Business		Total
			Factory	Office	Office	Drivers	
Phase 1	Morning	5am-3pm	15	5	-	15	35
	Day	8am-6pm	-	-	8	-	8
	Night	3pm-1am	12	1	1	15	29
	Subtotal 1		27	6	9	30	72
Phase 2	Morning	5am-3pm	36	7	-	40	83
	Day	8am-6pm	-	-	20	-	20
	Night	3pm-1am	32	2	2	40	76
			68	9	22	80	179

Shift hours and break times will be organised so that vehicle movements to and from the facility would be kept to a minimum during the peak hours on the surrounding road network, with very a low number of staff working on the 8am to 6pm shift.

Development Phasing

Phase 1 will involve the development of the two units (Blocks L1 and L2) to facilitate the processing of approximately 95,000 tonnes per annum of C&D waste and C&I waste. It is intended to extend this amount in Phase 2 to approximately 300,000 tonnes per annum. During Phase 2, Block K will be used solely for the storage of materials, trucks and skips. Phase 3 will involve further use of Block K, as yet undetermined, and therefore is not covered in this EIS.

Development Trip Generation

An estimation of trip generation was carried out by MCR Environmental based on a detailed analysis of the daily operation of the proposed development. The likely trip generation and

model split characteristics of staff was assessed by comparison with similar Materials Recovery Facilities in Dublin. It is expected that 50% of factory staff will drive to work, with 80% of office staff driving to work (car sharing is expected with factory floor staff). Truck driving staff will park their own vehicles and pick up the trucks at a separate compound remote from the site. Thus the truck drivers will not contribute any staff trips to the development trip generation. Details of the trip generation assessment are shown in Appendix 12.1.

It has been assumed that the majority of trips to the proposed development will be new trips (i.e. trips that are new to the road network). Therefore, a worst-case scenario has been assumed.

Table 12.2 shows the estimated vehicle trip generation detailed in the existing planning permission for Premier Business Park. The trip rates were estimated using the TRICS database. The daily trips from the Warehouse type development assumed in the existing permission for Block L are approximately 319 trips (159 in; 160 out). Office and Warehouse uses were separated for purposes of trip generation in original application. The daily trips from office uses assumed in the existing permission for Block L is approximately 146 trips (74 in; 72 out). This gives a total of 465 daily trips for Block L (233 in; 232 out).

Table 12-2 Trip Generation – Existing Permission (daily trips)

Use	Daily Trips (vehs)		
	In	Out	Two way
Warehouse	159	160	319
Office	74	72	146
Totals	233	232	465

Table 12.3 shows the proposed daily vehicular trip generation from the Materials Recovery Facility, including staff and truck movements. Phase 1 of the new facility will generate 291 trips less than that allowed for in the original planning application. The total two-way trips from Phase 2 will generate 85 trips less than that allowed for in the original planning application.

Table 12-3 Vehicle Trip Generation – Proposed Development (daily trips)

Phase	In		Out		Total Two way Trips
	Truck Movements	Staff Trips	Truck Movements	Staff Trips	
Phase 1	62	25	62	25	174

The junctions were assessed as part of the original application and were shown to have adequate reserve capacity for the future traffic generation from the development. Therefore an analysis of the junctions based on the new figures is unnecessary.

The peak hour on the surrounding road network is from 5pm to 6pm. Based on the traffic impact assessment for the existing planning permission, the traffic generation to and from the Business Park during the pm peak is 9 vehicles in; in and 27 vehicles out. It is estimated that trips to and from Phase 1 of the proposed Materials Recovery Facility during this period will be 3 vehicles in and 3 vehicles out. The trip generation for Phase 2 will be approximately 8 vehicles in and 8 vehicles out. Table 12.4 overleaf shows the trip generation for the existing permission and the proposed use.

Table 12-4 Vehicle Trip Generation – pm Peak Hour

Use		pm Peak Hour Trips (vehicles)		
		In	Out	Two Way
Existing Permission (warehouse)		9	27	36
Materials Recovery Facility	Phase 1	3	3	6
	Phase 2	8	8	16

The current planning application is for Phase 1 of the facility only. The table above shows that there will be minimal impact on the surrounding road network in terms of trips to and from the facility during the pm peak hour.

Trips to similar developments in the area have very low public transport or slow-mode modal splits. It is likely, however that the future improvements to the bus network in the area and the future presence of a Metro route adjacent to the site, will result in a shift towards public transport for staff trips to and from the development.

12.3.2 Impact on Road Network

Site Access from Road Network

Access to Premier Business Park will be by means of a 9-metre wide access road, which will join the external road network at the existing 3-arm, 60m ICD, Ballycoolin Road – Stadium Business Park Roundabout. The proposed development will be accessed from a 10-metre wide internal estate road, which includes on-road cycle tracks. HGV access from the internal estate road into the facility has been designed (using the AutoTrack computer program) to cater for the largest vehicles that will use the facility.

The facility will have a separate entry and exit on both sides of the building for HGVs, working as a one-way system with entry on the east side and exit on the west side. The staff/visitor car park will be accessed via a third separate entrance at the front of the building.

Junction Analysis

The two nearest major junctions on the road network were assessed as part of the planning application for Premier Business Park, namely:

- Cappagh Road – Ballycoolin Road Roundabout; and
- Junction of Ballycoolin Road – Stadium Business Park Roundabout.

The junctions were analysed for the years 2007 and 2016 with and without the Premier Business Park development in place using the ARCADY computer-modelling program.

Analysis of the junctions with the Premier Business Park in place shows that the road network will have sufficient spare capacity to cater for the future traffic demands of the Business Park. Given that the proposed Materials Recovery Facility will generate fewer trips than that allowed for in the original planning application, analysis of the junctions based on the new figures is unnecessary.

Construction Traffic

The development consists of the conversion of an existing high bay warehouse unit into a Materials Recovery Facility. Construction activities on the site will be restricted to setting up processing equipment and materials handling and storage facilities.

Construction traffic would consist of the following:

- Plant/machinery delivery vehicles;
- Private vehicles belonging to specialist contractor staff;
- Private vehicles belonging to site security staff; and
- Occasional Private vehicles belonging to professional staff (i.e. design team, utility companies).

It is likely that the conversion of the unit would take place over a short time period. The impact of the construction period would be very minor and temporary in nature and would not constitute a significant traffic impact.

12.3.3 Internal Layout

The development will have separate accesses for cars and HGVs. Staff and visitors travelling by car will access the car parking areas directly from the internal estate road. Heavy goods vehicles will use a dedicated entrance, thus keeping cars/pedestrians and HGVs separate.

The proposed landscaping along the internal estate road at the proposed entry and exit points of the facility has been designed to allow good visibility for vehicles exiting the facility. The kerb radii have been designed to allow easy access and egress for heavy goods vehicles to the facility from the estate road.

The facility will have a separate entry and exit on both sides of the building for HGVs, working as a one-way system with entry on the east side and exit on the west side. All plant and machinery will operate inside buildings and all materials will be kept indoors at all times. Vehicles importing materials to the facility will unload and turn within the building.

12.3.4 Parking

Parking Provision

A total of 46 No. car parking spaces are provided as part the proposed development, with at least one of these spaces reserved for disabled parking.

The parking provision for the proposed development is based on a parking ratio of approximately 1 space per 100m² of warehouse floor area.

Table X.3 in Appendix 12.2 shows the predicted staff-parking requirement for the proposed development. It is expected that a maximum of approximately 40 parking spaces would be required for staff purposes. The remainder of spaces will facilitate visitor parking when required.

Parking Dimensions

All car-parking bays in the proposed development have the standard 4.8m x 2.4m dimensions. Disabled parking bays are 3m wide. All aisle widths are a minimum of 6m wide to allow for comfortable entry and exit from parking spaces.

Service Area Access and Parking

The service and loading areas have been designed to cater for articulated trucks, with turning and loading areas located away from car parking areas and pedestrian areas. Truck unloading will take place inside the building.

HGV movements on the site have been designed (using the AutoTrack computer program) to cater for the largest vehicles that will use the facility.

12.4 MITIGATION MEASURES

12.4.1 Measures to Reduce Impact on Road Network

Shift hours and break times will be organised so that vehicle movements to and from the facility would be kept to a minimum during the peak hours on the surrounding road network. Table 12.3 above shows that Phase 1 of the development will generate only 6 trips during the pm peak hour. Thus the impact on the road network will be negligible.

12.4.2 Measures to Improve Pedestrian and Cyclist Facilities

Pedestrian Facilities

The development includes pedestrian routes to all areas within the site. The layout of the facility has been designed to avoid potential conflict between HGVs and pedestrians.

The development will have direct pedestrian linkage to the footpath network within Premier Business Park. Footpaths, 2-metre wide, are provided along the internal estate road, along with a number of pedestrian crossing points. Facilities for people with disabilities include

dished kerbs and tactile paving. There will also be linkage to the new pedestrian network on the Ballycoolin Road – Cappagh Road Realignment Scheme.

Cyclist Facilities

Cyclist facilities are being provided within the development including lockers, shower and changing facilities and cyclist parking. Approximately 17 no. secure cycle parking spaces are to be provided at the front entrance to the facility.

Cycle lanes and crossings are provided on the internal estate road. Thus there will be excellent access to the new cycle network, which will form part of the Ballycoolin Road – Cappagh Road Realignment Scheme.

There are also plans to extend the network to the Blanchardstown Centre. The cycle track network is continually being improved and safe cyclist access to the site will become available from a larger catchment area in future years.

12.4.3 Measures to Improve Public Transport Facilities

Bus

A number of public transport facilities are proposed in conjunction with Premier Business Park. It is proposed to provide bus stops at the entrance to the Park. In addition facilities are included to allow a bus route to penetrate into the Park. A bus lay-by could also be provided within the Park if required.

Metro

The indicative route within the Emerging Preferred Route Corridor runs along the northern boundary of the Premier Business Park. A future proposed stop at Ballycoolin Road – Cappagh Road Roundabout is shown on the indicative route.

It is likely, that the future improvements to the bus network in the area and the future presence of a Metro route adjacent to the site will result in a further shift towards public transport for staff trips to and from the development.

12.4.4 Mobility Management Plan

The planning application for Premier Business Park makes reference to a Business Park Mobility Framework. Individual Mobility Management Plans developed by the occupiers of the units within the business park will complement the structure defined by the Business Park

Mobility Framework. This Framework is to be developed by the owners of Premier Business Park.

The owners/occupiers of the proposed facility are committed to the implementation of an individual Mobility Management Plan. Preparation of the Plan will require a site assessment and staff surveys. Implementation of the Plan will involve identifying a suitable package of measures. The owners/occupiers will actively promote the use of alternative modes to car-based transport for staff.

A number of tangible measures will be in place at the same time that the Materials Recovery Facility will start operation:

24-hour operation and shift working hours will reduce vehicle movements at peak times;

Provision Cyclist facilities such as secure parking, lockers/changing facilities, and showers; and

Raising awareness and promotion of public transport/slow modes for staff/visitor trips.

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13 LANDSCAPE & VISUAL ASSESSMENT

13.1 INTRODUCTION

This report examines the likely impact on landscape and visual character due to the change of use of Block L and K within the new Premier Business Park Ballycoolin Road, County Dublin. The assessment also includes a description of the existing landscape character and describes measures to reduce the impact of the development.

The site for the proposed development is located in the townland of Cappoge approximately 2km northeast of Blanchardstown and approximately 2.5km west of Finglas. The proposal comprises 2 No. high-bay units within Premier Business Park, currently under construction along Ballycoolin Road. The development received planning permission as part of the planning application for the entire business park in May 2006. However, due to the proposed “change of use” to a Materials Recovery Facility, the development now requires an Environmental Impact Statement.

13.1.1 Basis for the Landscape Impact Assessment

This report uses the ‘Guidelines on the Information to be contained in Environmental Impact Statements’ prepared in March 2002 on behalf of the Environmental Protection Agency (EPA) as the basis for the landscape/environmental impact assessment.

The author visited the site on 30th August 2007 in cloudy but dry conditions, and carried out an assessment of potential landscape and visual impacts arising from the proposed development. All photos were taken with the digital equivalent of a 50mm SLR-lens.

13.1.2 Purpose and Structure

In terms of structure, this report includes descriptions of the existing environment, of the proposed development, of likely significant impacts and of mitigation measures.

13.1.3 Landscape in the description of the existing environment

The guidelines describe the term ‘Landscape’ as covering a range of environmental topics including Landscape Character, Landscape Context, Views & Prospects, Historical Landscapes and Manmade Landscapes.

Landscape impact assessment is a combination of two separate but closely related aspects. The first is visual impact, which is the extent to which new developments can be seen. The second is the impact on landscape character, that is the way in which the landscape

character of the area is expected to change, as a result of the combined effects of the new development.

The Guidelines recommend systematic, accurate and comprehensive descriptions of the following to be included in any assessment:

(i) Context

The report describes the location and the extent or magnitude of the landscape in question.

The areas from which the existing site is visible (with particular attention given to views from roads, residences and designated tourism routes and viewpoints) are described. Those areas from where the site can be seen beyond the boundary are noted. Principal landscape features and areas of distinctive character are mapped.

(ii) Character

The distinguishing aspects of the environment are noted.

A description of the landscape character differentiates between subjective assessments and objective description. A description of the character of the site that is perceived both from within the site and from the wider landscape is important, as is a description of the intensity and character of land use.

(iii) Significance

Here the quality, value and/or designation assigned to the aspect is described. The level of visual intrusion upon designated views, designated landscape and designated landscape amenity areas is investigated.

(iv) Sensitivities and Vulnerability

Changes that could alter the character of a view or aspect significantly are listed here.

The extent to which the existing landscape is capable of being changed in such a way as will not alter the perceived character is also analysed, and described as follows:

High - development of the type proposed will significantly alter the perceived character of the landscape.

Medium - development of the type proposed will moderately alter the character of the landscape.

Low - development of the type proposed will not significantly alter the perceived character of the landscape.

13.1.4 (Predictions of) Impacts on the Landscape

The report presents an assessment of the likely and significant effects and impacts of the proposed development.

The predicted impacts may be direct, indirect, secondary or cumulative.

Likelihood of Impacts

Only probable or likely impacts are addressed, including:

- *Predicted Impacts* - impacts that are expected or planned to take place, or that can be reasonably foreseen as inevitable consequences of normal construction and operation of the development are addressed. The character, magnitude, duration and consequence of impacts are described.
- *Potential Impacts* - impacts arising before proposed mitigation measures become fully effective e.g. visual impacts before vegetation becomes established.
- *Residual Impacts* – final or intended impacts occurring after the mitigation measures have taken effect as planned e.g. establishment of tree screening

Significance of Impacts

As described in this section, this means either the sensitivity to change of the environment that is affected (often reflects its importance), or the importance of the outcome of the impact (the consequences of the change). It is determined by a combination of objective and subjective concerns.

Description of Impacts

The report describes key aspects of impacts, namely *character, magnitude, duration and consequence*.

13.1.5 Mitigating Impacts on landscape

Strategies for impact mitigation as described in the guidelines include:

- **Avoidance** - Avoid developments in sensitive or prominent landscapes, and avoid insensitive or visually intrusive designs.
- **Reduction** – Where the significance of adverse impacts is lessened. Seeks to limit the exposure of the receptor. Reduce the visual intrusiveness of the design and reduce the

visibility of the project (e.g. by installing barriers between the location(s) of likely receptors and the source of the impact).

- **Remedy** – Remedy serves to improve adverse conditions by carrying out further works which seek to restore the environment e.g. increased planting of trees/shrubs to offset unavoidable loss of vegetation.

If it is not possible or practical to mitigate an impact (e.g. felling mature trees) this is described as a *Residual Impact*.

13.1.6 Definition of Visual Impacts

Terminology used in the assessment of impacts is defined as follows:

- **Visual Intrusion** – This occurs where a proposed development impinges on an existing view without obscuring the view.
- **Visual Obstruction** – This occurs where a proposed development obscures an existing view.

The quality of the impact may be described as:

- **Neutral** – A neutral impact will neither enhance nor detract from the landscape character or viewpoint.
- **Positive** – A positive impact will improve or enhance the landscape character or viewpoint.
- **Negative** – A negative impact will reduce or have an adverse effect on the existing landscape character or viewpoint.

The Duration of impacts is defined as follows:

- **Temporary** Impacts lasting one year or less
- **Short Term** Impacts lasting one to seven years
- **Medium Term** Impacts lasting seven to fifteen years
- **Long Term** Impacts lasting fifteen to sixty years
- **Permanent** Impacts lasting over sixty years

also

- **Occasional**
- **Intermittent**
- **Continuous**

The Significance of impacts may be described as follows:

- **None** – There will be no change to an existing view. Arises where existing landform, vegetation or the built environment adequately screens the proposal.
- **Imperceptible** – An impact capable of measurement but without noticeable consequences.
- **Slight** – An impact which causes noticeable changes in the character of the environment without affecting its sensitivities. The proposal forms only a small element in the overall panorama.
- **Moderate** – An impact that alters the character of the environment in a manner that is consistent with existing and emerging trends, or which by its magnitude, duration or intensity alters an important aspect of the environment. For example, where an appreciable segment of the panorama is affected, or where open views of the proposal are located in the mid-ground.
- **Significant** – An impact which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment. The view will be significantly affected, obstructed or so dominated by the proposal that it becomes the focus of attention. (e.g. there could be open views of the proposal located in the foreground)
- **Profound** – An impact which obliterates sensitive characteristics. Arises where a view of significance is completely obscured or altered.

13.1.7 Summary

In summary, this report employs recognised guidelines as the basis for landscape assessment, and recognises the assessment process as being a combination of assessment of impacts on views from key receptors, and of responses towards the combined effects of the new development on landscape character.

Landscape Context and Character are addressed; also Significance in relation to planning designations and the inherent Vulnerability of the landscape in question. An assessment is also made of the predicted impacts of changes in character, visibility, patterns of land use, followed by broad proposals for mitigating impact.

To ensure clarity, it is deemed important to use stated terminology to define impacts arising from the proposed development.

The significance of impacts on the perceived environment will depend partly on the number of people affected but also on value judgements about how much the changes will matter.

13.2 EXISTING ENVIRONMENT

13.2.1 Site Location and Context

The site for the proposed development is located within Premier Business Park, which is currently under construction, approximately 2km northeast of Blanchardstown, in the townland of Cappoge. The Business Park is located south of Ballycoolin Road and west of Cappagh Road.

Blanchardstown is situated approximately 8.5km north-west of Dublin and is located on the N3. The N3 runs approximately 2km to the southwest of the site and the N2 approximately 2km to the northeast. The M50 adjoins the Premier Business Park to the south.

Premier Business Park will be accessed off the roundabout at the entrance to Stadium Industrial Estate along the Ballycoolin Road. To the west, the site is bordered by a field of disused allotments, and to the east is bordered by Cappagh Road. Large parts of the surrounding area are made up of large office campuses and other commercial buildings, with attendant road networks.

The study area was defined as an area of approximately 1.5km radius surrounding the site.

13.2.2 Landscape Character

Within the immediate surroundings, the lands are gently undulating although this is not immediately apparent due to level of development within the study area. The landscape character is largely dominated by the built environment, with large-scale office buildings, residential housing estates and light industrial developments. The standard of designed landscape ranges from poor to good, depending on the particular property. The nature of the landscape character created by such developments is largely dependent on the treatment of the “space between buildings” – site boundaries, tree planting, car parking, roads and use of materials.

Plots are generally of medium to large scale, and there are a number of significant developments in the vicinity such as the National Aquatic Centre. There are large swathes of open institutional landscape (Abbotstown Veterinary Research Laboratory and the Department of Marine Fisheries Research Centre) in areas to the west of the site between the M50 and Snugborough road. To the northeast of the site, the land changes to an agricultural character, with gently undulating topography of hedgerow bound fields.

The two major roads within the study area, Ballycoolin and Cappagh Road, are both due to be upgraded, with works on Cappagh Road currently underway.

There is no significant high ground within the study area, although there is an area of localised high ground at the burial ground to the west of North West Business Park (part of Cloghran Church & graveyard, RPS No. 674). There are no open vistas within the study area, as potentially open views are interrupted by buildings and vegetation.

Within the study area there are isolated patches of dense native hedgerows along pre-existing county roads (i.e. Ballycoolin Road) and within undeveloped sites. A working quarry is located approximately 1.5km to the north of the site.

To the south/southwest of the site and outside the study area, the landscape is peri-urban in character, with housing estates, shopping centres and office buildings in Blanchardstown and on both sides of the M50.

13.2.3 Site Characteristics

The site for the proposed facility is located in the southeastern corner of the new Premier Business Park at Ballycoolin Road, which is currently under construction. The site elevations range from 70-80m AoD, which is a similar level to the surrounding landscape.

The application site consists of abandoned grassland. A mature native hedgerow marks the eastern boundary and woodland planting along the southern boundary screens views of the M50 (Refer to plates 13.4 and 13.8). The western and northern boundaries of the application site are unmarked, as they lie within Premier Business Park, which is currently under construction. The ecological aspects of the site are assessed in Chapter 6 of this report.

13.2.4 Site Visibility – General

Due to the gently undulating nature of the land surrounding the site, there is no potential for screening provided by topography. However, due to the screening provided by surrounding buildings and vegetation, the application site is visible from very few locations. Also, those

views available can only be gained through gaps in roadside and intervening vegetation (Refer to plates 13.3, 13.4 & 13.5).

Larger scale buildings, like the proposed Warehouse, may reach over the screening vegetation/buildings and would therefore be visible from some locations. The extent of visibility will largely depend on the amount of existing vegetation to be retained, proposals for new planting and the height of the proposed buildings.

Existing hedgerows and intervening buildings block potential longer distance views of the site entirely from surrounding county roads in the wider landscape.

Potential short distance views towards the site lands include the following. Views from:

1. Ballycoolin Road (Plates 13.3 & 13.5)
2. Cappagh Road (Plate 13.8)
3. Stadium Industrial Estate (Plate 13.4)
4. M50

There are no known potential long distance views towards the application site.

Section 13.3.3 will examine the significance of these views.

13.2.5 Sensitivity of existing views

Existing views are on the whole slightly to moderately sensitive to a development such as that proposed. The surrounding areas are already built up with buildings of similar shape and scale to the Warehouse proposed. The development would represent a continuation in the emerging trend of office/light industry development in the immediate area. It is worth noting that the standard of landscape treatment to the external environment is generally low in this area, and the visual quality could be improved by tree planting and other landscape features.

13.2.6 Significance and Planning Context (Refer to Figure 13.1 - Visual Impact and Plate Locations)

The word significance as used in this report relates to the level of intrusion of a proposed development upon designated views, designated landscapes and designated amenity areas.

The statutory plan detailing the development objectives of the Local Authority is the Fingal Development Plan 2005-2011.

The application site lies in Objective Zone GI. This objective is described as: ‘to facilitate opportunities for general industrial employment and related uses in industrial areas.’

Proposed Natural Heritage Areas (pNHA)/Candidate Special Areas of Conservation (cSAC)/Special Protection Areas (SPA)

No areas with the above designations will have views of the proposal.

The Royal Canal pNHA (Site Code 002103), which is located 2.1km to the south of the application site, will have no views of the site.

High Amenity Landscapes

Tolka Valley

The Tolka Valley comprises the open lands on either side of the Tolka River, and includes several parks and recreational areas. It is zoned under Objective HA: “To protect and improve high amenity areas”. There are no known views of the development site from the Tolka Valley.

Trees or Groups of Trees Considered for Preservation

There are no trees or groups of trees designated for preservation within the site lands.

Protected Structures

The ‘Site of a Castle (RPS No. 681) is located in the northern part of Premier Business Park and is a Protected Structure. The proposed Warehouse will be visible from this site. This visibility will however be reduced when the light industrial units in the northern part of the business park are complete.

Views to be protected

There are no protected views within the study area from which the proposed development will be visible.

13.2.7 The Historical and Man-Made Landscape

This section outlines briefly how history and more recent human activities have shaped the receiving environment and how it influences the wider landscape surrounding the proposed development. More detail on this subject is contained within the Archaeological chapter of this Environmental Impact Statement.

The area surrounding the application site was primarily agricultural land in recent times, as is evidenced by the native hedgerows that are present in the site's greater surroundings (Refer to plates 13.1, 13.4 & 13.6) and the agricultural type of grassland of the site itself. Local relics (e.g. Cloghran church and graveyard, RPS No. 437) would indicate that there was at one time a settlement nearby.

The local landscape character has changed recently as outlined in the Fingal Development Plan, 2005-2011:

“The proximity of the airport and the development of the M1 and M50 motorways have resulted in the expansion of light industrial and Warehouse activities in the area. These are encroaching [have encroached] into agricultural land...”







This encroachment has given rise to the current landscape character, which is informed largely by the widespread development of light industrial buildings and office complexes, and attendant road network. The quality of landscape treatments of these existing developments ranges from non-existent to mediocre.

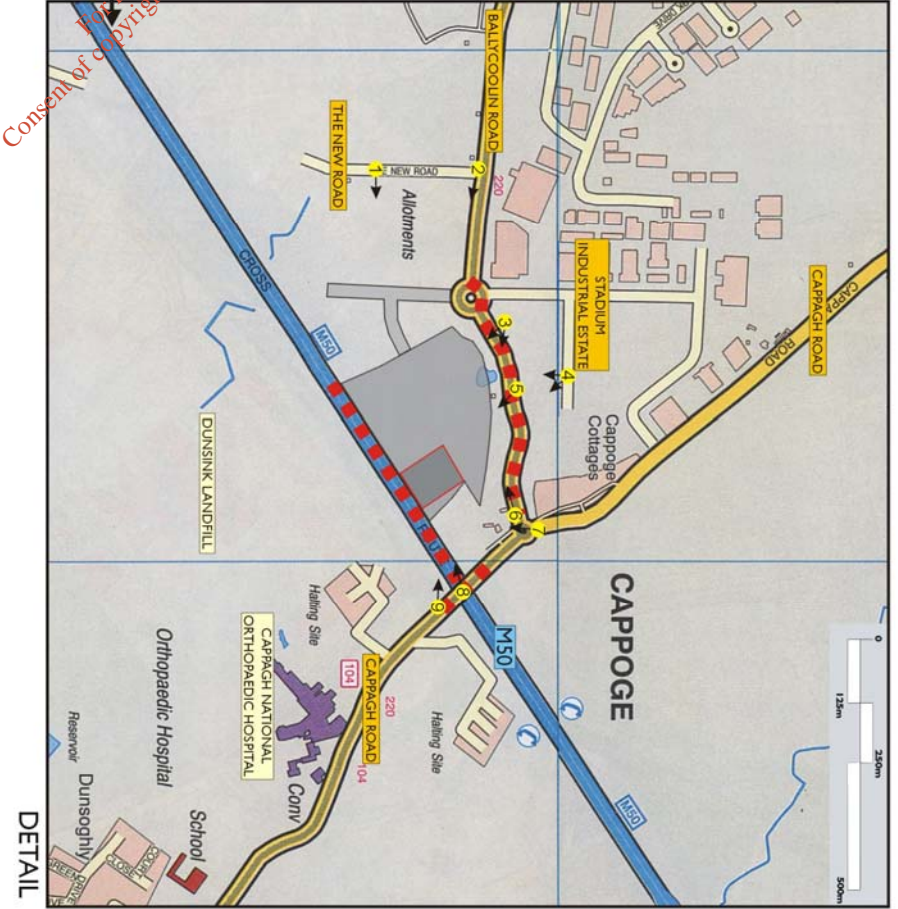
13.2.8 Summary

Due to existing vegetation along part of the site boundaries and along local roads and due to adjoining industrial developments, the application site is visible from a restricted number of viewpoints, with no longer distance views available.

Apart from the 'site of' a castle, in the northern part of Premier Business Park, which is listed as a protected structure, there are no designated landscape features within the study area and the current landscape character in the immediate area is largely determined by recent built development and road building. The standard of landscape treatment of the external environment is generally low, and the visual quality could be improved by tree planting and other landscape features.

Section 13.3.1 describes the proposed development, and sections 13.3.2 and 13.3.3 then assesses the potential impact of the development on the above-described views from properties and roads.

- KEY**
-  Approximate location of application site within Premier Business Park
 -  High amenity landscapes as marked in the Fingal Development Plan 2005-2011
 -  Proposed Natural Heritage Area (pNHA) as marked in the Fingal Development Plan 2005-2011
 -  Photoplate location - (Plates 13.1 - 13.9)
 -  Glimpsed views of application site from roads
 -  Kilometres distance from centre of application site



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	<p>VISUAL IMPACT & PLATE LOCATIONS</p>
<p>FIGURE 13.1</p> <p>September 2007 S105069</p> <p>Drawn: AM - Checked: DB</p>	



Plate 13.1: View east from The New Road in the direction of Premier Business Park
 note: mature vegetation blocks views of the Business Park and therefore the application site



Plate 13.2: View east from the corner of Ballycoolin Road and The New Road
 note: vegetation along both roads screen views of the application site



Plate 13.3: View southeast from the entrance area of Stadium Industrial Estate towards Premier Business Park, which is currently under construction
 note: the proposed warehouse will be visible from this location. The extent of visibility will depend on the amount and type of planting proposed.



Plate 13.4: View southeast from the most southern road within Stadium Industrial Estate over an undeveloped site.
 note: the proposed warehouse will be visible from this location until warehouses/industrial units are constructed along this road.



Plate 13.5: View southeast from Ballycoolin Road from the northern boundary of Premier Business Park
 note: the proposed warehouse will be visible from this location, however smaller industrial units are proposed to be built in the foreground and will screen views of the warehouse.



Plate 13.6: View west along Ballycoolin Road just west of the junction with Cappagh Road
 note: mature vegetation screens views of the application site at this location



Plate 13.7: View southwest from the junction of Ballycoolin Road and Cappagh Road
 note: mature vegetation screens views of the application site at this location

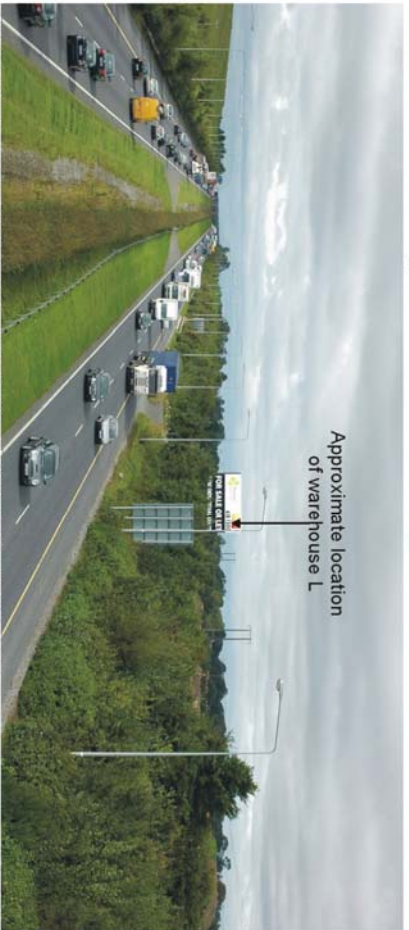


Plate 13.8: View west from the flyover over the M50 along Cappagh Road
 note: mature vegetation will partially screen the warehouse in views from the M50

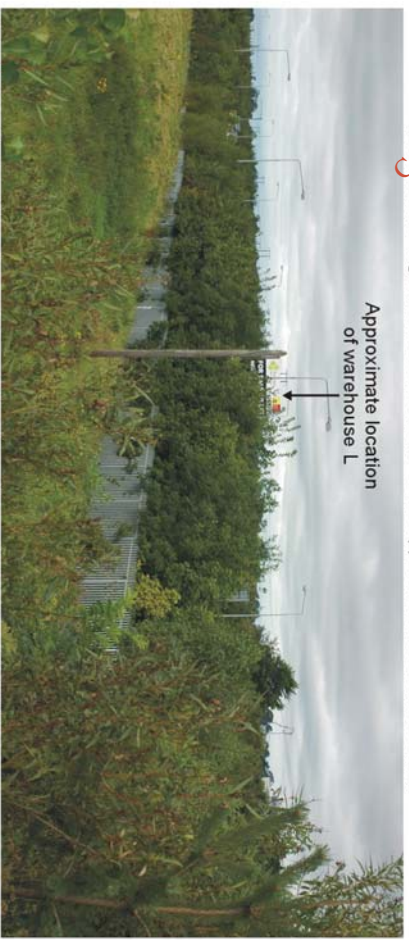


Plate 13.9: View northwest from Cappagh Road on the southern side of the M50
 note: views of the warehouse from this side of the M50 will be screened by mature vegetation

Photosheet 13.2: Plates 13.5-13.9
 September 2007 S105069

MRF BALLYCOOLIN
 PREMIER BUSINESS PARK
 Scov Wilson

13.3 POTENTIAL IMPACTS

13.3.1 The proposals

The proposed development is located at the south-eastern end of the new Premier Business Park along Ballycoolin Road. Warehousing in this location received planning permission in 2006, as part of the application for the entire business park. However, due to the material change of use, a full Environmental Impact Statement is now required. It should be noted that the outside dimensions and design of the proposed facility will not change due to the change of 'internal' use. The overall visual impact of the Warehouse will therefore be equal to that of the proposal that was granted permission in 2006. The yard at the rear of the Warehouse (Block L) will contain a weighbridge hut, diesel tanks, a water tank and a loading platform but there will be no additional visual impact from these structures as they will be at a smaller height than the Warehouse.

The Warehouse will be accessed via the main road within Premier Business Park, which in return is accessed from Ballycoolin Road. Associated car and bicycle parking will be located to the front of the Warehouse.

13.3.2 Scope of the Impact

The development will impact on both the site itself and on views from surrounding areas. The impacts are assessed in the following.

The development described will have impact on the visual and landscape character of the surrounding area. These impacts will be likely to arise from factors including the following:

- Construction works/site development;
- Removal of vegetation;
- New development/changes in land use; and
- Increases in traffic.

Construction Works/Site Development

The construction works will cause general noise and physical disturbance to road users and to those working in the surrounding area, arising largely from vehicle movement. This will result in (short term) significant visual impacts on the viewpoints identified in 13.2.4 above. It should however be noted that construction works are taking place in a number of locations

surrounding the site and that the proposed development will add to existing disturbances, rather than create this kind of disturbance in a settled landscape.

Construction activities on site will be restricted to setting up processing equipment, materials handling and storage facilities.

Removal of vegetation

It is proposed to retain the hedgerow along the eastern boundary of the site and the woodland planting along the boundary with the M50.

The removal of the grassland vegetation of the site to facilitate the development will have a moderate and negative visual impact.

New Development/Changes in Land Use

There will be permanent and moderate visual impacts on views upon completion of the proposed development.

Any alteration to the landscape as a result of the change of land use associated with the proposals will have a corresponding impact on the character of the landscape. The extent of the impact depends on the degree of change of land use.

While the site is currently made up of unmaintained grassland, its wider context is characterised by office development and light industry. The change to the landscape and visual character as a result of the proposed development will be moderate, i.e. in a manner that is significant but “consistent with existing and emerging trends” as defined in 13.1.2 above.

Increases in traffic

The change in land use will result in higher amounts of traffic on the surrounding roads with a consequent alteration to the landscape character. This will result in a moderately negative visual impact of an ongoing nature. It should however be noted that both Ballycoolin Road and Cappagh Road are currently being upgraded to facilitate the general increase in traffic due to several new developments in the locality. The development will operate throughout the year.

13.3.3 Impact on Visual Character

(Refer to Figure 13.1 - Visual Impact and Plate Locations and to the definitions of visual impacts as described in section 13.1.2 of this report).

Note:

In this report, no simple, authoritative categorisation of visual impacts as positive, negative or neutral is possible in relation to the issue of architectural style. Subjective opinions here are likely to be highly variable. It will not be assumed that where a view of fields or woods is replaced or intruded upon by one of urban development, this situation is objectively and simply negative. Again subjective issues arise. The impact will be noted as negative where it is felt likely that a significant number of individuals may perceive the impact as negative.

The development will give rise to significant visual intrusion arising from the construction phase in the short term. Permanent and slight to moderate visual impacts will occur upon completion of the development.

The principle views are illustrated in photoplates 13.1-13.9 and described below:

Views from Ballycoolin Road

Plates 13.1, 13.2, 13.3, 13.5 and 13.6: Plates 13.1, 13.2 and 13.6 show how mature roadside and intervening vegetation currently screens views of the application site in most locations along Ballycoolin Road and The New Road (Plate 13.1). However, most of the roadside hedgerows will be removed as part of the realignment of Ballycoolin Road, which is currently being carried out. Views of the application site will therefore open up along the northern boundary of Premier Business Park (refer to Plates 13.3 & 13.5 below).

Plates 13.3 and 13.5 show views from two locations along Ballycoolin Road, where roadside vegetation has already been removed. The construction works of Premier Business Park are currently more or less openly visible in these views. The location of the proposed Warehouse Block L can be made out easily, as a large advertisement sign is located at the southeastern corner of the plot of this Warehouse block. Therefore, the proposed Warehouse will be visible in these views. However, the visibility will be reduced by the light industrial units to be constructed in the northern part of Premier Business Park and by potential new planting along Ballycoolin Road.

The proposed Warehouse will have no visual impact on views from most locations along Ballycoolin Road for as long as the roadside vegetation stays in place. Once the hedgerows are removed the visual impact will be moderate, neutral and permanent on views from Ballycoolin Road along the northern boundary of Premier Business Park. The visual impact of the Warehouse will however be reduced on the construction of the light industrial units permitted in the northern part of Premier Business Park and on maturing of any potential new planting along Ballycoolin Road.

There would be short-term moderate to significant and negative visual impacts as a result of construction activities and construction traffic.

Views from Cappagh Road

Plates 13.7: This plate shows a view from the roundabout at the junction of Ballycoolin Road and Cappagh Road in the direction of the application site. The view towards the site is blocked by intervening vegetation and buildings. This is the case for all locations along Cappagh Road north of the M50 and for views from this road south of the M50. This includes views from Cappoge Cottages just north from where this view was taken.

The proposed development, including the construction works, will have no visual impact on views from Cappagh Road, apart from a small section at the flyover over the M50 (see plates 13.8 and 13.9 below).

Plates 13.8 and 13.9: Plate 13.8 shows a view from the centre of the flyover over the M50 along Cappagh Road. The advertisement signs in the location of Warehouse Block L can be seen in this view and the proposed Warehouse will therefore be visible from this location. It should be noted that this picture was taken from a standing position through a gap in the fencing along the edge of the flyover. The site would not be as openly visible as one drives along this part of Cappagh Road.

Plate 13.9 was taken from a location just southeast of the flyover. It indicates how the mature vegetation along both sides of the M50 will screen views of the proposed Warehouse in less elevated locations along Cappagh Road and generally to the south of the M50.

The proposed development will have moderate, neutral and permanent impact on views from the top of the flyover, due to the existing impact on the view by the motorway. The visual impact will reduce as the vegetation along the M50 matures further.

There would be short-term moderate to significant and negative visual impacts as a result of construction activities and construction traffic.

Views from Stadium Industrial Estate

Plate 13.4: This photo was taken from an undeveloped site in the southeastern part of Stadium Industrial Estate. The existing hedgerows along the southern boundary of this estate and along Ballycoolin Road partly screen the site of Premier Business Park. Warehouse Block L will however be visible in this view, as the advertisement signs in the location of the Warehouse site are visible. This view will further open up when the vegetation along Ballycoolin Road is removed due to the road realignment.

Considering the location of this viewpoint within an industrial estate the visual impact of the proposed Warehouse on views from this part of Stadium Industrial Estate will be slight to moderate, neutral and permanent. This visual impact will reduce with the construction of the light industrial units in the northern part of Premier Business Park and with the maturation of any proposed planting within the scheme. There are no details available for this planting at present. Construction of an industrial unit in the foreground of Plate 13.4 will also block views from the public areas of Stadium Industrial Estate.

Construction activities will have short-term, moderate neutral impact on this view.

Views from the M50

Plates 13.8: This plate indicates that only the top part of the proposed Warehouse would be visible from the M50 once constructed. Mature vegetation along the motorway will screen most parts of the proposed development.

The visual impact of the development on views from the M50 would be slight to moderate, neutral and permanent, reducing as the roadside vegetation further matures.

Construction activities will have short-term slight to moderate impact on views from the M50.

Longer distance views

There are no known longer distance views that would experience visual impact due to the proposed development.

13.3.4 Impact on Historical / Landscape Character

Impact on landscape character is dependent partly on the vulnerability of the affected landscape i.e. by its ability to accommodate change without loss of perceived character. The existing landscape character is described in 13.2.2 above. There are several other examples of buildings of this scale and nature in the immediately surrounding landscape.

The proposed Warehouse development is in line with the emerging landscape character of the area. The long-term impact on landscape character will be influenced by the amount and type of planting to be carried out within Premier Business Park and along Ballycoolin Road, there are no details available for this planting at present. The increase in traffic and people brought into the area as a result of the development will also have an impact on landscape character.

The change of land use will have a significant impact on the existing site, changing it from essentially an open ungrazed field to an industrial Warehouse site. The general change to landscape character is, however, moderate, considering the location of the site in the setting of a developing business park.

In the short term, construction traffic will have a negative impact on the landscape character, and all efforts should be made to limit the occurrence of dust and mud on surrounding roads.

13.3.5 Summary

Overall, the visual impact of the proposed development will be slight to moderate, permanent and neutral in its nature. In the short-term it is likely that activities during the construction period will have moderate and negative visual impact.

The existing landscape character can accommodate development such as this, providing that extensive tree/shrub planting will be carried out and maintained within the business park and in particular along the northern boundary/Ballycoolin Road.

Section 13.4 outlines potential mitigation measures considered as part of the proposed development of the site.

13.4 MITIGATION MEASURES

The proposed development will have slight to moderate impact on selected views towards the site, which will be generally be neutral in nature.

The following describes the measures that have been incorporated into the design, to reduce or avoid visual intrusion and to integrate the development into its surrounds.

Location

The proposed Warehouse was granted permission in 2006 as part of the application for all of Premier Business Park. The change of use of the building does not affect its dimensions and design and the location was therefore deemed appropriate.

Layout

The layout of the Warehouse plot received permission in 2006 and does not change as part of the change of use.

Landscape Concept and Design

No details of proposed planting within the site are available at present, but a landscape plan will be drawn up to address some of the visibility issues outlined in this report. This is required under Condition 13 of the existing planning permission for Premier Business Park (Ref: F05A/ 1363).

Materials

High quality materials in suitable colours will be used for reasons of durability, aesthetic appeal and appropriateness to the setting.

14 CULTURAL AND ARCHAEOLOGICAL HERITAGE

14.1 INTRODUCTION

This report describes the archaeological importance of the environs of the proposed development at Ballycoolin Road, County Dublin. The purpose of this assessment is to identify and classify the extent of impact from development on any archaeological features or deposits, which maybe in the area. Measures to safeguard any monuments, features or finds of antiquity therein will be recommended.

Full planning permission was granted in May 2006 for the development of a Business Park including six No. high-bay industrial units and 71 No. small enterprise units. The current application is for change of use to two No. high bay industrial units (Block L). It is proposed to develop a Materials Recovery Facility in these units.

The proposed development is situated in Cappoge townland, approximately 2km northeast from Blanchardstown. The site is bound by the M50 to the south and by Ballycoolin Road to the north. Much of the land within the immediate vicinity of the site is currently under construction as part of the development of Premier Business Park.

The proposed development site will comprise of a Materials Recovery Facility with associated access roads and car-parking areas. The Materials Recovery Facility will handle construction and demolition (C&D) waste along with commercial and industrial (C&I) waste.

14.1.1 Study Methodology

The assessment of the archaeological heritage was based on a desktop study of published and unpublished documentary and cartographic sources. The following sources were consulted during the desktop study.

Record of Monuments and Places

The RMP is a database recording all archaeological sites in Ireland known to the National Monuments Service established under Section 12 of the 1994 National Monuments (Amendment) Act. It is based on Ordnance Survey 6" sheets, which indicate the location of each monument or place of archaeological interest. For each, a file contains further documentary and photographic data or information relating to an archaeological event such as a site visit, survey or excavation. These are housed in the National Monuments Services in Dublin. The record is constantly updated and focuses on monuments that pre-date 1700.

The National Museum of Ireland Topographical Files

The discovery of artefacts can be an important indicator of past levels of activity in an area and therefore a useful guide to the archaeological potential of a site. The National Museum in Dublin houses a national archive of antiquities cataloguing artefacts that were found and reported between 1928 and 1995. These artefacts are catalogued by year and accession number.

Cartographic Sources

The Map Library in Trinity College, Dublin houses a varied collection of historic and contemporary maps including the First, and Third edition Ordnance Survey maps for County Dublin. The Ordnance Survey six-inch maps dated 1837-43, and the 1910 were consulted.

Irish Excavations Database

This online database (www.excavations.ie) contains summary accounts of all excavations carried out in Ireland – North and South – from 1970 to 2002. The database has been compiled from the published Excavations Bulletins from those years. The database was consulted to check if any excavations were carried out within the assessment area or its immediate environs.

Field Inspection

A field inspection was undertaken to assess current and previous land use, access to the site, local topography and any additional environmental information relevant to the appraisal. It also sought to identify potential low-visibility archaeological sites or features and/or areas of archaeological potential that will possibly be subject to direct or indirect impacts as a result of the proposed development.

14.2 EXISTING ENVIRONMENT

Townland	Cappoge	Parish	Castleknock
Barony	Castleknock	OS 6" Sheet No.	Dublin 014

Full planning permission was granted in May 2006 for a business park development (Ref. FO5A/1363). The current planning application will be for change of use of 2 No. high bay industrial units (Block L).

There are no archaeological monuments recorded within the footprint of the proposed development (Record of Monuments and Places for County Dublin). There are six recorded monuments located adjacent to the proposed development site. These comprise a ring ditch – DU014 :026, a tower house site – DU014:027, a habitation site – DU014:028 , a ring fort

DU014:029, a possible souterrain and a burial site – DU014:033 and a house site – DU014:051.

14.2.1 Historical Background

Prehistoric Period

The first settlers in the Dublin region are believed to be hunter-gathers during the Later Mesolithic, or Middle Stone Age (around 5500 BC) who lived off the sea. The first farming inhabitants appeared in the Dublin region during the Neolithic period shortly after 4000 BC. A habitation site (DU014:028) of Neolithic date (approximately 4000-2300 BC), which was discovered during the construction of the North Eastern Gas Pipeline in 1984 provides the earliest recorded settlement in the Cappoge townland for this era.

The Bronze Age (2200 – 600BC) is recorded in the Dublin region through several bronze and gold artefacts including cauldrons, side blown horns, lock rings and hair rings.

It is believed North County Dublin was more populous in the Bronze Age than in the Neolithic era. A Bronze Age ring-ditch (DU014:026) has been recorded within Dunsink townland.

The recorded monument (DU014:029) located to the east of the development site area has been classified as 'mound' and as 'ringfort', which implies that it could date from as early as the Bronze Age but may have originated somewhat later in the Early Historic period (approximately AD 500-1100).

Dublin's official date of establishment is believed to be 988 A.D. During the 9th and 10th Centuries there were two settlements located where the present day city stands and from which the city takes its name. A Viking settlement known as *Dyflin* ("black pool") and a Celtic settlement known as *Ath Cliath* ("ford of the hurdles"). The Celtic settlements name is still used as the Irish today and the Viking settlement name is derived from the Irish Duiblinn. Norman Viking settlers have been recorded in the Dublin area through many artefacts, old walls and buildings, which have been uncovered in the present city centre area.

Medieval Period

Dublin became the centre of English power in Ireland after the 12th Century as the focal point of Ireland's polity. Over time, however, many of the Anglo-Norman conquerors were absorbed into the Irish culture, spreading to rural areas, adopting the Irish language and customs, leaving only a small area around Dublin, known as the pale under direct English control. The 14th century saw the pale being fortified against the increasingly assertive Irish and English rule was centred on Dublin Castle. Medieval Dublin is believed to have had 5-10,000 inhabitants.

Settlement is known to have existed outside Dublin City during the Medieval period in the form of Medieval boroughs. A Medieval borough consisted of a small settlement. Smaller

Medieval settlements that did not gain borough status are believed to have been present in areas such as Blanchardstown, Abbotstown and Cappogoe.

Until the middle of the 17th century Dublin remained a small, walled medieval town.

Cappoge

The placename “Cappoge” is said to derive from the Irish “*ceapach*”, anglicised elsewhere in Dublin as Cappagh, a term applied to small plots of land laid out for tillage.

Cappoge townland is situated within the parish of Castleknock, which, following the Anglo-Norman invasion in 1169 was granted by Hugh de Lacy to Hugh Tyrrell, Baron of Castleknock. In succeeding centuries, a number of families were established on the Castleknock lands, either by grant from the Crown or from the Tyrrells, and by the thirteenth century, a John Woodlock, Sheriff of Dublin and Constable of Dublin Castle, resided at Cappoge.

The Woodlock family held possession of lands at Cappoge until the beginning of the sixteenth century. Bartholomew Dillion, a nephew of Rose Woodlock, came into possession of Cappoge in the middle of the sixteenth century. At the close of the century the Dillons of Cappoge are included amongst men of name in County Dublin (Ball 1920; 1995, 18).

The Castle at Cappoge was forfeited by Bartholomew Dillon after the rebellion of 1641, and was in ruins before the Restoration (1660). The castle ruins still remained at the close of the eighteenth century. The ruins did not survive any longer than the early nineteenth century when its then owner, Mr. O’Leary, used it as a quarry for stones with which to build cowsheds. During the Ordnance Survey in the 1830s and 1840s, the site was recorded as ‘site of’ Cappoge castle.

14.2.2 General Archaeological Background

The following archaeological monuments in the surrounding townlands are included to highlight the type of sites, which survive in the general area. Sheet No 14 for County Dublin, revealed a number of sites within 2.5km of the development site. Table 14.1 overleaf and Figure 14.1 - Archaeological Sites (RMP) indicate archaeological monuments within the surrounding townlands.

Table 14-1 Archaeological Monuments in the surrounding townlands

Sheet Number	Townland	Grid Reference		Classification	Distance from site (km)
DU014:026	Dunsink	310480	239410	Ringditch	0.25
DU014:027	Cappoge	310640	239850	Tower House site	0.04
DU014:028	Cappoge	310940	239740	Habitation site	0.03
DU014 :029	Cappoge	311430	239780	Mound / Ringfort	0.51
DU014 :03301	Dunsink	310610	238940	Souterrain possible	0.66
DU914 :03302	Dunsink	310610	238940	Burial site	0.66
DU014 :051	Sheephill	309990	239330	House site	0.71

See Appendix 14.1 for a detailed list of RMP sites in the vicinity of the proposed development site.

Burial Mounds comprise a large portion of the Bronze Age archaeological evidence, particularly for the early part of the period. Unlike funerary practices in the Neolithic, Bronze-Age burials are not in the main monumental in character and are generally in cist or pit graves, or in rarer examples in cist cairns or flat cemeteries. The construction and style of the grave itself varied. The remains, burnt or as inhumations, were usually placed in a stone cist or a pit, often accompanied by grave goods of semi precious stones, jewellery or weaponry, some were marked with a mound of earth or a cairn of stones. Burials often occurred in groups or cemeteries, called barrows or cemetery mounds, being a circular mound used to enclose several burials ranging in date from the **Late Neolithic to the Early Iron Age**. There is one possible burial site in the townland of Dunsink located at a distance of approximately 0.66km from the proposed development.

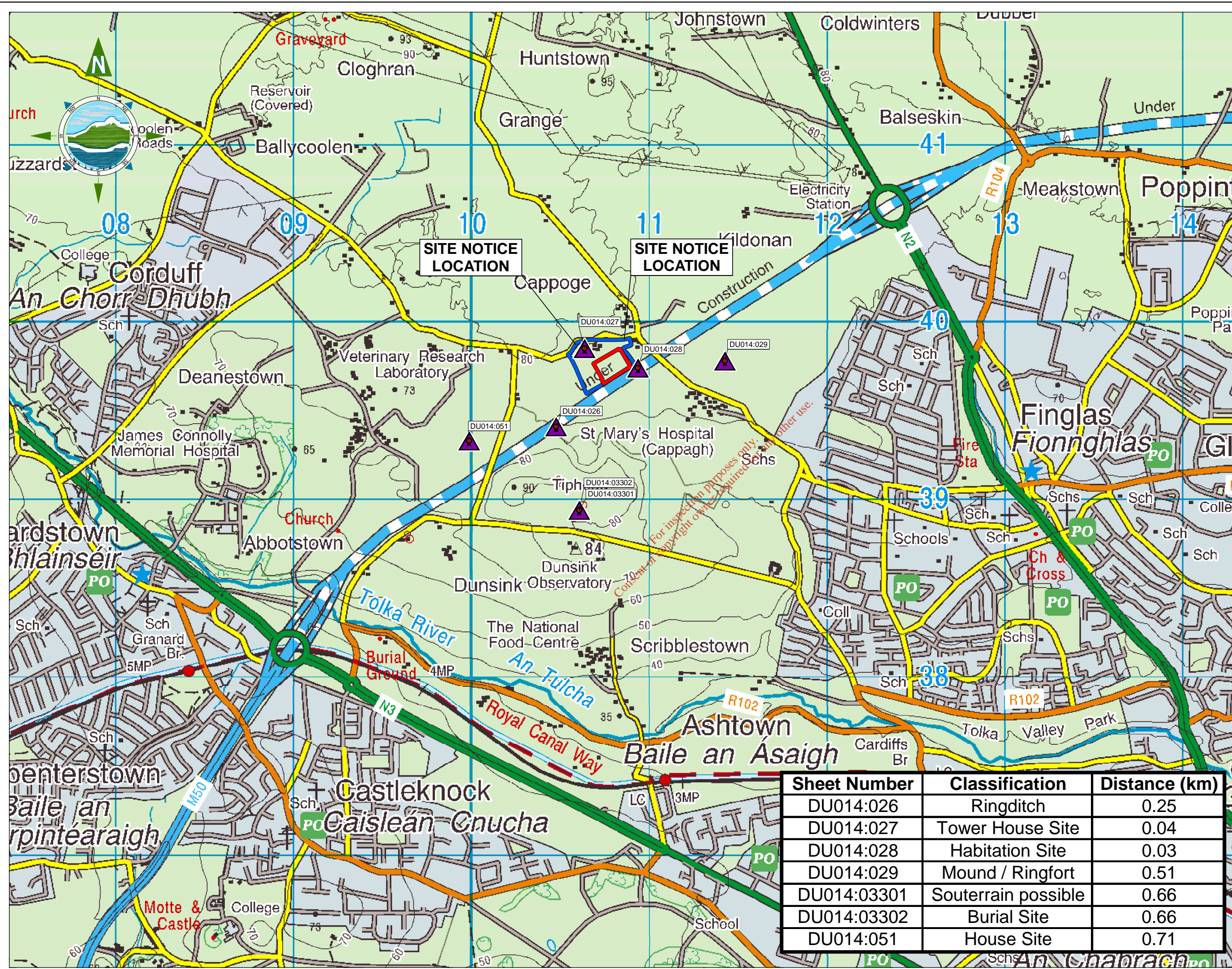
The term **ring ditch** refers to any regularly-shaped circular or pennanular ditch cut. They are often identified as cropmarks during aerial photography surveys and usually represent the ditch that surrounded a round barrow. Often the barrow itself has been ploughed or eroded away and the quarry ditch and its fill are all that survive.

A **habitation site** can be rectangular or circular in shape and was often used frequently over multiple occasions revealing evidence of seasonal or permanent habitation. Habitation sites are important in revealing past lifeways and living traditions. There is one habitation site in the townland of Cappoge (DU014:028). The RMP files states that this habitation site is of Neolithic or Stone Age date.

Ringforts are the most widespread type of archaeological monument in the country with approximately 40,000 in total. They are the classical **Early Christian** settlement type. They consist of circular areas, defined by banks and external ditches, and usually contain dwelling houses and outbuildings for extended families. It is quiet likely that many more were levelled by subsequent farmers but many of the sites may still remain undisturbed below the ground. There is one ringfort in the townland of Cappoge at a distance of approximately 0.51km from the proposed development.

Souterrains are a feature often found in ringforts and consist of an underground passage or souterrain. They are usually built of stone but can also be tunnelled into rock or compact clay or gravel. Souterains are sometimes found apparently independent of any enclosure and are also found in **Early Christian** ecclesiastical enclosures. They were used as places of refuge and possible also for storage. There is one possible Souterrain present in the townland of Dunsink at a distance of approximately 0.66km from the proposed development.

The most evident archaeological sites in Ireland are old ruined buildings almost square in shape and from seventy to one hundred feet tall. These are usually referred to as Irish castles but are more properly known as **Tower Houses**. They can be seen in various stages of delapidation throughout the country, but fortunately a few have been maintained or restored and continue to fascinate those who visit them. During the years after the Normans arrived in 1169 and had begun to move inland, they at first set up the unusual fortification system known as Motte and Bailey. These Motte and Baileys were only in use for a short time and were replaced by large stone castles called 'donjons' which are identified by archaeologists as being the earliest of the tower houses. There is one tower house site in the townland of Cappoge at a distance of approximately 0.04km from the proposed development.



LEGEND

- Site Activity Boundary
- Premier Business Park
- Archaeological Site (RMP)

- NOTES**
- FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
 - ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
 - ENGINEER TO BE INFORMED OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
 - ALL LEVELS RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Issue	Date	Description	By	Chkd.
A	26-11-07	Issued	A.G.	M.H.

Client:
MCR ENVIRONMENTAL

Project:
BALLYCOOLIN ROAD MATERIALS RECOVERY FACILITY

Title:
ARCHAEOLOGICAL SITES (RMP) MAP

Scale @ A3: 1:20,000
 Prepared by: A. Gruschka
 Checked: M. Hogan
 Date: Nov 2007
 Project Director: D. Grehan

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FIGURE 14.1 A

Sheet Number	Classification	Distance (km)
DU014:026	Ringditch	0.25
DU014:027	Tower House Site	0.04
DU014:028	Habitation Site	0.03
DU014:029	Mound / Ringfort	0.51
DU014:03301	Souterrain possible	0.66
DU014:03302	Burial Site	0.66
DU014:051	House Site	0.71

14.2.3 Record of Monument and Places

The nearest recorded monument is a habitation site (DU014:028) located approximately 0.03km from the proposed development site boundary. This site was discovered during archaeological monitoring of the construction phase of the North Eastern Pipeline for Bord Gáis Éireann.

The proposed Materials Recovery Facility is located within the Premier Business Park. A number of archaeological investigations have taken place adjacent to this site (Refer to Appendix 14.2 and Appendix 14.4).

14.2.4 Recorded Artefacts In the Vicinity of the Development

The following archaeological artefacts are included to highlight the type of archaeological activity in the area and the importance of archaeological monitoring as stray finds are frequently found in the course of monitoring of groundworks. The discovery of artefacts can be an important indicator of past levels of activity in an area and therefore a useful guide to the archaeological potential of a site. The National Museum in Dublin houses a national archive of antiquities cataloguing artefacts, which were found and reported between 1920 and approximately 1995.

Table 14.2 outlines finds found in the townlands surrounding the development site.

Table 14-2 Finds recorded in the surrounding townlands

Townlands	Reg No.	Finds
Dunsink	1998:90	Pottery
Dunsink	1930:534	Roman coin: Consantinus Magnus
Dunsink	None	Various items including 2 hammerstones, several sherds glazed and unglazed pots, pottery, Sgraffito ware, small bronze cone, iron wedge, several bone buttons, halfpenny George II 1753, pieces of delf, pieces of clay pipe and glassware.

See Appendix 14.3 for details of stray finds uncovered in townlands in close proximity to the proposed development site.

14.2.5 Cartographic Sources

Both 1st edition (1837-43) and 3rd edition (1910) six –inch maps were examined. In relation to the area surrounding the development site, the first edition (1837 –1843) map shows the site of Cappoge Castle, a small building (possibly a gate lodge), a garden and a quarry to the northwest of the development site. To the east of the development site three buildings are present and to the north is the current Cappagh Road, bordering farmland to the north. The development site is shown as a field and several fields are present to the south.

On the third edition (1910) map the site of Cappoge Castle is marked to the northwest of the development site but the quarry and garden are no longer present. Several buildings are marked in this area. Two buildings are present to the east of the development site and to the south, farmland still remains. To the northwest of the development site a small building is marked and is situated adjacent Cappagh Road which borders farmland to the north. The development site is shown as a field.

14.2.6 Recent Excavations in the vicinity of Cappoge Castle

A search of the excavation database revealed that two excavations have taken place in the vicinity of the proposed development.

In October 1995 archaeological testing by trial-trenching was carried out on the site of a proposed rock extraction works at Ballycoolin, Dublin. However there were no features uncovered in any of the trenches or finds of great antiquity.

In 2000 four test-trenches were mechanically excavated in a field north of Cappage Castle on the site of a proposed industrial / warehouse development and a considerable amount of medieval pottery and oyster shells were found. The results of test trenches did not indicate the presence of archaeological deposits but the ploughsoil, was rich in pottery, glass and clay pipe fragments. The pottery spanned all periods from the late medieval to the present and was evenly scattered throughout the field. The evidence from the test-trenching would therefore suggest that this area had always been a greenfield site and that the surface finds were introduced with the topsoil at some period during the last twenty years.

Also Margaret McGowan & Co. Ltd is currently undertaking archaeological monitoring on behalf of Harcourt Developments to the north of the Premier Business Park site. An interim report was completed in August 2007 (Refer to Appendix 14.2) and a geophysical survey and archaeological assessment was completed in April 2006 (Refer to Appendix 14.4).

14.3 POTENTIAL IMPACTS

As the proposed changes to the facility do not involve any changes to the physical environment at the proposed Material Recovery Facility site, i.e. no additional buildings or infrastructure will be required, there will be no impact on the archaeological or cultural heritage.

The surface is currently comprised of made-ground.

Avoidance or alteration to existing proposals is not required for archaeological reasons.

14.4 MITIGATION MEASURES

This development has no significant impacts accordingly no mitigation measures are required.

It should be noted that any recommendations made in this report are subject to ratification by the Department of the Environment, Heritage and Local Government.

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15 INTERACTION OF THE FOREGOING

15.1 INTRODUCTION

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

15.2 HUMAN BEINGS / AIR / ODOUR / NOISE

Waste handling operations have the potential to impact on human beings from the deterioration in air quality due to dust and odours and also noise emissions. The design and operation of the development has taken account of these emissions and effective mitigation measures have been adopted.

15.3 HUMAN BEINGS / GEOLOGY / SURFACE WATER

The development has the potential to increase surface water in the area. In order to prevent potential contamination of soil/surface water/ groundwater media with water that may be contaminated with oil/ solids, an appropriately sized Class 2 by-pass interceptor will be installed to treat surface water runoff from all yards in the business park.

15.4 TRAFFIC

Traffic in the surrounding area will increase when the Premier Business Park becomes operational. The proposed Materials Recovery Facility will organise shift hours and break times so that vehicle movements to and from the facility would be kept to a minimum during the peak hours on the surrounding road network.

16 EXPLANATION OF TECHNICAL TERMS

AADT	Annual Average Daily Traffic
AOD	Above Ordnance Datum
C&D	Construction and Demolition
C&I	Commercial and Industrial
CDP	County Development Plan
CSO	Central Statistics Office
Db	Decibel
DDS	Double Drum Separator
DED	District Electoral Division
DoEHLG	Department of the Environment, Heritage and Local Government
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
GDA	Greater Dublin Area
GI	General Industrial
GSI	Geological Survey of Ireland
HA	Hectares
HGV	Heavy Goods Vehicle
Hz	Hertz
IDA	Industrial Development Agency

IEEM	Institute of Ecology and Environmental Management
ICD	Inscribed Circle Diameter
IGI	Institute of Geologist of Ireland
ISO	International Organisation for Standardization
KM	Kilometre
M	Metre
MBT	Mechanical Biological Treatment Plant
MM	Millimetres
MRF	Materials Recovery Facility
NDP	National Development Plan
NHA	Natural Heritage Area
NPWS	National Parks and Wildlife Services
NRA	National Roads Authority
NSS	National Spatial Strategy
OPW	Office of Public Works
pNHA	proposed Natural Heritage Area
PPE	Personal Protection Equipment
PPP	Public Private Partnership
QNHS	Quarterly National Household Survey
RDF	Refuse Derived Fuel
RMP	Record of Monuments and Places

RPA	Railway Procurement Agency
RPG	Regional Planning Guidelines
SDS	Single Drum Separator
TPA	Tonnes Per Annum

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