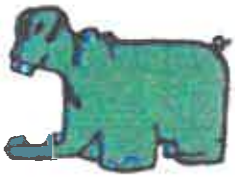


REVISION TO

ENVIRONMENTAL IMPACT STATEMENT

FOR A MATERIALS HANDLING AND RECYCLING FACILITY OPERATED BY IPODEC IRELAND LTD. AT FORGE HILL, KINSALE ROAD, CO. CORK

NON-TECHNICAL SUMMARY

Volume 1 of 3

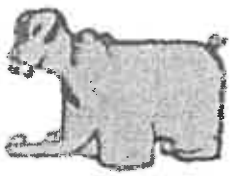
Prepared for:

IPODEC Ireland Ltd.,
Ballymount Cross,
Tallaght,
Dublin 24

Prepared by:
Fehily Timoney & Co.,
Core House,
Pouladuff Road,
Cork

EPA Ref No.	173-1

September 2002



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FEHILY TIMONEY & COMPANY

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1. INTRODUCTION

The subject of this Environmental Impact Statement (EIS) non-technical section is a Materials Handling and Recycling facility located on Forge Hill, Kinsale Road, Co. Cork.

IPODEC Ireland Ltd. has operated at the Forge Hill site since 1991 (from 1987 until 1991 as Cleanaway Ltd and before that as William O'Brien) where it has conducted waste recycling and waste transfer activities on materials delivered to the site from the Cork region. The company is a subsidiary of OXYX, the waste management arm of Vivendi Environmental, the largest providers of waste management services in Europe and the third largest company of it's type in the world.

National and regional waste management policy clearly sets the terms for the requirement of such a Materials Handling and Recycling facility in the Cork region. In particular, the participation of the private sector in the provision of waste transfer stations and materials recovery facilities (MRF) are outlined in policy documents. IPODEC Ireland Ltd. have been successfully providing such infrastructure at the Forge Hill site.

The company typically handles 40% of all commercial waste produced in the Cork region. This site will continue to provide essential waste management services to handle significant proportions of commercial waste generated in the Cork Region.

Towards the end of 2001 the reduction of available landfill space in the county, the imposition of quotas and the banning of packaging waste at landfill has significantly increased the waste volumes entering the Forge Hill site. As a consequence IPODEC Ireland are required to prepare an EIS to accompany a Waste Licence application to the Environmental Protection Agency (EPA). This EIS was prepared in accordance with guidelines issued by the EPA and follows best practice, which includes scoping/consultation exercises, in addition, to a review of alternatives for different aspects of the operation. These are all detailed in the main EIS document (Volume II).

2. DESCRIPTION OF THE DEVELOPMENT

2.1. Location

The site is situated in the Forge Hill Area, off the Kinsale Road, of Cork, an area zoned for industrial development. The location of which is shown in Drawing A.1.1 attached. The Forge Hill Road that passes the front entrance of the facility is a link road between the Kinsale Road (N27) and the Southern Ring Road (N28). The Forge Hill Road is a main distributor road for the industrial developments in the area and is used constantly by heavy goods vehicles.

The predominant landuse in the area is industrial. The northern and southern boundaries of the site are bordered by industrial developments, the eastern boundary by a disused tarmacadam driveway. Finally the western boundary of the facility is bordered by Forge Hill Road and across this are located more industrial developments.

2.2. The Site

The site covers an area of approximately 2.54 acres, extending some 75 metres in a north - south direction and 150 metres in an east-west direction. The site plan is detailed in Drawing A.1.2 attached. The Forge Hill site has been in existence as a waste transfer facility since 1987. Current buildings at the site include a garage/recycling building and offices. The remainder of the site is used to conduct waste transfer operations, bin storage and yard activities.

1:50,000 PLAN

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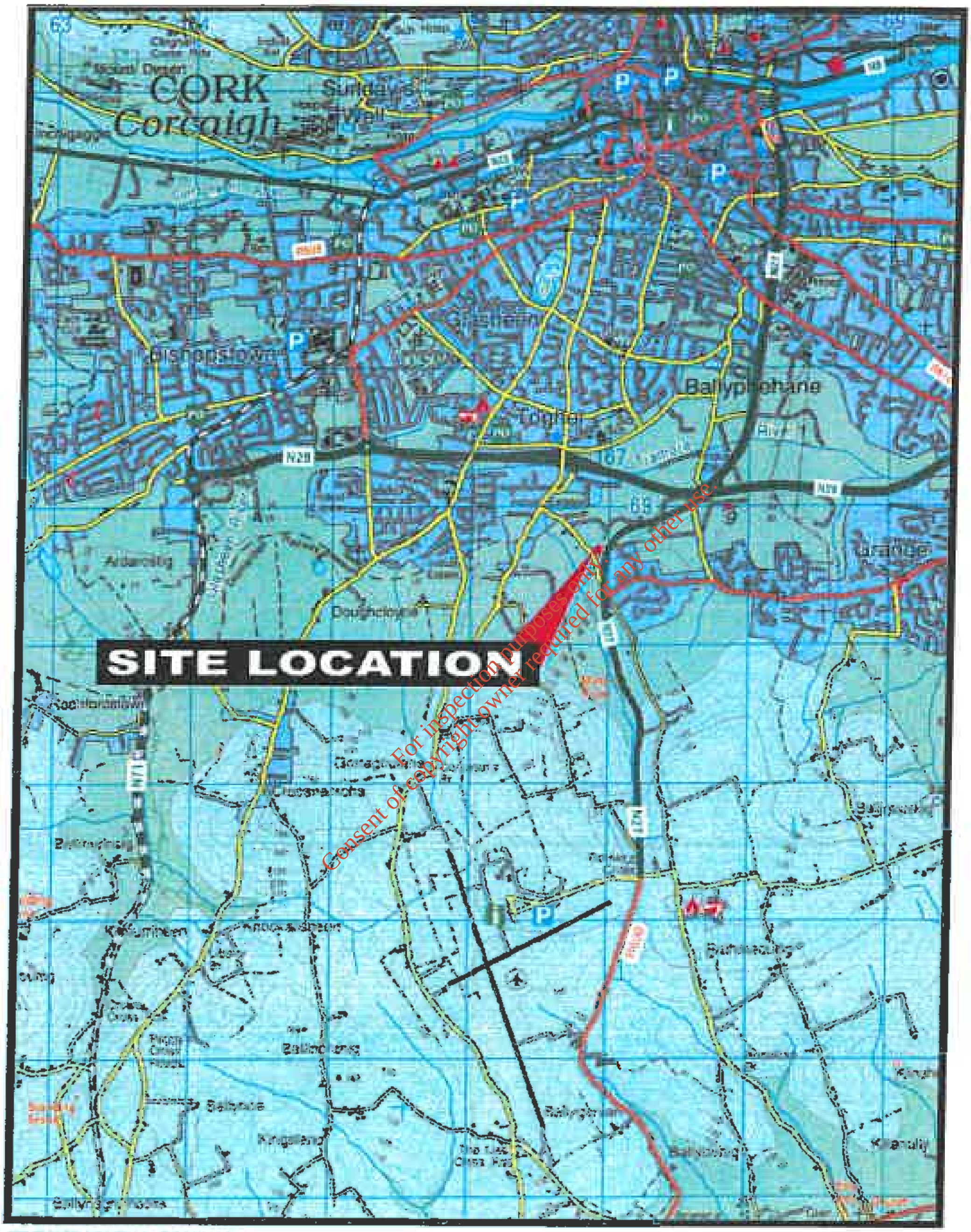

FEHILY TIMONEY & COMPANY

SITE LOCATION MAP

WASTE LICENCE APPLICATION
For IPODEC IRELAND Ltd TRANSFER
STATION At FORGE HILL Ind.Estate,CORK

DRAWING A.1.1

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CORK 1:1000 6427–08.09.10, 1:2500 6427 B + D

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MAR 2002

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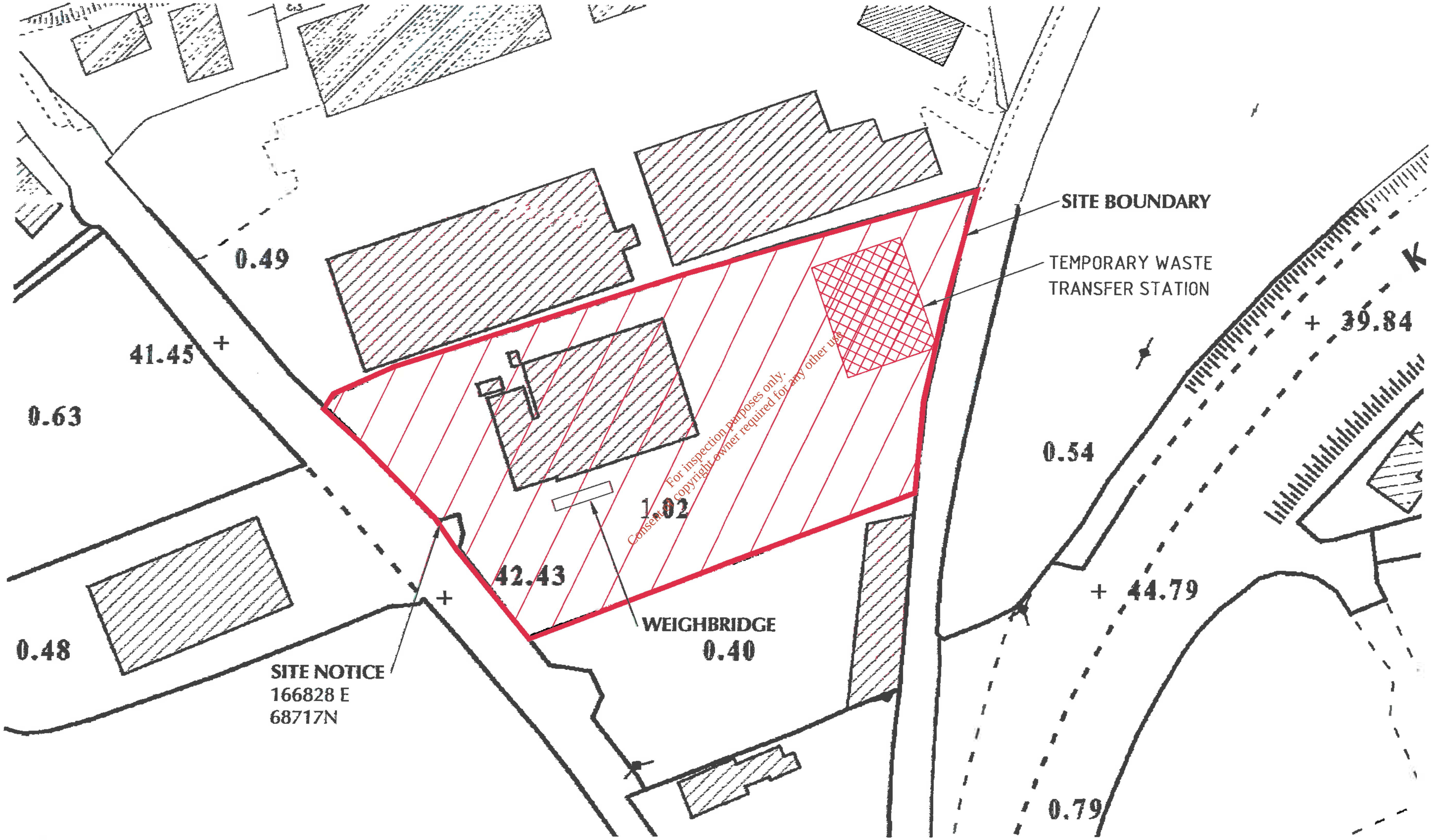
1:1000 PLAN



FEHILY TIMONEY & COMPANY

SITE BOUNDARY PLAN

SITE + SITE BOUNDARY

TEMPORARY WASTE TRANSFER STATION

WASTE LICENCE APPLICATION

For IPODEC IRELAND Ltd TRANSFER STATION At FORGE HILL Ind.Estate,CORK

DRAWING A.1.2

2.3. Planning Context

This EIS accompanies a planning application to Cork County Council and waste licence application to the EPA for the redevelopment of the site.

The activities conducted at the site as they relate to the Waste Management Act 1996 are outlined as follows:

The principal activity conducted at the site involves the following:

- Bulk loading of non-recoverable waste prior to the removal off site to an appropriate disposal facility.

Other activities conducted at the site include:

- Storage of non-recoverable commercial and industrial wastes received at this facility, prior to the disposal at an alternative appropriate facility.
- Transfer of loose waste into large containers for eventual disposal at another appropriate facility.
- The recovery and subsequent repackaging of wood, plastics and paper/ cardboard from waste accepted at the facility. In addition, food waste may be separated for delivery to composting facilities.
- Receipt, collection and holding of metal wastes to be sent off site for reprocessing.
- Receipt, collection and holding of glass and construction and demolition wastes (such as bricks, cement, ceramics, soils) to be sent for reprocessing.
- Exchange of materials such as metals, glass, food waste and construction and demolition wastes for further re-processing off-site.
- The storage of commercial and industrial non-hazardous wastes and wood or timber waste received at the facility prior to recovery at an alternative appropriate facility.

2.4. Facility Operations

The general waste types accepted at the facility are municipal waste, commercial and industrial non-hazardous waste. No liquid waste is accepted at the facility. The majority of the waste that is transferred at the facility is commercial and industrial waste. Figure 2.1 presents a flow diagram of the overall process at the IPODEC Cork site.

No public vehicles are allowed access to the site. The majority of waste arriving to the site is delivered by IPODEC operated trucks from established customers of IPODEC Ireland Ltd.

Waste is handled on-site during the hours of operation, Monday to Saturday-7.00 to 19.30 and in emergency situations on a Sunday.

Initial waste collection by IPODEC Ireland Ltd. incorporates a cursory check on all wastes collected to ensure conformity of agreements with individual clients. Hazardous materials and liquid wastes are not accepted at the site. Waste accepted onsite is subsequently tipped within the transfer area for inspection.

Existing situation

Currently non-recyclable waste is processed in an area to the east of the site.

All non-recyclable waste that arrives on-site is diverted to the temporary waste transfer area. Waste is then transferred to a transfer trailer (ejector trailer) using a grab machine.

Once the transfer trailer is full it is removed off-site to an authorised waste management facility.

Currently recyclable loads are directed to the recycling area. Here loads are tipped onto the sorting floor where the cardboard is manually separated on a sorting line before being tipped into the cardboard baling machine. Once all the recyclable cardboard has been separated the remainder of the waste (non-recyclable) is transferred to the transfer area. In the event that the floor of the recycling area is full the recyclable loads are stored in sealed containers on the asphalt surface outside the door of this area.

There are five solid waste types that are considered to be recyclable at the IPODEC facility:

- Cardboard
- Metal
- Timber
- Plastic
- Newspaper

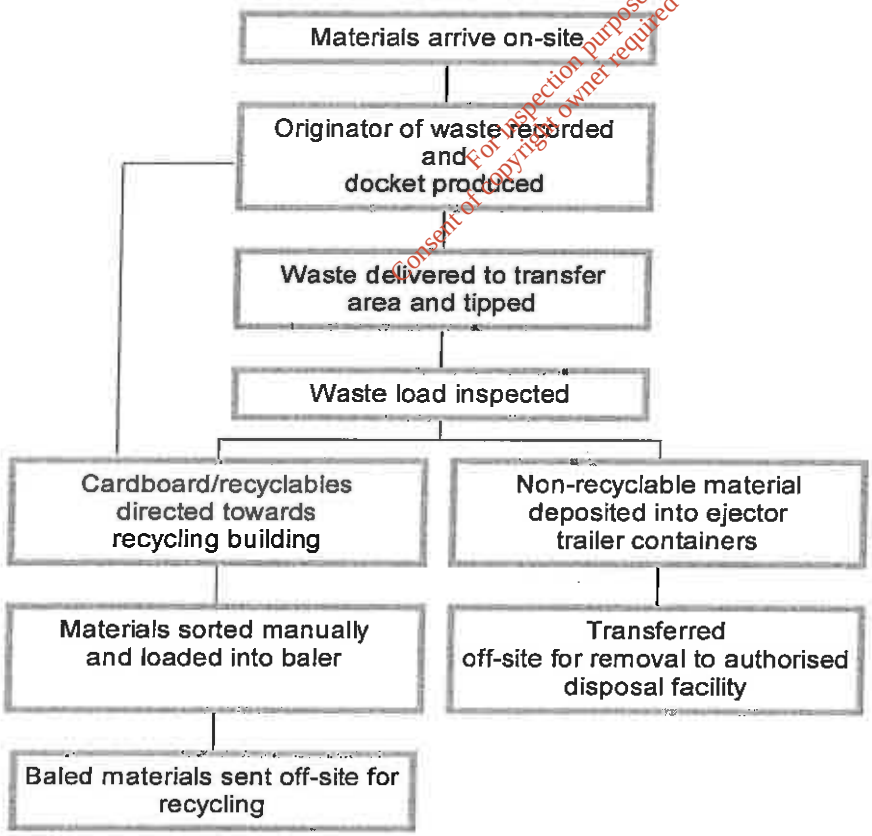
Clean uncontaminated cardboard is removed from any waste loads that are deposited on the recycling area floor. The cardboard is loaded onto a conveyer belt that feeds a baler. The baled cardboard is subsequently stored outside prior to removal to a recycling companies in Ireland and Northern Ireland.

Any metal delivered to the site is placed in a dedicated bin for transfer to a local metal recycling company.

All timber is sorted from incoming loads and stockpiled on-site prior to being bulk loaded and transported off-site to a timber recycling facility.

Plastic delivered to the site has been segregated at source and is stored on a hardstanding area on-site until sufficient quantities are available for transportation to a recycling facilities in Northern Ireland and the U.K.

Figure 2.1: Flow Diagram of Facility Operation



2.5. Waste Types and Quantities

The percentage breakdown of the primary waste stream being delivered to the site is detailed in Table 2.1 as follows;

Table 2.1: Percent Breakdown of Primary Waste Stream at the IPODEC Site

Constituent	Percent
Metal	5%
Plastic	8%
Timber	9%
Cardboard	25%
Paper	15%
Miscellaneous	13%
C & D Waste	5%
Mixed non recoverable waste	20%

Table 2.2 presents details on the tonnages of waste that have been transferred through the IPODEC Facility at Forge Hill for 1998 to 2001 and as predicted for 2002 to 2005.

Table 2.2: Approximate Annual Tonnages of Waste Transferred at the IPODEC Site

Year	Tonnages
1998	4,250
1999	5,000
2000	5,000
2001	8,000
2002 (predicted)	~ 45,000
2003 (predicted)	~ 60,000
2004 (predicted)	~ 75,000
2005 (predicted)	~ 80,000

As indicated in Table 2.2 there will be a significant increase in the amount of waste that will be transferred through the facility in the coming years. This is a result of increased pressure on landfill space in addition to increased priorities for recovery and recycling of wastes.

In order to deal with this increase in waste intake significant improvements have been undertaken at the site (e.g. new weighbridge, new baler with conveyer system and sorting line).

An overall redevelopment of the site, will ensure that all waste operations will be enclosed and will allow for greater efficiency and improved turn-around times for waste delivered to the site.

2.6. Materials and Equipment

Chemical usage is minimal at the site and is restricted to the following:

- Insecticide
- Rodenticide
- Alkaline detergent used within the truck wash.

Engine oil and hydraulic oil is used on-site for plant equipment is adequately bunded. Bale wire is used for the production of cardboard bales. No other packaging materials are consumed on-site. Low volumes of waste oils generated at the site are disposed of at an appropriate off-site facility.

Solid waste generated at the site is largely restricted to office waste, e.g. paper. The recyclable portion of this waste is delivered to the recycling plant.

The plant used on-site is outlined as follows:

- 1 No. Forklift (weight capacity 2 tonnes)
- 1 No. JCB with loading shovel
- 1 No. Hymac with loading grab
- 1 No. Hopper and baler
- 3 No. 45 foot cubic yard container
- 1 No. Sorting line.

Additional plant proposed for the site includes:

- 1 No. Weighbridge
- 1 No. Baler (higher capacity)
- 1 No. Sorting line (extended)

3. HUMAN BEINGS - IMPACTS AND MITIGATION

3.1. Human Beings in the Existing Environment

The site is situated in the Forge Hill Area, off the Kinsale Road, of Cork, an area zoned for industrial development. The nearest residential property is located 90 m to the north-west of the entrance on the Forge Hill Road. It has however no direct line of site to the transfer activities. There are no other sensitive receptors within 500m or in the immediate vicinity of the site (i.e. hospitals, churches or schools).

3.2. Noise

The main noises sources from the site were identified as the grab machine within the transfer area and the baler within the recycling building. In general these sources are not audible at the site front entrance to the Forge Hill road.

Noise assessments at the Forge Hill site have been conducted at perimeter locations and at the nearest noise sensitive location. Measurements to date have concluded that noise emanating from sources within the site were not significant contributors to the noise levels recorded at boundary locations. The principal contributor to all noise levels recorded as part of these assessments was determined to be traffic noise on Forge Hill.

It is considered that the future noise levels emanating from the proposed new developments at the site will not create a nuisance at the nearest noise sensitive location. The increased traffic movement on-site and activity of plant equipment will cause the noise levels at the boundary of the facility to increase. However, the ultimate enclosure of all waste activities at the site will reduce noise emissions from the site.

3.3. Traffic

The IPODEC site is accessed directly from the Forge Hill Road, which is a main distributor road in the area for industrial premises. Primary access to Forge Hill itself is directly off the nearby Southern Ring Road (N28) or Kinsale Road (N27). The traffic on the Forge Hill Road is typical of an industrial area.

Traffic survey conducted at the entrance to the site on the Forge Hill road in May 2000 and March 2002 indicated that traffic levels on this road increased marginally over this period. The contribution of traffic associated with the IPODEC site to the traffic surveyed on the Forge Hill road, indicated low percent levels during the two surveys. With the proposed development of the site the number of vehicles serving the site will increase from the current maximum levels of 20 - 22 traffic movements per hour up to 36 - 38 movements per hour.

Traffic surveys conducted as part of this environmental assessment indicates that the traffic generated from the waste transfer activities were low in relation to the overall traffic levels on the Forge Hill road.

In addition, a waste management company has applied to Cork County Council and the EPA for permission and a waste licence for an MRF on Forge Hill. The predicted increase in traffic using this facility is estimated to be 2%. The combined impact of the IPODEC MRF and the other MRF will not cause a significant cumulative impact on traffic on the Forge Hill road, in the long-term, as the proposed upgrade of the Kinsale Road roundabout will mitgate against any increased traffic movements on Forge Hill.

3.4. Air

3.4.1. Odour

Odour is a significant form of air pollution in that it can be perceived through the sense of smell that we all possess.

At the IPODEC facility the main waste stream is commercial waste. 80 - 85% of this waste is non-putrescible and will not generate odours. The putrescible waste however, depending on the length of time it is putrefying before collection can generate significant odours.

Until a waste load is deposited in the waste transfer area there is no way of telling how odorous it is or how much putrescible waste is present. As a result short-term odours may be emitted from the site when loads containing such waste are deposited.

In order to further mitigate against this potential odour nuisance from the site, proposals in conjunction with the enclosure of all waste handling operations, include the installation of an odour neutralising system.

3.4.2. Dust

Dust emitted from the IPODEC facility can derived from the general site activities and include sources of dust from the transfer area when waste loads are deposited and the hardcore areas where empty waste skips are stored. Dust generated in the transfer area is as a result of the nature of the waste deposited in the building. The dust generated from the hardcore areas is as a result of the truck movements on and off these areas.

The results of dust monitoring conducted indicated elevated levels of dust deposition at the site. In particular, levels of dust deposition have appeared to increase in line with the increased waste throughput at the site.

Critical to the successful mitigation of these elevated dust levels is the future enclosure of waste handling operations. This building will also incorporate the installation of plastic curtains at the entrance to the building to reduce fugitive dust emissions. In addition, the odour neutralising system proposed may also be used as a dust suppression system capable of removing airborne dust generated within the transfer building. Finally all operational areas of the site will be concreted.

3.5. Nuisance

3.5.1. Vermin

The nature of certain fractions of waste transferred through the facility, in particular putrescible waste, is such that they provide a food source for vermin. In particular, nuisance vermin in the form of birds, rodents and insects are likely to be drawn to such food sources present at the site.

The vermin control system currently in place is successful in minimising vermin at the site. This includes the use of specialist pest control sub-contractors.

3.5.2. Litter

Windblown litter deriving from waste delivered and handled at the site has the potential to cause a significant nuisance problem and negatively impact on the aesthetics of the site and environs.

Overall, it is considered that the facility has no impact on the surrounding environment in relation to litter. Within the confines of the boundary of the site there is a potential for litter to be windblown and scattered as a result of the transfer area operations. Control measures in place at the site ensure that litter is not a problem at the site.

3.6. Cultural Heritage

A desk based and site walkover archaeological assessment of the site and surrounding area was undertaken to identify the archaeological constraints, if any, associated with the facility at Forge Hill. No material or structures of archaeological significance were found on the actual site itself during the course of the inspection. The site does not have any special archaeological or architectural designation.

There is no evidence to suggest that the facility is of any cultural or historical importance or infringes on any areas of heritage value.

3.7. Material Assets

The site covers an area of approximately 2.54 acres including the recycling building, garage and offices. The remainder of the site is used for skip storage, truck movement and parking, and, for car parking. The site has been used as a waste management facility for since 1987, however, the current site infrastructure was only developed in 1991.

Potential impacts of the site on material assets in the area include traffic associated with the site, however it is emphasised that this is an industrial area and, as such, the activity will not have any significant effect on the material assets of the locality.

4. ENVIRONMENTAL ASPECTS – IMPACTS AND MITIGATION

4.1. Geology and Hydrogeology

The IPODEC facility is located on the south side of the Tramore River Valley, which runs approximately west to east towards the Douglas Estuary. The geology of this area of south Cork is dominated by sedimentary rocks and contains groundwater that is potentially available for abstraction.

There is an on-site well used for vehicle washing and sanitary use (i.e. other than drinking water). No other properties in the vicinity have wells delivering their water supply. All are on the local authority mains water system.

The results of the groundwater quality assessments indicate the groundwater underlying the IPODEC site to be of satisfactory quality. Concentrations recorded for the range of parameters targeted did not indicate contamination that can be associated with on-site activities at IPODEC.

IPODEC Ireland Ltd. will ensure that all waste handling and recycling activities at the site will be conducted so as to ensure protection of the underlying soils and groundwater. The ultimate enclosure of waste handling activities and associated drainage works will increase this protection.

4.2. Hydrology

The IPODEC site in Forge Hill is located in the catchment of a small stream to the west of the site, which is a tributary of the Tramore River. The Tramore River enters a tidal basin called the Douglas River. This subsequently flows into Lough Mahon.

At present, all surface water drainage from the facility is collected via a network of surface drains throughout the site, which ultimately discharges, into the small stream, which is a tributary of the Tramore River.

Results of surface water quality assessments indicated slightly elevated concentrations of parameters associated with truck movements on-site and surface water run-off from hardstanding areas on-site. Measures are currently in place to ensure that surface water discharges from the site do not negatively impact on the receiving waters including site-cleaning programmes. In addition, it is proposed to enclose all waste handling activities and to install an interceptor system on surface water discharges from the site. These mitigation measures will ensure that the impact of discharges from the IPODEC site will have minimal impact on the receiving wasters. The surface water discharge from the other MRF will be licenced by the EPA and the cumulative effects of both discharges on the receiving waters will be minimal.

4.3. Foul water

Emissions of foul wastewater currently comprise of domestic effluent arising from the canteen and toilets. All such effluent passes through a septic tank and then into a soak pit located in the north-west corner of the facility. Contaminated water (i.e. leachate) from the transfer area is collected within a separate drainage system and collected and taken off-site for further treatment.

It is proposed to connect foul water discharges from domestic effluent, the truck wash area and leachate to a nearby local authority sewer line. This will prevent any potential environmental impact from foul water arisings at the site. The septic tank and soakaway on site will be decommissioned.

The proposed adjacent MRF will also discharge to the nearby local authority sewer line. The volume of discharge from both facilities will not have a cumulative significant impact on this sewer line, as the sewer line has adequate capacity to handle additional discharges.

4.4. Climate

The long-term weather patterns at the site reflect the regional conditions affecting the South Munster area, dominated by low fronts from the west and south-west in the winter months and more settled conditions during the winter months. The dominant wind direction fluctuates between North Westerly to South Westerly. Rainfall is slightly higher than national averages with the months of September to March receiving the greatest monthly rates.

It is considered that the current operations and the proposed future operations will not affect existing or future climatic conditions.

4.5. Flora and Fauna

The site is located in an industrially zoned urban area approximately 5km south-west of Cork City centre. The site does not lie in any designated ecological area.

Ecological surveys conducted as part of the environmental impact assessment and concluded that no special features of ecological note (i.e. flora and fauna) were present at the site. Due to the location of the facility within an industrial area and the fact that there are no areas of significant ecological interest within the vicinity of the site, activities at the site do not have a negative impact on flora and fauna in the area.

Overall, the site is of very low ecological value and has little potential to sustain any floral or faunal habitats of significance. It is considered that the current and future operations of the Materials Handling and Recycling Facility does not pose a risk either to any species of flora or fauna or any ecological habitats in the area.

4.6. Landscape and Visual Assessment

The area around the IPODEC Forge Hill site is predominantly industrial with a series of industrial estates located in the general vicinity of the site. The site is not set aside as a proposed scenic route or designated landscape area.

The northern and southern boundaries of the site are bordered by industrial developments, the eastern boundary by a tree-lined disused tarmacadam driveway. Finally the western boundary of the facility is bordered by Forge Hill Road and across this are located more industrial developments.

The screened boundary on the Forge Hill Road disallows a direct line of sight to the nearest residences. Moreover, site operations cannot be viewed except directly at the front gate of the site.

Overall, it is considered that the views of the site do not impair the character of the existing landscape. Furthermore, the proposed development will not alter this situation significantly.

4.7. Land Use

The primary landuse in the area is industrial. There are two residences on the Forge Hill Road with the nearest being over ninety metres from the main entrance to the site. There are no hospitals, hotels, or other such sensitive amenities in the immediate vicinity of the site. It is considered that the site has had no discernible impact, either directly or indirectly, on patterns of employment, landuse or economic activity in the area.

5. CONCLUSION AND INTERACTION OF THE FOREGOING

Environmental factors may be interrelated to a minor or significant degree based on various interactions between different environmental elements. The IPODEC site at Forge Hill will have positive and negative impacts on the receiving environment. The interactions and interdependencies between these environmental impacts, as discussed in the preceding chapters, are addressed in this section.

Plastic delivered to the site has been segregated at source and is stored on a hardstanding area on-site until sufficient quantities are available for transportation to a recycling facilities in Northern Ireland and the U.K.

5.1. Negative Cumulative Effects

- Increased traffic movement on the Forge Hill Road
- Increase in noise level due to traffic movement to facility and corresponding decrease in air quality
- Visual impact of traffic movements
- Visual impact in the vicinity of the site.

5.2. Positive Cumulative Effects

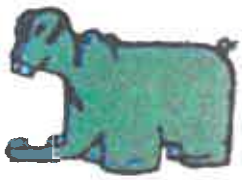
- The provision of a waste recycling facility in Cork in order to increase recovery and recycling rates within the area and decrease to volumes of waste being delivered to landfill

- The provision of a properly controlled waste management facility for the efficient transfer of waste produced in Cork
- The provision of increased local employment
- Decrease in vehicles going to landfill
- Reduction in dust and noise emissions
- Improved surface water and foul water emissions.

5.3. Conclusions

Based on the positive impacts of the existing development, it is considered that the IPODEC Ireland Ltd site in Forge Hill will provide a suitable location for a Materials Handling and Recycling Facility in this area of County Cork. This operation expresses an explicit commitment to the process of implementing enhanced recycling and efficient transfer of waste. It thereby furthers national and international policy on both waste management and diversion of waste from landfill.

The interactions of all environmental factors indicate an overall positive development capable of providing efficient materials handling and recycling infrastructure with minimal impacts on the local environment.



REVISION TO

ENVIRONMENTAL IMPACT STATEMENT

FOR A MATERIALS RECOVERY FACILITY OPERATED BY IPODEC IRELAND LTD. AT FORGE HILL, KINSALE ROAD, CO. CORK

MAIN REPORT

Volume 2 of 3

Prepared for:

IPODEC Ireland Ltd.,
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Prepared by:
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Core House,
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EPA Ref No. 173-1

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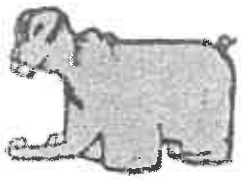

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ENVIRONMENTAL IMPACT STATEMENT

User is Responsible for Checking The Revision Status Of This Document

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2	Re-issue to Client	DD	DE		10/09/02

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PREAMBLE

The subject of this Environmental Impact Statement (EIS) is the redevelopment of an existing waste transfer station, located on Forge Hill, Kinsale Road, Co. Cork, to a Materials Recovery Facility (MRF) and Residual Waste Transfer Station.

The EIS has been prepared using the "Grouped Format Structure" as recommended in the *Guidelines on the Information to be Contained in Environmental Impact Statements* published by the Environmental Protection Agency (EPA, 2002).

The main EIS (Volume 2) is subdivided into the following sections:

- Section 1 is an introductory section.
- Section 2 gives a description of the site and site activities.
- Sections 3 through 12 describe the various impacts of the proposed development on the existing environment and outlines the measures proposed to mitigate these impacts.

Volume 1 provides a non-technical summary of the EIS in accordance with the EPA guidelines.

Volume 3 contains the Appendices to the Main EIS, which provide additional technical back-up material. This volume (Appendix A) also contains all relevant drawings referenced throughout Volume 2. It is noted that the labelling system for all drawings conforms to the standard EPA waste licence application labelling system.

The EIS has been prepared by Fehily Timoney & Co., Core House, Pouladuff Road, Cork in conjunction with IPODEC Ireland Ltd. Specialist inputs have been presented from the following sub-consultants:

Fehily Timoney & Co.	Ecological Survey Hydrogeological Assessments Noise Assessments Traffic Assessments Air Assessments Landscape and Cultural Heritage MRF Design
IPODEC, Ireland Ltd.	MRF Design and transfer building design
Water Technology Ltd.	Bacteriological Analysis
Bord na Mona Environmental Ltd.	Dust Monitoring Groundwater and Surface water analysis
AWN Consulting	Noise Survey
RPS Environmental Sciences Ltd.	Surface water Monitoring Dust Monitoring Noise Monitoring

This revision to the environmental impact statement supercedes other previous versions.

1. INTRODUCTION

1.1. National Waste Management Policy

Government policy in relation to waste management is set out in the policy statement entitled *Preventing and Recycling Waste: Delivering Change* published by the Minister for the Environment and Local Government in March 2002. This policy statement evolves from and is grounded in the 1998 policy statement *Changing Our Ways* which provided a policy framework for the adoption and implementation of strategic waste management planning.

Following the enactment of the Waste Management (Amendment) Act 2001, all waste management plans have been adopted and are in the process being implemented. The establishment of a National Waste Management Board in 2002 will co-ordinate, monitor, review and advise on all aspects of waste management policy at all levels of the waste hierarchy.

The government has established a National Waste Prevention Programme (NWPP) to deliver substantial results on waste prevention and minimisation. This programme will be driven from within the Environmental Protection Agency (EPA). In the area of re-use the government will promote voluntary action by industry to implement re-use systems and support EU initiatives to increase re-use, including where appropriate mandatory re-use targets.

In relation to recycling the policy statement states that the government will provide €127 million in EU/Exchequer support for waste recovery infrastructure, including recycling infrastructure, in the period 2002-2006. A landfill levy has been introduced in 2002 and national bans on landfilling specific materials will be further introduced. The policy statement indicates that there is a clear need to rapidly develop an integrated network of appropriate facilities for the collection, sorting and treatment of recyclables. The statement indicates that these facilities must be designed to generate good quality segregated waste that is suitable for delivery to reprocessing and biological treatment facilities.

The statement recognises that the producers of goods and materials need to take responsibility for the environmental impact of placing goods and services on the market. The government will put measures in place for the attainment of 50% recovery of packaging waste by 2005 and ensure that recycling targets of 50% by 2003 and 85% by 2013 are met for Construction and Demolition Waste.

The government will draw up a National Strategy on biodegradable waste in 2002 and support the provision of infrastructure for the biological treatment of organic waste.

Many of the structural initiatives identified in the 2002 policy statement will bring strengths to the modernisation of waste management practice. The statement in line with local and regional management plans will make prevention and recycling easier for the public.

1.2. Waste Management Policy in Co. Cork

The *Draft County Development Plan* for Co. Cork was published in February 2002 and outlines the waste management policy for the county. The *Waste Management Plan* for County Cork (1999) is based on the Cork Waste Strategy, a joint document with Cork City Council which aims to radically alter the approach to waste and the level of waste produced in the region up to 2013. In line with both national and EU targets the policy strategy sets down a hierarchy of preferential modes of waste management, including the following; prevention, minimisation, reuse/recycling, disposal with energy recovery and disposal of residual wastes.

The *Waste Management Plan* puts forward the following key proposals;

- Rationalisation of the existing landfills to one state of the art engineered landfill
- **Provision of Materials Recovery Facility (MRF)**
- **Greater involvement by the private sector in provision of waste management facilities.**
- Provision of a network of civic amenity sites and bring sites
- **Provision of waste transfer stations**
- Voluntary/domestic refuse segregation
- Investigate the possibility of employing thermal waste to energy treatment for residual waste
- A major public awareness campaign

1.3. Need for the Materials Recovery Facility

The overall objective of the Council Directive on the Landfill of Waste (1999/31) is to define and unify the nature of acceptable landfill design, operational and post-closure standards across Europe. The Directive requires that, with the exception of inert waste, all waste being landfilled must be pre-treated. The Directive also contains binding obligations for the reduction of the use of landfill for the disposal. In this respect, the requirement for a Materials Recovery Facility in meeting these obligations to provide pre-treated waste to existing and future landfills, such as the proposed Bottlehill site, is critical.

On review of key national and regional waste management strategies the requirements for efficient transfer and recycling of waste is obvious. With direct reference to the waste strategy in Co. Cork, IPODEC Ireland Ltd. is providing the much needed infrastructure in order to help achieve the ambitious targets set by national and EU guidelines.

The involvement of the private sector is encouraged by the *Waste Management Plan* and it specifically details the requirement for waste transfer stations and Materials Recovery Facilities (MRF's) in meeting the targets set. IPODEC has been in operation at the Forge Hill site since 1991 with waste management activities that have been taking place at the site since 1987. The site is ideally located in an industrial zone to the south of Cork City and to date has operated without environmental or social concerns being raised.

To date IPODEC Ireland Ltd. has typically handled 40,000 tonnes of waste per annum in the Cork region. Significantly IPODEC handles 40% of commercial waste produced in the region. The company's business plan proposes that this will increase to 50% of the total commercial waste produced in the region.

As a result of the lack of available void space at landfill in the region the volume of waste handled by the company has significantly increased on the Forge Hill site from 5,000 tpa to 40,000 tpa. It is envisaged that given the current pressures on available landfill space in the region, the waste throughput at the site will increase to 80,000 tonnes per annum.

The requirement, therefore, for the IPODEC Forge Hill site is critical in maintaining adequate infrastructure in the Cork region to handle this waste volume. Without the Materials Recovery Facility and all associated IPODEC collection activities in the region, the consequences would severely impact on the waste management infrastructure in the region.

Already IPODEC has installed a small-scale sorting line and baling equipment to improve recycling figures at the Forge Hill Site.

1.4. IPODEC Ireland Ltd.

IPODEC Ireland Ltd. is the largest waste management/recycling company in Ireland with Waste Recycling and Transfer Facilities located in Dublin, Cork, Limerick, Waterford and Newry (SCL-Onyx). All facilities are fully licensed by the Environmental Protection Agency or permitted by the relevant Local Authorities. The company, through its operations, handles over 275,000 tonnes of commercial and industrial waste per annum and 250,000 tonnes of domestic waste.

IPODEC is a subsidiary of the waste management arm (ONYX) of the multinational Utilities Group, Vivendi Environmental. ONYX is the largest provider of waste management services in Europe and the third largest worldwide. The group operates 151 sorting, transfer/recycling facilities recovering more than 3 million tonnes per annum and related composting facilities treating 1 million tonnes per annum, 83 waste-to-energy plants treating 8 million tonnes per annum, and 133 landfill sites worldwide. ONYX, has a presence in over 40 countries, employs over 60,000 people, and has a turnover of £5 billion.

Dublin Operations

In the Dublin area IPODEC Ireland operates a Waste Transfer and Recycling Facility in Ballymount through which it processes waste for the commercial and industrial sector. This facility was granted a Waste Management Licence by the Environmental Protection Agency in November, 1999 (Waste Licence 39-1). It was the first privately operated non-hazardous waste transfer facility to be licensed in Ireland. As a result of clients needs, and the significant increase in waste volumes passing through the facility, IPODEC applied in December 1999, to the EPA for a review of the licence primarily with a view to increasing the opening hours to 24 hours per day seven days per week and to ensure that the facility was licensed to accept the quantities of waste handled. This revised licence was granted in September 2000 (EPA Waste Licence 39-2). Since the initial waste licence was granted IPODEC has spent €400,000 in upgrading its premises and operations to ensure compliance with the licence conditions. Some of the infrastructure changes that have taken place include installation of bunded areas for diesel, installation of an odour control and dust control system, diversion of surface water drains to foul sewer, upgrading of the truck wash facility, concreting of the truck parking area, installation of interceptors and upgrading of the weighbridge system.

In 2002 IPODEC Ireland has continued this upgrading of the site with the implementation of an Environmental Management System to ISO 14001 standard. It is expected that this will be in place by the third quarter of 2002. The other major project that the Dublin depot is developing is the installation of a Material Recycling Facility to improve further the quantity of material recycled from the waste streams.

In addition to its own Waste Transfer and Recycling Facility, IPODEC operated on a Joint Venture Partnership with South Dublin County Council a Waste Baling and Recycling Facility, also in the Ballymount area, and the Arthurstown Landfill in Kill, Co. Kildare. This landfill is operated to the highest environmental standards and is one of the few of its type in the world where baled waste is landfilled (licensing condition). The Baling Station processes over 270,000 tonnes of waste per annum and serves both SDCC and Dublin Corporation domestic waste collections.

Cork Operations

In Cork IPODEC operates a recycling facility at Forge Hill, Kinsale Road. In addition, it's fleet of waste collection vehicles operate out of this facility. Cork County Council permitted this facility in 2001 (W02/01). Cardboard, paper, plastic, metal and timber are the principal materials recovered here. By the end of 2002 it is anticipated that approximately 5,000 tonnes of material will be recycled through the Forge Hill facility.

This facility is in the early stages of redevelopment with its upgrading to a licensed facility capable of handling 80,000 tonnes per annum of waste. Part of this upgrading includes the installation of a full-scale MRF.

Limerick Operations

In December 2001 IPODEC purchased the Cussens & Co. Waste Management business and took a lease on their site in the Dock Road, Limerick. This site is licensed by the EPA (Reg. No. 82-1) and is currently undergoing major infrastructural changes, including the installation of an MRF, to ensure that the facility can be operated in compliance with the conditions set out in the licence. The primary focus of the site is to maximise the quantity of material recycled and minimise the amount sent for disposal to landfill. From Limerick, where IPODEC is by far the largest supplier of waste management services to the commercial sector the company services clients in Limerick City and County, North Cork, Tipperary NR, Clare and North Kerry.

Waterford Operations

In 2000 IPODEC constructed a new Waste Transfer and Recycling facility in the Carrignard Industrial Estate, Kilbarry, Waterford. This facility was permitted by Waterford Corporation (WR/02/00) and commenced operating in January 2001. The facility was designed to ensure that any emissions that arise as a result of the on-site activities complies with the relevant emission limit values. This has included the installation of odour/dust control system, shut off valves interceptors and grip traps in both the surface water and foul sewer drainage networks and bunding of all fuel and oil storage.

The depot is primarily a recycling facility where cardboard, timber, plastic and metal are taken out of the waste stream with the remainder being disposed of in landfills. From its Waterford depot, IPODEC services industrial and commercial clients in Wexford, Carlow, Kilkenny, Tipperary and Waterford regions. In 2001 it is expected that over 20,000 tonnes of waste will be handled in these regions by IPODEC vehicles.

Newry Operations

The Newry operation was purchased in December 2001 from a company called SCL. The company (SCL-Onyx) is one of the largest waste management contractors in Northern Ireland as with all the other IPODEC facilities its site is undergoing infrastructure changes which includes modernising the transfer operation and the construction of an MRF.

Recycling

The advent of the Packaging Regulations, the Landfill Directive, plastic bag levy and the landfill levy has endorsed the policies already embarked upon by IPODEC in the field of recycling. In order to increase the quantities of materials being recycled by the company IPODEC began a program in late 1999 of redevelopment of its Waste Transfer Facilities. The primary purpose was to improve the recycling infrastructure in each of its depots nationwide. This has included the purchasing of recycling infrastructure, the designing of material recycling plants and the changing of operational practices. The success of this development is now starting to show dividends with IPODEC likely to recycle or send for recycling over 30,000 tonnes of material in 2002. The materials recycled include timber, paper, plastic, metal, cardboard, newspaper and some sludges. In addition, IPODEC has embarked upon a program of encouraging larger clients to sort and segregate their waste as much as possible as it is well documented that source segregation is the most efficient way of recycling/recovering waste.

1.5. Requirements for EIS

1.5.1. Applicable Legislation

IPODEC Ireland Ltd. is submitting this EIS, in support of a Waste Licence Application to the EPA and in support of a Planning Application to Cork County Council, in respect of the redevelopment of the existing site to a Materials Recovery Facility (MRF) at Forge Hill, Kinsale Road, Co. Cork in accordance with the following legislation:

- EC Directive 85/337/EEC (on assessment of the effects of certain public and private projects on the environment) requires the preparation of Environmental Impact Statements for certain projects
- SI No. 349 of 1989 [European Communities (Environmental Impact Assessment) Regulations 1989] translates 85/337/EEC into Irish Law
- S.I. No. 93 of 1999 [European Communities (Environmental Impact Assessment] (Amendment) Regulations 1999.
- S.I. No. 185 of 2000 Waste Management (Licensing) Regulations.
- S.I. No. 600 of 2001 Planning and Development Regulations 2001

The competent authority for the determination of the waste licence application is the EPA.

The competent authority for the planning application is Cork County Council.

The EIS was prepared with particular reference to guidelines issued by the Environmental Protection Agency, namely:

- *'Advise notes on current practice (in the preparation of Environmental Impact Statements)'.*
- *'Guidelines on the information to be contained in Environmental Impact Statements (EPA, 2002).*

1.5.2. Scoping

A scoping exercise was conducted during the initial stages of the environmental impact assessment. The exercise established the terms of reference for the EIS and identified the concerns and issues that warranted particular attention during the assessment phases. For example, dust, noise, odour, traffic, surface water quality were identified as potential issues and appropriate monitoring programmes were put in place to assess the current status of the site with regard to these emissions.

However, a methodical examination of the requirements of the guidelines issued by the EPA set the criteria by which this EIS was prepared. This was the principal method through which the environmental impact assessment was scoped.

1.5.3. Consultation

As part of the EIS consultation process a notice was placed in a paper circulating in the area and also at the front entrance to the site detailing the company's intention to prepare an Environmental Impact Statement to accompany an application to the Environmental Protection Agency for a Waste Licence.

1.5.4. Alternatives Considered

Alternatives were considered as part of the environmental assessment conducted. An alternative to the current site location was not further considered given that waste recycling and transfer activities are established at the site and have not led to any significant environmental or social concerns.

Given the increase in waste throughput at the site the company has investigated alternative strategies in order to improve efficiency and reduce environmental impacts associated with this increase. This has been further crystallised in light of the unavailability of landfill space in the Cork region, which has resulted in increased waste throughput at the site. As a result alternatives to the design of the site was investigated.

The 'do nothing' alternative investigated involved an assessment of maintenance of the site in its existing format. It is accepted that while the existing site was in a position to manage waste tonnages prior to 2001, given the anticipated increase in waste accepted to the site this situation may potentially change. The 'do nothing' alternative for the site is not considered a sustainable approach to meet increased waste tonnages delivered to the site.
Overall, the assessment of alternative design for the site deemed that redevelopment of the site to a modern Materials Recovery Facility was the most environmentally and economically sustainable approach for the site at Forge Hill.

Alternatives are assessed and discussed for individual mitigation measures where applicable within this EIS. The examination of alternatives are detailed within the individual sections (e.g. odour suppression system Section 3.3.3.1 and foul water treatment Section 5.3).

1.5.5. EIS in the context of the existing site

This EIS is presented on the basis of the redevelopment of the site. FTC emphasises that the most significant environmental improvement of this redevelopment will be the enclosure of all waste handling at the site. Mitigation measures, which are a critical part of this EIS, are presented on the basis of enclosed waste handling operations (i.e. MRF design), in addition, to other measures to be taken at the site.

1.5.6. Technical Difficulties

There were no technical difficulties encountered during the environmental assessment conducted at the site.

1.5.7. Impact Description

This EIA provides for an assessment of a range of potential impacts from the proposed development. In accordance with Schedule 6 of S.I. No. 600, 2001, Planning and Development Regulations, 2001 these include:

- Direct impacts
- Indirect impacts
- Secondary impacts
- Cumulative impacts
- Short-term impacts
- Medium-term impacts
- Long-term impacts
- Permanent impacts
- Temporary impacts
- Positive impacts
- Negative impacts

For the purposes of this EIS a significant impact is one that will cause substantial adverse change in an ecosystem, society or economy. The changes would be outside the range of natural variation and if allowed to recover unassisted then repair/recovery could be protracted.

A moderate impact results in a moderate change in an ecosystem, society or economy. The potential for recovery over a long period is good although a low level of impact will remain.

A minor impact results in minor changes to an ecosystem, society or economy. Changes fall within the range of normal variation and the effects are typically short lived.

A negligible impact results in changes to an ecosystem, society or economy that are unlikely to be noticeable.

A positive impact results in desirable or beneficial effects to an ecosystem, society or economy.

2. DESCRIPTION OF THE DEVELOPMENT

2.1. Location

The site is situated in the Forge Hill Area, off the Kinsale Road, of Cork (E1669, N 0687), an area zoned for industrial development, and the location of which is shown in *Drawing B.2.1.* The Forge Hill Road that passes the front entrance of the facility is a link road between the Kinsale Road (N27) and the Southern Ring Road (N28). In addition, the site's close proximity to these two National Roads makes it readily accessible via the local road network. The predominant landuse in the area is industrial. The northern and southern boundaries of the site are bordered by industrial developments, the eastern boundary by a disused tarmacadam driveway. Finally the western boundary of the facility is bordered by Forge Hill Road and across from which more industrial developments are located.

The nearest residential property is located 90m to the north-west of the entrance on the Forge Hill Road. It has however no direct line of site to the IPODEC site activities. The Forge Hill Road is a main distributor road for the industrial developments in the area and is used constantly by heavy goods vehicles. There are no other sensitive receptors in the immediate vicinity of the site (i.e. hospitals, hotels, holiday homes, churches or schools).

2.2. The Site

The existing site covers an area of 2.54 acres, extending some 75 metres in a north-south direction and 150 metres in an East-West direction. The current site plan is detailed in *Drawing B.2.2.* Buildings at the site include a garage/recycling building and offices. The remainder of the site is used to conduct waste transfer operations, bin storage and yard activities. *Drawing D.1.1* illustrates the existing layout of the premises. The facility is located in an industrial zoned area with much of the surrounding land occupied by industrial units. The operations are screened from Forge Hill Road and adjacent building by an existing hedgerow.

The redevelopment of the site incorporates the construction of a new administration building within the southeast corner of the site. The existing garage/recycling building will be extended to the west to house a new residual waste transfer area (refer to *Drawing D.1.2*). In addition an extension to the west of the recycling building will allow for a large scale sorting line.

2.3. Planning and Waste Licensing Context

The Forge Hill site has been in existence as a waste transfer facility since 1987. Original planning permission for the site was granted to Howard Rotavators (Ireland) Ltd., in 1969. The leasehold interest in the property was created in 1986 when Howard Rotavators (Ireland) Ltd. leased part of the site to William O'Brien Plant Hire Ltd. In 1987 the lease agreement was extended to the whole site and William O'Brien Plant Hire Ltd. conducted its waste operations from the yard. Cork County Council had no objections to this change of use of the premises, provided that no waste was stored, temporarily or otherwise, on the site.

Cleanaway Ireland Ltd. purchased the waste management business of William O'Brien Plant Hire Ltd. in 1984. The business was subsequently sold to the current owners IPODEC Ireland Ltd. in 1991.

In 1991 the site was acquired by Vareen Ltd. The site is now leased by them to IPODEC Ireland Ltd. The site ownership plan is presented in *Drawing B.1.1* in Volume III, Appendix A.

IPODEC currently hold a Waste Permit for its operations at Forge Hill, Kinsale Road in Co. Cork. This waste permit (Ref. No. 02/01) issued by Cork County Council is held in accordance with the Waste Management Act, 1996 (S.I No. 10 of 1996) and the Waste Management (Permit) Regulations, 1998 (S.I No. 165 of 1998). A copy of the permit is included within *Appendix B*.

Due to increased tonnages of waste being transferred through the facility and the extended hours of operation at the site IPODEC Ireland Ltd. is now applying to the EPA for a waste licence.

The company now seeks to operate for the following hours:-

- Monday to Friday - 06.00 hrs to 24.00 hrs
- Saturday - 06.00 hrs to 18.00 hrs
- Sunday - 08.00 hrs to 18.00 hrs

The principal reason for the extended hours of operation is to ensure efficient transfer of waste from the site, and allow for recycling activities on-site.

This application is made for a maximum tonnage throughput at the site of 80,000 tonnes per annum.

IPODEC Ireland Ltd. in conjunction with FTC has prepared a design for the redevelopment of the site in order to allow for improved handling of the increased waste volumes being handled at the site. This EIS, which accompanies the application for planning permission describes these proposed, changes to the site.

In relation to the Waste Licence Application, the relevant activities of the operation in the Third and Fourth Schedule of the Waste Management Act 1996, and as amended in the European Communities (Amendment of Waste Management Act 1996) Regulations 1998, (S.I. 166 of 1998) for which it is being made are listed below.

***Principal Activity*:**

- ***Third Schedule, Class 12.*** **Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.**

  This refers to the bulk loading of non-recoverable waste prior to the removal off site to an appropriate disposal facility.

***Other Activities*:**

- ***Third Schedule, Class 13.*** **Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced.**

  This refers to the storage of non-recoverable commercial and industrial wastes received at this facility, prior to the disposal at an alternative appropriate facility.

- ***Third Schedule, Class 11.*** **Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this schedule.**

  This refers to the transfer of loose waste into large containers for eventual disposal at another appropriate facility

- ***Fourth Schedule, Class 2.*** **Recycling or reclamation of organic substances (including composting and other biological transformation processes) which are not used as solvents.**

  This refers to the recovery and subsequent repackaging of wood, plastics and paper/ cardboard from waste accepted at the facility. In addition, food waste may be separated for delivery to composting facilities.

- ***Fourth Schedule, Class 3.*** **Recycling or reclamation of metals and metal compounds.**

  This refers to the receipt, collection and holding of metal wastes to be sent off site for reprocessing.

- ***Fourth Schedule, Class 4.*** **Recycling or reclamation of other inorganic materials.**

  This refers to receipt, collection and holding of glass and construction and demolition wastes (such as bricks, cement, ceramics, soils) to be sent for reprocessing.

- *Fourth Schedule, Class 12.* **Exchange of waste for submission to any activity referred to in a preceding paragraph of this Schedule.**

  This refers to exchange of materials such as metals, glass, food waste and construction and demolition wastes for further re-processing off-site.

- ***Fourth Schedule, Class 13.*** **Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced**.

  This refers to the storage of commercial and industrial non-hazardous wastes and wood or timber waste received at the facility prior to recovery at an alternative appropriate facility.

2.4. Facility Design

2.4.1. Infrastructure

(a) Facility security arrangements

The site is surrounded on 3 sides by palisade fencing and at the front of the site by chain link fencing. Access to the site is via the front entrance on the Forge Hill road. Control of access to the site during hours of operation is maintained by the Operations Manager and a weighbridge attendant (Refer to *(d)* below).

The front gates are locked outside the hours of operation. The site is further secured by an on-site security guard continually present outside normal operating hours.

(b) Design for facility roads

Access to the site is from the Forge Hill Road, which acts as a link road between the Kinsale Road and the Southern Ring Road. In addition it acts as a feeder road for the industrial units surrounding the IPODEC facility. This road carries HGV's throughout the day. The Forge Hill area is readily accessible via the local road network. The entrance to the site is wide enough for truck access and has good visibility from both directions.

(c) Design of hard-standing areas

Existing - Hardstanding

The areas around the garage recycling area and offices consist of hardstanding cover. The area in front of the office block is used as a carpark. Trucks are parked, at night, in the hardstanding area at the eastern end of the building. This area is used during the day for the operations of the garage and recycling area. There is a hardcore area at the south-eastern end of the site that is used for bin storage.

The predominant use of the hardstanding area is for traffic movement throughout the site.

The old transfer area to the south-east of the site is underlain by a 200mm concrete slab. Currently, a temporary structure located to the rear of the garage/recycling area is in place, consisting of stacked 40ft containers with a net cover to capture litter. All transfer activities are currently undertaken within this temporary structure. As part of this submission it is proposed to construct a redeveloped and enclosed Materials Recovery Facility under which all these operations will take place.

Drawing C.9.2 details the existing building, hardstanding and grassed cover at the site.

Proposed - Hardstanding

It is intended to have no hardcore areas in the redeveloped site. All transfer activities will be carried out within the proposed MRF.

(d) Weighbridge Design

A weighbridge was installed at the site in June 2002. The details of this weighbridge are outlined below.

The weighbridge is a 15m long, 3m wide surface mountable weighbridge with a 60,000Kg capacity (20Kg increments). The weighbridge deck is factory built to ISO 9002 Quality Standards with structural design in accordance with BS 8110. The weighbridge is operated by weighbridge management system software that records critical details of all waste transferred at the site (i.e. weight, truck, waste category, and customer).

(e) Vehicle Cleaning

A dedicated truck washing area is located to the rear of the site. Water from this area is currently diverted via an on-site sediment and oil trap (which is routinely desludged) to the storm-water run-off drainage system for the site. It is proposed to install a new oil and sediment interceptor and divert the runoff to the local authority foul sewer system.

Sludge from this area has been routinely taken off-site for disposal to landfill (e.g.. Rossmore landfill). Approximately one tonne of this material is taken from the site per year.

It is proposed to relocate the truck washing area to the north-eastern corner of the site as indicated on *Drawing D.1.2.*

(f) Laboratory facilities

There are no laboratory facilities at the IPODEC Forge Hill site.

(g) Fuel storage areas

No fuel is stored on-site. The vehicles transferring the waste obtain the fuel off-site. Waste oil from the garage is collected in 200-litre drums, which are stored near the eastern entrance to the garage. When full, the oil is removed off-site by a licenced waste contractor. The hydraulic and lubricating oils are stored in separate 1,500 litre tanks in the same area. In addition, some lubricating oil is stored in 200-litre drums, in the same area.

These drums or tanks are stored in dedicated bunds. These bunds have adequate capacity to store at least 110% of the largest tank and 25 % of the total volume of diesel and oil present. Fuel for the plant equipment on-site is brought in on an as needed basis. In the future there will be no garage on-site.

It is proposed to have no truck maintenance on the new site therefore oils storage will no longer be a requirement.

(h) Waste quarantine area

At present there is no waste quarantine area on-site. Refer to Section 2.5 for procedures with regard to hazardous waste materials inadvertently delivered to the site.

As part of the site improvements programme unacceptable waste encountered in the new facility will be removed immediately to the waste quarantine area. This area will be labelled and dedicated to waste quarantine only. The non-acceptable waste and hazardous waste will be kept segregated from all other on-site operations. This area is likely to comprise of a bunded 4 m x 3 m x 0.5 m structure to prevent any uncontrolled discharge to ground.

(i) Waste inspection area

At present there are no formal procedures in place to inspect loads for hazardous and/or unacceptable material. However, all waste is inspected by IPODEC staff at the transfer area as trucks are unloaded to ensure that the contents conform with the general waste acceptance criteria at the site.

Following development of the site waste inspection will be conducted in accordance with recognised procedures which IPODEC has successfully implemented in its Dublin and Limerick Depots (EPA licensed).

At a minimum all vehicles entering the facility will be covered or enclosed and inspection of the waste will be conducted as emptied in the transfer building. Loads that are considered to have acceptable or non-hazardous waste present will be further processed.

In addition, the customer profiles and awareness program will ensure that minimal quantities of hazardous/unacceptable waste is received on-site.

(j) Traffic control

Traffic controls in place at the site include control of vehicular movements by a designated member of staff by way of a two-way radio system. Sight lines leading onto the site access road are adequate. All waste delivered to the site must pass over the weighbridge, thus ensuring control of vehicles entering and leaving the facility. The traffic control system that will be used on site is shown on Drawing D.1.2.

Further details on traffic controls are presented within Section 3.3.2.

(k) Services

Electricity

Electricity is used on site in the office area, canteen, garage, cardboard recycling baler and lighting of the facility. The annual usage of electricity for 2001 was 98,340kWh. The main consumption periods were the winter months with monthly averages of approximately 15,000kWh. The new infrastructure proposed for the site is likely to increase electricity consumption on-site. A new and larger baling machine with sorting line, a new weighbridge and improved lighting at the site will cause this additional consumption. The National Grid will easily meet this additional electricity consumption demand.

Water

Water is currently supplied from an on-site groundwater water well for supply to the truck washing area and on-site toilets. Details on this well are presented in Section 4.1.3.

It is proposed to connect to the local authority mains water supply by the end of 2002. This will supply all water requirements for the site including domestic, fire hydrant and cleaning requirements.

Telecommunications

The site is linked to the Eircom telecommunications network.

(l) Sewerage and surface water drainage infrastructure

Sewer - Existing

At present there are no discharges to foul sewer from the facility in Forge Hill. All domestic waste from the canteens and toilets pass through a septic tank and then into a soak pit located in the north-western corner of the site (*Drawing D.1.1*). Refer to Section 4.2 for additional details.

The truck wash effluent passes through a sediment and oil trap prior to discharge to the local authority storm water network.

Sewer – Proposed

It is proposed to link all wastewater discharges (i.e. domestic, truck wash and leachate discharges) to the local authority sewer line during the redevelopment of the site (refer to *Drawing D.1.3).*

Surface water drainage

At present, all surface water drainage from the facility is collected via a network of surface drains throughout the site (refer to *Drawing D.1.1*). This connects at a central manhole adjacent to the site entrance. This manhole discharges to a drain, which runs under Forge Hill to a manhole on the industrial site opposite the site. This ultimately discharges into the small stream, which is a tributary of the Tramore River.

The surface water emissions originate from surface water run off from hardstanding areas after a rainfall event and the treated effluent from the truckwash area. Further details on surface water drainage and site hydrology are presented within Section 5.1.

As part of current site improvements it is proposed to install a Class 1, full retention, interceptor for surface water discharges from the site. A drawing of the future surface water drainage infrastructure proposed for the site is detailed in *Drawing D.1.3.*

(m) Plant sheds, garages and equipment compound

Existing

The garage / workshop is used to service the IPODEC fleet of trucks. In addition damaged skips and all site plant are repaired in this area.

Plant used on-site is parked overnight on concrete covered areas of the site (refer to *Drawing D.1.1*). Plant associated with waste handling activities will all be enclosed upon completion of all site redevelopment. Plant associated with recycling activities (e.g. baler) continues to be enclosed within the main recycling/maintenance building.

Temporary

In order to provide enclosure for waste handling until the site is redeveloped IPODEC Ireland Ltd. has erected a temporary structure at the rear of the site. The structure comprises of stacked 40ft containers arranged at the back of the site, with a temporary cover provided by netting (refer to *Drawing D.1.1*).

Proposed

Drawings D.1.2 outline the proposed structural changes at the site. This involves the construction of a new residual waste transfer area to be attached to the east of the existing garage/recycling area. The garage will be decommissioned and used as part of the recycling infrastructure.

(n) Facility accommodation

Accommodation - Existing

The current offices are attached to the western end of the main warehouse/garage building. These contain all the communication and infrastructure requirements to maintain a fully functional office. In addition, an administration portacabin is situated towards to front of the site (refer to *Drawing D.1.1*).

Accommodation - Proposed

A new administration building is proposed for the site. This building will be positioned to the south east of the site (refer to *Drawing D.1.2*).

(o) Fire control

The fire control systems currently in place at the site include the provision of fire extinguishers, fire blankets and fire hoses within the garage, offices and recycling building. In addition, a fire standpipe is located on the main Forge Hill road which can be accessed should a fire occur on-site.

Additional components of fire control at the site include:

- General site precaution e.g. vehicle access control and traffic management
- Staff training and awareness in fire prevention and control
- Security measures to minimise risk of unauthorised entry and subsequent arson risk at the site.

In order to improve fire control procedures at the site measures to link the site to a nearby water main are currently in progress. It anticipated that this connection will be in place by the end of 2002. In conjunction with this connection two fire hydrants will be installed to serve the recycling building and in the future to supply the proposed materials recovery facility. This water main connection will ensure the delivery of an adequate supply of water to combat any fire event at the site.

A review of fire control will form a significant part of the emergency procedures that will be developed at the site in the event of a Waste Licence being issued. This review will include an agreed fire fighting strategy with the Chief Fire Officer for Cork.

(p) Civic amenity facilities

The general public are not allowed access to the IPODEC, Forge Hill site. Furthermore there are no civic amenity facilities at the site. IPODEC has no plans to have civic amenity facilities on site.

(q) Waste recovery infrastructure

Cardboard and newsprint waste streams are directed to the recycling building where they are sorted manually on a sorting line and baled. As part of current site improvements a new cardboard baler was installed at the site in June 2002 and a sorting line was installed in July 2002.

The site redevelopment presented as part of this EIS includes the design of a modern large scale Materials Recovery Facility (MRF).

Timber, metal and plastic is also recovered within the IPODEC Forge Hill site and forwarded to appropriate recycling operators.

(r) Other infrastructure

All current major infrastructure is outlined within this EIS.

2.4.2. Facility Operation

(a) Facility Operations Overview

IPODEC Ireland Ltd. at its facility in Forge Hill is involved in the collection of waste within the Cork area. Of the waste collected the majority (>75%) is transferred at the Forge Hill site. The remaining is transported from source to an authorised disposal facilities in the Cork area.

Attached is a flow diagram, (Figure 2.1) which presents the overall process at the IPODEC Cork site. Refer to *Drawing D.1.1* for details on locations of each of the main unit operations currently at the site (i.e. transfer area and recycling building).

Initial waste collection by IPODEC Ireland Ltd. incorporates a cursory check on all wastes collected to ensure conformity of agreements with individual clients. Upon entry to the Forge Hill site an individual waste docket is printed and recorded.

Waste accepted onsite is subsequently tipped within the transfer area for inspection. Checks are first made for hazardous wastes inadvertently contained within individual skips. Details on procedures for waste inspection are detailed in Section 2.5.

Existing situation

Currently non-recyclable waste is processed in an area to the east of the site.

All non-recyclable waste that arrives on-site is diverted to the temporary waste transfer area. Waste is then transferred to a transfer trailer (ejector trailer) using a grab machine.

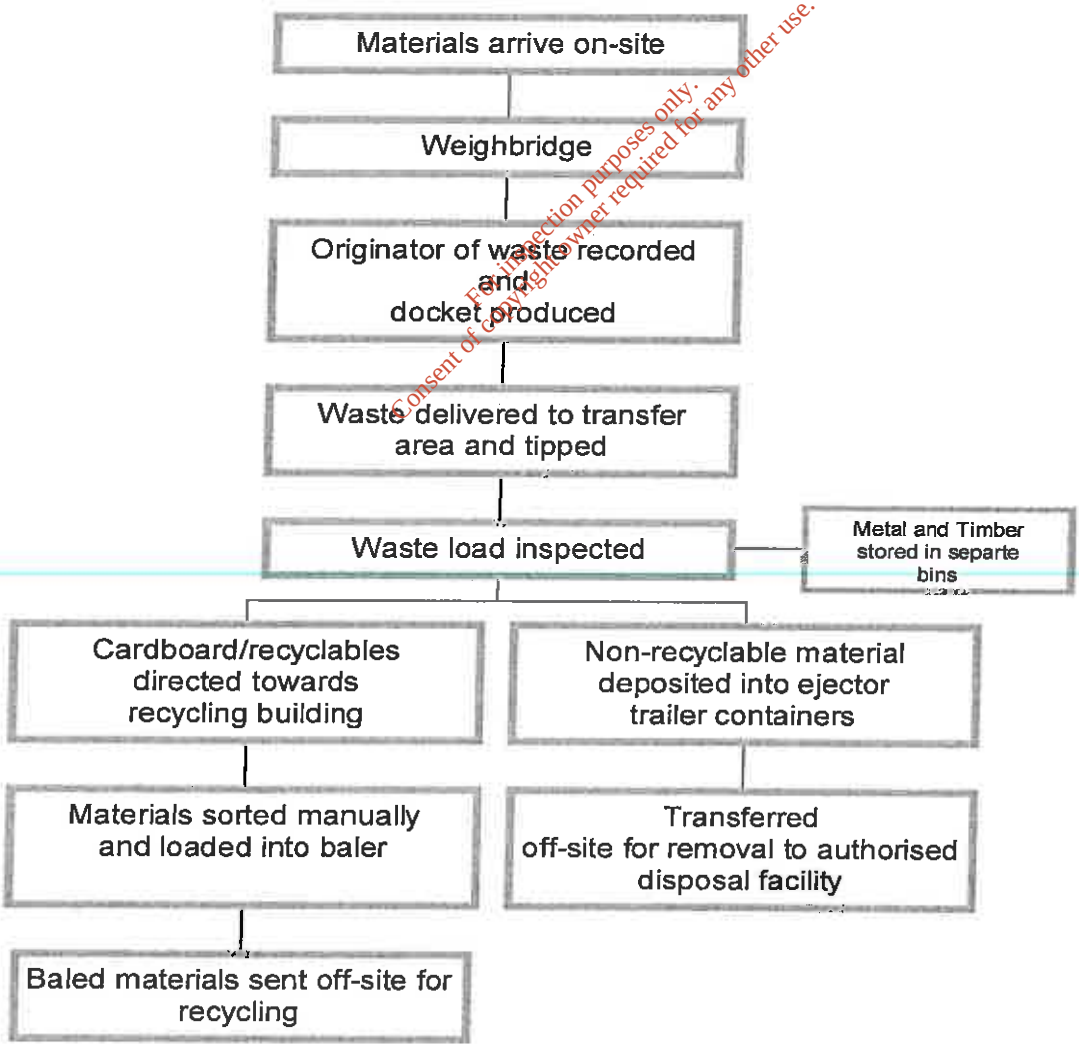
Once the transfer trailer is full it is removed off-site to an authorised waste management facility.

A schematic of the proposed layout and process is detailed in *Drawing D.1.4.*

Currently non-recyclable materials are transported to the following authorised waste disposal/transfer sites;

- IPODEC Ireland Ltd. - Waste Transfer Station, Ballymount Cross Dublin 24 (EPA Waste Licence Register No. 39-2)
- KTK Landfill Ltd. - Kilcullen, Co. Kildare (EPA Waste Licence Register No. 81-2)
- Cork City Council - Kinsale Road Landfill (EPA Waste Licence Register No. 12-1)
- Cork City Council - Rossmore Landfill (EPA Waste Licence Register No. 22-1)
- Cork City Council - Youghal Landfill (EPA Waste Licence Register No. 68-1)

Figure 2.1: Flow Diagram of Facility Operation



(b) Capacity of unit operations

The restriction on available landfill space within the Cork region has impacted significantly on the waste volumes entering the IPODEC site at Forge Hill. In order to transfer non-recoverable waste collected within the Cork area to authorised disposal/transfer routes it has become necessary to transport waste over increasing distances. As such, volumes delivered to the site have significantly increased over the last number of years and it is expected that this will further increase. Within the next number of years the annual waste intake to the site will reach 80,000 tonnes.

In order to deal with this increase in waste intake significant improvements have been undertaken at the site.

A new weighbridge, installed in June 2002 ensures that all wastes delivered and transferred from the site is accurately weighed and recorded.

A new baler with conveyer system and sorting line with significantly increased capacity has been installed to greatly speed up recycling operations. This system will form an integral part of the new MRF proposed for the site.

Overall, the proposed redevelopment of the site will ensure that all waste operations will be enclosed and will allow for greater efficiency and improved turn-around times for waste delivered to the site.

2.5. Waste Acceptance and Handling

2.5.1. Existing Waste Types and Quantities

IPODEC Ireland Ltd. transfer through its Forge Hill facility both commercial and industrial waste types. Hazardous waste is not accepted at the site. The list below describes these waste types that are currently accepted, for transfer and/ or recycling at the IPODEC facility. It is intended to continue to transfer this type of waste through the proposed MRF. The list is not exhaustive, however, it accounts for the vast majority of the waste types accepted or likely to be accepted (refer to Section 2.5.3 (d) for applicable EWC codes).

- Subsoil
- Topsoil
- Brickwork
- Stone, Rock and Slate
- Clay
- Natural Sand
- Concrete
- Pottery & China
- Wood & Wood Products
- Solid Road Plannings
- Solid Tarmacadam
- Solid Asphalt
- Paper & Paper Products
- Vegetable Matter
- Natural & Manmade Fibres
- Food stuffs
- Road Sweepings
- Ash & Cinders
- Plasterboard & Plaster
- Foundry Sand
- Sand Blasting residues
- Non-hazardous de-watered and filtered sludges (>20% solids)
- Solid, Fully Polymerised Plastics
- Solid Rubber (excluding tyres)
- Empty Container
- Glass
- Non-hazardous Ferrous and Non-Ferrous Metals
- Fridges
- Electronic Equipment (obsolete)

No liquid wastes are handled, stored on-site (temporarily or otherwise) or transferred through the facility. On occasions non-hazardous de-watered and filtered sludges are temporarily stored on site (>20% solids). The composition of wastes historically transferred through the IPODEC site in Cork included light plastic mixed with cardboard and minor quantities of timber and putrescible, non-recoverable waste. The trends in waste composition at the site during 2001 and 2002 have changed. Overall, 98% of the waste currently handled at the site derives from commercial and industrial sources. Only 2% of transferred waste is derived from domestic premises (mainly apartments).

Details on the quantities of waste transferred at the IPODEC site in Forge Hill are based largely on records issued from the final disposal routes and recycled material records. Prior to this EPA application there has been no means of accurately recording waste quantities at the site. A new weighbridge was installed at the site in June 2002 (refer to Section 2.4).

The percentage breakdown of the primary waste stream being delivered to the site is detailed in Table 2.1 as follows;

Table 2.1: Percent Breakdown of Primary Waste Stream at the IPODEC Site

Constituent	Percent
Metal	5%
Plastic	8%
Timber	9%
Cardboard	25%
Paper	15%
Miscellaneous	13%
C & D Waste	5%
Mixed non recoverable waste	20%

Table 2.2 presents details on the tonnages of waste that have been transferred through the IPODEC Facility at Forge Hill for 1998 to 2001 and as predicted for 2002 to 2005.

Table 2.2: Approximate Annual Tonnages of Waste Transferred at the IPODEC Site

Year	Tonnages
1998	4,250
1999	5,000
2000	5,000
2001	8,000
2002 (predicted)	~ 45,000
2003 (predicted)	~ 60,000
2004 (predicted)	~ 75,000
2005 (predicted)	~ 80,000

2.5.2. Proposed Waste Types and Quantities

As indicated in Table 2.2 there will be a significant increase in the amount of waste that will be transferred through the facility in the coming years. The reasons for this significant increase in throughput are detailed as follows;

- Landfill charges are increasing steadily, driving the requirement for more recycling.
- Quotas have been imposed at Kinsale Road and Rossmore landfills, hence, waste must be bulk loaded and hauled long distances for disposal.
- In line with improved infrastructure it is intended to increase the amount of recycling /recovery conducted at the site.
- Cork City and County are currently reviewing proposals for the siting of a new landfill. In the interim this will result in longer haulage distances to landfill as available capacity decreases in the Cork region. In any case the likely location of any new landfill will result in longer haulage distances to landfill. This EIS outlines the infrastructure that will be put in place at the IPODEC site to properly and effectively carry out this type of transfer operation.
- With these longer haulage routes the local authorities will need a facility capable of handling large quantities of waste effectively. This facility will be able to provide such an operation.

The increase in waste throughput at the Forge Hill site is reflected in waste records collated for January and February 2002 as outlined in Table 2.3 below. These records are indicative of the general increase in waste handling at the site. The total waste handled at the site is expected to rise further to a maximum of 80,000 tonnes per annum. The waste types delivered to the site are expected to largely conform with the general breakdown in waste currently delivered to the site.

Table 2.3: Monthly Tonnages of Waste Transferred at the IPODEC Site in 2002

Month	Tonnages
January	2,176
February	2,446
March	2,205
April	2,158
May	2,321
June	2,041

In addition, to the waste material transferred through the Forge Hill site IPODEC also carry significant quantities to landfill directly from client's facilities. Up to 2001 this was the predominant disposal route utilised by the company. The waste that now goes directly to landfill is either sludge or putrescible waste. It is noted that IPODEC Ireland Ltd. has applied to all relevant local authorities for waste collectors' permit as per the Waste Management (Collection Permit) Regulations 2001. It has been granted a permit to transfer, haul and collect waste in the Cork Region under permit CK WMC 10/01.

2.5.3. Waste Acceptance Procedures

All waste that is received at the site comes from existing IPODEC customers. New customers are subject to initial waste profiling. This profiling ensures that IPODEC are aware of the waste types that it will be receiving on-site before it arrives. This waste is predominantly collected by IPODEC waste collection vehicles (or by other commercial waste collection contractors who have approved access to the facility).

No public vehicles are allowed access to the site.

Waste is handled on-site during the following hours of operation.

- Monday to Saturday 7.00 to 19.30

Sunday emergencies only.

It is proposed to have the following hours of operation.

- Monday to Friday - 6.00 to 24.00
- Saturday - 6.00 to 18.00
- Sunday - 8.00 to 18.00

These extended times are required in order to provide efficient transfer of waste from the site and on-site recycling activities. Such operating hours facilitates long haulage of transferable waste and prevents build up of waste at the site. However, in practice actual waste acceptance to the site will occur from 7.00 to 19.30 during Monday to Friday and from 7.00 to 16.30 on Saturdays. The facility does not accept waste on Sundays except in emergencies. However, to ensure waste does not build up at the site waste handling and transfer activities may take place on Sundays.

The general waste types accepted at the facility are municipal waste, commercial and industrial non-hazardous waste. No liquid waste is accepted at the facility. The majority of the waste that is transferred at the facility is commercial and industrial waste. At present approximately 2% of the waste transferred at the site is derived from domestic waste sources. Minor quantities of C&D waste (<5%) are accepted on-site.

To date waste acceptance procedures at the IPODEC Forge Hill site were based on recording of waste origin, type and volume (i.e. skip or other). This was mostly conducted on the basis that all vehicles were owned or managed by IPODEC Cork and collections were based on a predetermined schedule. Waste arriving onto the site was delivered to the waste transfer area for inspection and further processing.

Given the significant increases in waste throughput at the site waste acceptance procedures will be modified to adequately record and manage waste delivered to the site. These proposed waste acceptance procedures are detailed as follows, which are similar to those utilised by IPODEC in its Dublin and Limerick facilities (EPA licenced facilities).

When the waste is collected a service docket will be filled out and signed by the customer confirming collection. All waste that arrives on-site will be weighed on the weighbridge, checked that the load is covered or enclosed, and documented. In addition, the originator of the waste will be recorded. Dedicated software will be used for the recording of weights. This information will be stored on a database, which will also provide the date, time, origin and quantity of waste. Both collection and weight dockets will be subsequently matched and filed for billing and archiving.

In the event that a load is uncovered the vehicle will be refused access. This procedure applies to all commercial vehicles other than IPODEC vehicles, as all IPODEC drivers are aware of the requirements to cover loads. The time, vehicle registration and carrier of the rejected load will be recorded. If the load returns covered this will be subsequently processed through the facility.

Once weighed the weighbridge operator will direct the load to the appropriate area. As all vehicles entering the facility will be covered or enclosed, inspection of the waste cannot be conducted until the vehicles are emptied in the unloading area (currently the transfer area). Within the unloading area the driver will be directed, by the Yard Supervisor, to the most appropriate location within the building for maximum efficiency of handing and recovery of the waste.

Once deposited on the floor of the proposed waste transfer area, the yard supervisor will inspect the load. Following this visual inspection the load will be processed for disposal or recovery. The efficiency of this process will be significantly improved with the construction of the proposed MRF, Residual Waste Transfer Building.

Any materials that are of a suspect nature (i.e. hazardous or not acceptable at the facility) will be diverted to a waste quarantine area for further examination and processing. The identity of the driver and source of the waste will be established. The customer responsible for the waste item will be informed and given the option to collect the waste from the site and arrange for correct disposal. Alternatively IPODEC will arrange for the collection and safe disposal of the waste in question and invoice the customer responsible. Records of this unacceptable waste will be maintained and the customer will be informed that such wastes are not acceptable at the Forge Hill site. It is noted that the delivery of hazardous waste and/or unacceptable waste types to the IPODEC Forge Hill site is very infrequent.

Clean cardboard, paper, timber, and metal will be removed to the appropriate location for recycling purposes. Non-recyclable waste will be stockpiled within the building prior to bulk loading for removal off-site.

2.5.4. Waste handling

Historically the waste that arrived at the facility was described as either recyclable or non-recyclable. The description of a load dictated where the load was brought to on-site i.e. transfer area or to recycling area.

Given the significant increases in waste throughput at the site waste handling procedures have been modified to manage waste delivered to the site. Current arrangements, whereby waste handling operations are conducted externally are temporary. IPODEC Ireland Ltd. are committed to the redevelopment of the site to ensure efficient and enclosed handling of waste.

(a) Non-Recyclable Waste

Existing situation

Currently non-recyclable waste is processed in an area to the east of the site.

All non-recyclable waste that arrives on-site is diverted to the temporary waste transfer area. Waste is then transferred to a transfer trailer (ejector trailer) using a grab machine.

Once the transfer trailer is full it is removed off-site to an authorised waste management facility.

Future situation

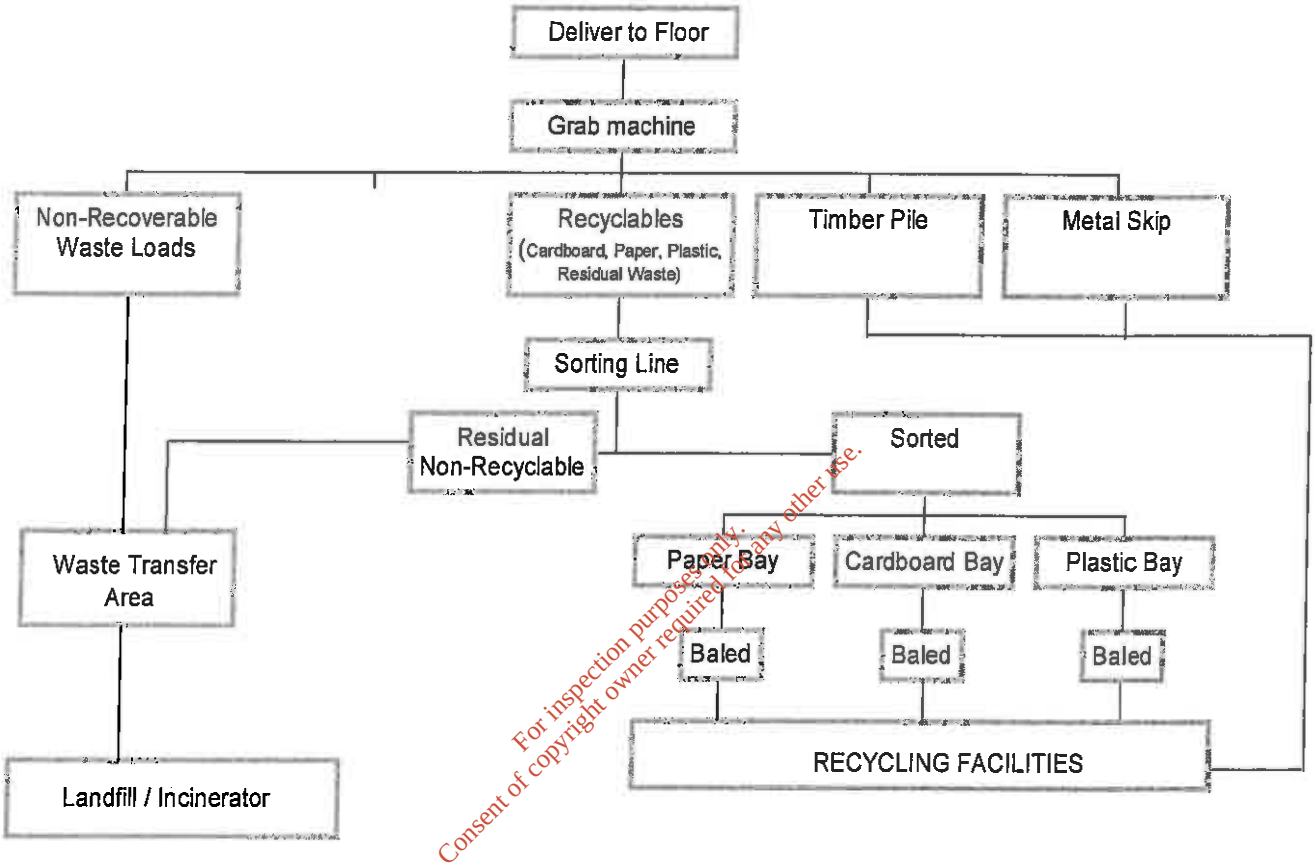
Drawing D.1.4 presents an overview of the process operations for the proposed MRF building. Waste will be delivered to the new waste transfer area (i.e. tipping and storage area) where it will be tipped and inspected as detailed in Section 2.5.3. Accepted waste will be transferred to the intake conveyer where it will be conveyed via a sorting line. Recyclables will be manually segregated from the waste mass and transferred onto the sorting line and baled. Waste remaining at the end of the MRF conveyer (i.e. residual waste) will be delivered to the residual waste transfer area where it will be transferred to an ejector trailer. A flow diagram of the waste procedures upon delivery to the new transfer area is presented overleaf (Figure 2.2). Non-recyclable loads will be tipped directly to the waste transfer area.

The weighbridge operator will record the weight and destination of the non-recyclable material. The hours of operation will change as discussed earlier for the proposed redevelopment.

Due to the hours of operation at the landfill, it may not possible to clear the floor of the transfer area at the end of every day. However, no non-recyclable waste will remain on-site for more than 56 hours. Every evening a transfer trailer will be loaded with this waste. This transfer trailer on occasions will remain on-site overnight prior to dispatch, to the landfill site, the following morning, with the exception of Sundays. It is emphasised that these operations will be conducted within an enclosed area.

The only other area where non-recyclable waste is processed will be in the recycling building. Any residual waste from this process will be transferred to the waste transfer area at the end of the day and bulk loaded into an ejector trailer. Non-recyclable loads will be tipped directly to the waste transfer area.

Figure 2.2: Flow Diagram of Proposed Transfer and Recycling Operation



(b) Recyclable Waste

Existing situation

Currently recyclable loads are directed to the recycling area. Here loads are tipped onto the sorting floor where the cardboard is manually separated on a sorting line before being tipped into the cardboard baling machine. Once all the recyclable cardboard has been separated the remainder of the waste (non-recyclable) is transferred to the transfer area. In the event that the floor of the recycling area is full the recyclable loads are stored in sealed containers on the asphalt surface outside the door of this area.

There are five solid waste types that are considered to be recyclable at the IPODEC facility:

- Cardboard
- Metal
- Timber
- Plastic
- Newspaper

Clean uncontaminated cardboard is removed from any waste loads that are deposited on the recycling area floor. The cardboard is loaded onto a conveyer belt that feeds a baler. The baled cardboard is subsequently stored outside prior to removal to a recycling companies in Ireland, UK and Northern Ireland.

Any metal delivered to the site is placed in a dedicated bin for transfer to a local metal recycling company.

All timber is sorted from incoming loads and stockpiled on-site prior to being bulk loaded and transported off-site to a timber recycling facility.

Plastic delivered to the site has been segregated at source and is stored on a hardstanding area on-site until sufficient quantities are available for transportation to a recycling facilities in Northern Ireland and the U.K.

Newspaper is collected from Bring Banks located throughout Cork City and County. The paper is tipped on the floor and bulk loaded to recycling facilities in Ireland and Northern Ireland.

Future situation

Mixed recyclable waste delivered to the proposed MRF will be loaded onto a conveyer system where waste will be manually segregated. It is anticipated that the recyclable categories and the general approach described above will remain. Paper, plastic and cardboard will be delivered to a large capacity baler which will be located within the western section of the MRF building. Paper will continue to be bulk loaded.

The weighbridge operator will record the weight and destination of the recyclable material.

(c) Hazardous or Unacceptable Waste

At present there are no procedures in place to inspect loads for hazardous and/or unacceptable material. However, IPODEC staff at the transfer area inspects all waste as trucks are unloaded to ensure that the contents conform with the general waste acceptance criteria at the site. In addition, the transfer documentation requires the customer to clearly outline the contents of the waste.

The Yard Supervisor will be familiar with the wastes acceptable at the facility and will follow the following procedure when suspect waste is identified.

In the event of hazardous waste or non-acceptable waste been deposited on the floor of the transfer area it will be removed immediately to the waste quarantine area. The yard supervisor will notify the operations manager or environmental officer as soon as possible. The producer of the waste will be identified and informed and the incident will be photographed, logged and recorded. The waste will then be removed off-site by the hazardous waste contractor who must also provide a C1 form, if applicable.

Batteries and florescent tubing inadvertently delivered to the site will be stored within dedicated receptacles within the waste quarantine area.

Fridge units containing fluorocarbon mixtures will be stored within a dedicated 40-foot container in the north-east corner of the site. These units will be stored prior to transfer off-site for processing. In the future IPODEC Ireland Ltd. may utilise a mobile plant for de-manufacturing refrigeration units. This mobile will be licensed in the appropriate manner.

Electronic equipment will be removed from loads and stored prior to removal off-site to a licensed disposal/recycling facility.

(d) EWC Codes

The principal process streams associated with waste operations at Forge Hill are outlined in Figure .2.2 and described below. Table 2.4 details all of the wastes accepted at the site and assigns each waste category an individual European Waste Catalogue (EWC) code.

All process streams are non-hazardous.

Profiles of the waste generated by each customer on-site are retained on the IPODEC Database. This profiling is based upon the European Waste Catalogue and Hazardous Waste List with the amendments made by the EPA included. These customer profiles enable IPODEC to assess the loads and make the decision as to the ultimate destination of the waste.

Table 2.4: EWC Codes for Waste Accepted at IPODEC Cork

Ewc Code	Waste Type
01 04 01	Waste gravel and crushed rocks
01 04 02	Waste sand and clays
02 01 04	Waste Plastics (excluding packaging)
03 01 01	Waste bark and cork
03 01 02	Sawdust
03 01 03	Shavings, cuttings, spoiled timber/particle board/veneer
07 05 12	Sludges from on-site effluent treatment
15 01 01	Paper and cardboard
15 01 02	Plastic
15 01 03	Wooden
15 01 04	Metallic
15 01 05	Composite packaging
15 01 06	Mixed
16 01 05	Light fraction from automobile shredding
16 03 01	Inorganic off specification batches
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and ceramics
17 01 04	Gypsum based construction materials
17 02 01	Wood
17 02 02	Glass
17 02 03	Plastic
17 04 01	Copper, bronze, brass
17 04 02	Aluminium
17 04 03	Lead
17 04 05	Iron and Steel
17 04 06	Tin
17 04 07	Mixed metals
17 04 08	Cables
17 05 01	Soils and stones
17 05 02	Dredging spoil
17 06 02	Other insulation materials
17 07 01	Mixed construction and demolition waste
18 01 04	Wastes whose collection and disposal is not subject to special requirements in view of the prevention of infection (e.g. dressings, plaster casts, linen, disposable clothing, diapers).
20 01 01	Paper and cardboard
20 01 01 01	Packaging
20 01 01 02	Newspapers and brochures
20 01 01 03	Magazines and glossy papers
20 01 01 04	Other papers
20 01 01 05	Flat packaging cardboard
20 01 01 06	Corrugated packaging board
20 01 01 07	Other cardboards
20 01 01 08	Cardboard composite packaging
20 01 01 09	Liquid packaging Al
20 01 01 10	Liquid packaging non-Al
20 01 01 11	Other composite packaging

Table 2.4 (cont.) EWC codes for waste accepted at IPODEC Cork

EWC CODE	WASTE TYPE
20 01 02	Glass
20 01 02 01	Green glass packaging
20 01 02 02	Clear glass packaging
20 01 02 03	Brown glass packaging
20 01 02 04	Other glass waste
20 01 03	Small plastics
20 01 03 01	Mixed flexible plastic
20 01 03 02	Clear PVC bottles
20 01 03 03	Clear PET bottles
20 01 03 04	Mixed rigid plastic
20 01 03 05	Opaque PVC jars and bottles
20 01 03 06	Green PET jars and bottles
20 01 03 07	Brown PET jars and bottles
20 01 03 08	PE bottles
20 01 03 09	Supermarket bags
20 01 03 10	Other plastic packaging
20 01 04	Other plastics
20 01 05	Small metals (cans, etc.)
20 01 05 01	Ferrous metal packaging
20 01 05 02	Other ferrous metal waste
20 01 05 03	Aluminium packaging
20 01 05 04	Other aluminium waste
20 01 05 05	Other metal packaging
20 01 06	Other metals
20 01 07	Wood
20 01 08	Organic compostable kitchen waste (including frying oil and kitchen waste from canteens and restaurants)
20 01 09	Oil and fat
20 01 10	Clothes
20 01 11	Textiles
20 01 11 01	Packaging
20 01 11 02	Other textiles
20 01 11 03	Health care textiles
20 01 16	Detergents
20 01 20	Batteries
20 01 24	Electronic equipment (e.g. printed circuit boards)
20 01 25	Unclassified combustibles
20 01 25 01	Wood packaging
20 01 25 02	Other combustible packaging
20 01 25 03	Other unclassified combustibles
20 01 26	Unclassified incombustibles
20 01 26 01	Unclassified incombustible packaging
20 02 01	Compostable wastes
20 02 02	Soil and stones
20 02 03	Other non-compostable wastes
20 03 01	Mixed municipal waste

2.5.5. Raw materials and energy

Bale wire is used for the production of cardboard bales. No other packaging materials are consumed on-site.

The baler and sorting link are currently run off a generator. All lighting and offices electrical supply is derived from the main supply.

The combined electrical consumption for the site is approximately 100,000 kW-hr/year.

Chemical usage is minimal at the site and is restricted to the following:-

- Insecticide
- Rodenticide
- Alkaline detergent used within the truck wash.

Engine oil is used on-site for plant equipment (i.e. grab, forklift) and the IPODEC truck fleet (operating out of the Forge Hill site). Hydraulic oil is used and stored on-site in a 300 gallon tank. The plant machinery consumes approximately 35 litres of hydraulic oil per month. Low volumes of waste oils are generated at the site (typically less than 400 litres per annum). These waste oils are taken from the site for appropriate and authorised off-site disposal by Atlas oil.

The chemical component of the odour suppression system proposed for the new materials handling and recycling building is composed of a proprietary blend of food grade emulsifiers and plant extracts in an aqueous solution.

Solid waste generated at the site is largely restricted to office waste e.g. paper. The recyclable portion of this waste is delivered to the recycling plant. The quantity generated is less than 1 tonne per annum.

2.5.6. Plant

Details on all plant used on-site is given below:

- 1 No. Forklift (weight capacity 2 tonnes)
- 1 No. JCB with loading shovel
- 1 No. Hymac with loading grab
- 1 No. Hopper and baler

- 3 No. 45 foot cubic yard container
- 1 No. Weighbridge
- 1 No. Baler (higher capacity)
- 1 No. Sorting line

Additional plant proposed for the site includes:

- 1 No. Sorting line

3. HUMAN BEINGS

3.1. Human Beings in the Existing Environment

The site is situated in the Forge Hill Area, off the Kinsale Road, of Cork (E1669, N 0687), an area zoned for industrial development. The nearest residential property is located 90 m to the north-west of the entrance on the Forge Hill Road. It has however no direct line of site to the site activities. The Forge Hill Road is a main distributor road for the industrial developments in the area and is used constantly by heavy goods vehicles. There are no other sensitive receptors within 500m or in the immediate vicinity of the site (i.e. hospitals, churches or schools).

This section examines the effects of the IPODEC waste management operations on human beings and the measures proposed to mitigate potential impacts. The main areas to be examined with respect to the potential effects are noise, traffic and air (incorporating dust and odour nuisance). Other areas that potentially directly impact on human beings are detailed in separate sections of the EIS and are outlined as follows;

- Water quality - Sections 4 and 5
- Cultural heritage and material assets - Sections 7 and 11 respectively.

3.1.1. Noise

Noise assessments at the Forge Hill site have been conducted at perimeter locations and at the nearest noise sensitive location (NS1). The locations of sampling points are presented on *Drawing J.1.1*. An overview of noise monitoring events conducted to date are detailed in Table 3.1. Refer to *Appendix C* and *Appendix D* for consultant noise reports.

Table 3.1: Noise Assessments Conducted to Date

Date	Period	Consultant	Conditions
May 2000	Day	AWN Consulting (refer to Appendix C)	Dry light wind speeds - significant traffic levels
Sept 2001	Day	RPSES Ltd. (refer to Appendix D)	Dry light wind speeds - significant traffic levels
March 2002	Day	FTC	Dry light wind speeds - significant traffic levels
March 2002	Night	FTC	Dry light wind speeds - significant traffic levels

Within the facility there are two principal noise sources namely, a grab machine and an on-site baler.

The grab machine exhibits low frequency components consistent with engine and exhaust frequencies. During normal operations the unit exhibits components at 100, 160 and 200 Hertz. The unit exhibited operating levels that varied from an idle of 72 dB(A) to an operating level of 82 dB(A) (reference 5m). In general the grab machine was not audible at the boundary measurement locations with the exception of the rear boundary (B4).

The baler is fixed and exhibited dominant frequencies at 800 Hertz. An associated hydraulic pump generated this moderate tone. The unit exhibited an operating level noise level of less than 67 dB(A) and is thus audible within the recycling building or close to open doors.

The results of ambient noise measurements conducted to date at the IPODEC site are summarised in Table 3.2 (daytime measurements) and Table 3.3 (night-time measurements).

Table 3.2: Summary Results of Daytime Noise Measurements conducted at the IPODEC Site

Ref. No.	Description	L_{eq}			L_{10}			L_{90}		
		May 00	Sept 01	Mar 02	May 00	Sept 01	Mar 02	May 00	Sept 01	Mar 02
B1	South Boundary	56.3	60.4	60.4	58	58	63	47	51	53
B2	West Boundary	61.6	64.5	59.0	65	64	62	48	49	51
B3	North Boundary	49.2	58.9	63.9	51	55	66	41	47	53
B4	East Boundary	64.1	59.6	54.7	68	59	57	49	47	50
NS1	Noise Sensitive	70.2	75.0	69.3	74	74	73	51	53	58

The results demonstrate that noise levels measured at all locations are above the daytime limits typically stipulated by the EPA of 55 dB(A). However, measurements to date have concluded that noise emanating from sources within the site were not significant contributors to the noise levels recorded at boundary locations. In particular, the ambient noise levels recorded at the nearest residence (NS1), located approximately 90m north of the site, were higher than levels recorded at the boundary locations. The principal contributor to all noise levels recorded as part of these assessments was determined to be traffic noise. This was demonstrated by the L_{10} results obtained, which indicated significantly higher noise levels for 10% of the measurement period that principally resulted from traffic noise. It is further noted that traffic entering and leaving the IPODEC facility was not significant relative to the overall traffic levels on Forge Hill Road.

It can, therefore, be concluded that the reason for the elevated noise levels recorded was resultant from noise sources other than the IPODEC waste operations. In particular, traffic noise was determined to be the principal contributor to the levels observed at the nearest noise sensitive location. Furthermore, noise emanating from the IPODEC site was not clearly audible at this location.

Table 3.3: Summary Results of Night-time Noise Measurements conducted at the IPODEC Site (March 2002)

Ref. No.	Description	Time	L_{eq}	L_{10}	L_{90}
B1	South Boundary	06.50 - 07.05	60.3	61	55
B2	West Boundary	06.30 - 06.45	54.6	57	47
B3	North Boundary	07.10 - 07.25	52.1	56	44
B4	East Boundary	07.30 - 07.45	56.8	59	51
NS1	Noise Sensitive	06.10 - 06.25	62.0	61	45

Night-time measurements were conducted on the 21st of March 2002 at 15 minute intervals between 06.00 and 08.00. Significant levels of birdsong along with commuter traffic contributed to the elevated noise levels recorded. An increase in the levels of noise generated at the site was notable from 07.00 onwards. This increase is negated by the significant increase in traffic noise generated on the Forge Hill road from 07.00 onwards, as demonstrated by the increased noise levels at B2 located to the front of the site and not subject to significant noise levels generated by the site (i.e. elevated L_{10} result of 57dB(A)).

3.1.2. Traffic

The IPODEC Materials Handling and Recycling site is accessed directly from the Forge Hill Road, which is a main distributor road in the area for industrial premises. Primary access to Forge Hill itself is directly off the nearby Southern Ring Road (N28) or Kinsale Road (N27). The traffic on the Forge Hill Road is typical of an industrial area.

Traffic count surveys were conducted on two occasions at the entrance to the IPODEC site and the Forge Hill road. The first survey was conducted in May 2000 followed by a repeat survey in March 2002. The overall results of the traffic count surveys are presented in *Appendix E.* Traffic count results are presented as annual average daily traffic (AADT) calculated from standard expansion factors determined by the National Roads Authority.

Traffic Survey - May 2000

Technical personnel from IPODEC Ireland Ltd. conducted a traffic survey at the entrance to the site on Tuesday the 16th of May 2000. The survey was taken over an eleven-hour monitoring period. In addition, to calculating the annual average daily traffic (AADT) for the road the survey also allowed the principal road traffic to be compared with the traffic levels entering and leaving the facility. The results of the May 2000 traffic survey indicated that the annual average daily traffic (AADT) for the road was 7,400 (based on expansion factors issued by the NRA). The traffic count comprised mainly of cars (73.7% of the total AADT), light goods vehicles (LGVs) (7.3% of the total AADT) and heavy goods vehicles (HGVs) (19% of the total AADT). The remainder comprised of pedal bike and motorbike passes.

The directional movement of traffic on the Forge Hill Road was evenly distributed. During the survey 47.9% of vehicles were travelling in a southerly direction towards the Kinsale Road (N 27) while, 52.1% travelled in a northerly direction towards the Southern Ring Road (N28). The trend in the levels of traffic on the road is as would be expected with peak levels occurring during the rush hours (i.e. 08.00 to 09.00 hrs and 16.30 to 17.30 hrs).

Traffic counts relating to vehicular movements from the IPODEC site were also recorded. Results indicate that a total of 205 vehicles were recorded entering and leaving the site. This figure represents only 3.8% of the total traffic (5,371) recorded during the survey on the Forge Hill road. Of this 75% were HGVs associated with the IPODEC site.

Traffic Survey - March 2002

FTC conducted a follow-up traffic survey on Thursday the 7th of March 2002. This survey was conducted in order to assess changes, if any, in traffic patterns on the Forge Hill road since the May 2000 survey.

Traffic counts were taken in accordance with guidelines issued by the National Roads Authority (NRA). Four count periods, lasting 1.5 hours, were set according to expansion factors for short period traffic counts from 08.30 hrs to 18.00 hrs. In addition, to calculating the annual average daily traffic (AADT) for the road the survey also allowed the principal road traffic to be compared with the traffic levels entering and leaving the facility. The results of the March 2002 traffic survey indicate that the existing annual average daily traffic (AADT) for the road is 8,162. The traffic count comprised mainly of cars (74% of the total AADT), light goods vehicles (LGVs) (18.6% of the total AADT) and heavy goods vehicles (HGVs) (5.8% of the total AADT). The remainder comprised of pedal bike and motorbike passes.

The directional movement of traffic on the Forge Hill Road was evenly distributed. During the survey 46.6% of vehicles were travelling in a southerly direction towards the Kinsale Road (N 27) while, 53.4% travelled in a northerly direction towards the Southern Ring Road (N28).

Traffic counts relating to vehicular movements relating to the IPODEC site were also recorded. Results indicate that a total of 124 vehicles were recorded entering and leaving the site. This figure represents only 3.9% of the total traffic (3,205) recorded during the survey on the Forge Hill road. Of this 75% were HGV's associated with the IPODEC site.

A review of the statistics collated from the May 2000 and the March 2002 traffic counts indicate the following general trends;

- The calculated AADT results indicate a 9% increase in traffic volume on the Forge Hill road.
- The breakdown in vehicle types indicate similar composition of cars (i.e. 73% vs. 74% from May 2000 to March 2002, respectively). Differences in the ratio of light to heavy goods vehicles noted may be attributed to different classification used during the two surveys. Overall, similar levels of goods vehicles 25.3% and 22.4% (light and heavy) were recorded during the May 2000 to March 2002 surveys, respectively

- The overall traffic patterns noted in March 2002 did not significantly change from those recorded in May 2000. The directional movement of traffic remained similar as did the overall composition of vehicles moving on this urban commuter route

- The contribution of traffic associated with the IPODEC site to the traffic surveyed on the Forge Hill road, indicated similar percent levels between the two surveys (i.e. 3.8% vs. 3.9% from May 2000 to March 2002, respectively). Similar to the overall increase in traffic noted on the Forge Hill road this count represents an overall 9% increase in traffic entering and leaving the IPODEC site.

3.1.3. Air

The air quality of the site and the surrounding environs may be affected by the following factors:

- Odour
- Dust
- Weather conditions.

Weather conditions and climate are discussed in a Section 6 of this EIS .

3.1.3.1. Odour

Odour is a significant form of air pollution in that it can be perceived through the sense of smell that we all possess. It is the sensation generated by the interaction of volatile compounds on the olfactometric nerves located in the nasal passage. Odours can be divided into offensive and non-offensive smells. Malodour is the most 'visible' indicator of environmental pollution and increasingly is becoming unacceptable to the general public. However, it should be noted that non-offensive odours could also become a significant source of nuisance if they persist. Thus both offensive and non-offensive odours can cause nuisance.

It is important to realise that odour nuisance is essentially a statistical problem and at any particular point, (e.g. outside a site boundary) the concentrations of odour, and, even more so, the perceived nuisance will vary irregularly over a wide range. It may well be impossible, in any remotely economic way, to ensure that a nuisance never occurs, even rarely and over very short periods. Consequently, the most reasonable approach is to aim below the nuisance threshold for a high percentage of the time, say 99%, and to exceed it only modestly for the remaining 1.0%.

With regard to air emissions, the Air Pollution Act 1987 and it's associated Licensing of Industrial Plant Regulations 1988, have been the main statutory provision for the control of air pollution in this country. The pertinent sections of the Air Pollution Act includes section 24(1) which requires *"the occupier of any premises, other than a private dwelling"* to *"use the Best Practicable Means to limit and, if possible, to prevent an emission from such premises"*. An emission is defined as *"an emission of a pollutant into the atmosphere"*(Sec 7) and a subsequent amendment to the act altered the definition of *pollutant* to include *"a substance which gives rise to odour"*. Therefore the implication is that the Best Practical means must be employed to control odours.

Any odour discharged into the atmosphere is carried along by the wind and diluted by the turbulence that is always present in the atmosphere. This dispersal process is dependent upon several factors including the odour concentration, odour emission rate, meteorological conditions (i.e. wind speed, ambient temperature, precipitation) and surrounding topography. In general the higher the windspeeds the more likely the odours are to be dispersed to such a degree that offsite odour episodes are minimised. The worse case scenario from a dispersion point of view is when temperature inversion at ground level occurs. This is caused at night-time by radiational cooling of the ground, which in turn cools the air near it. Consequently, little or no vertical mixing of the atmosphere occurs. However, horizontal crosswinds will be maintained to some extent due to fluctuations in wind directions and this can result in high odour concentrations being detected at surprisingly large distances from the source.

At the IPODEC facility the main waste stream is commercial waste. 80 - 85% of this waste is non-putrescible and will not generate odours. The putrescible waste however, depending on the length of time it is putrefying before collection can generate significant odours. Until a waste load is deposited in the waste transfer area there is no way of telling how odorous it is or how much putrescible waste is present. As a result short-term odours may be emitted from the site when loads containing such waste are deposited.

3.1.3.2. Dust

All dust emitted from the IPODEC facility can be described as fugitive (i.e. there are no point sources of dust emissions). The sources of dust are from the transfer area when waste loads are deposited and the hardcore areas where the empty waste skips are stored. Dust generated in the transfer area is as a result of the nature of the waste deposited in the building. The dust generated from the hardcore areas is as a result of the truck movements on and off these areas.

A series of dust deposition monitoring programmes have been carried out at the Forge Hill site using Bergeroff dust gauges. The results of the investigations are summarised in Table 3.4 below. The locations of the dust sampling points are illustrated in *Drawing J.1.1.*

Table 3.4: Results of Dust Deposition Monitoring

Sample ID	Description	May 2000	October 2001	March 2002
		Dust Concentration $mg/m^2/day$	Dust Concentration $mg/m^2/day$	Dust Concentration $mg/m^2/day$
ST-1	SW Corner	27.0	398	282
ST-2	NW Corner	81.1	117	371
ST-3	NE Corner	54.0	101	413
ST-4	SE Corner	81.1	101	255

The typical dust deposition limit set by the Environmental Protection Agency is 350 $mg/m^2/day$ (as specified by TA Luft Guidelines). The limit set by the waste permit issued to IPODEC at Forge Hill by Cork County Council is 250$mg/m^2/day$. A comparison of dust deposition results obtained from the first sampling event in May 2000 to the second in October 2001 indicates an apparent increase in dust concentration. In particular, a dust concentration of 398 $mg/m^2/day$ is above the stipulated guidelines. The reason for the apparent increase in dust deposition concentrations may be linked to increase in waste throughput to the site.

Results of monitoring conducted during March 2002 indicated a further increase in dust deposition at the 4 No. monitoring locations. Results obtained from ST-2 and ST-3 were above the stipulated TA Luft guidelines. The elevated concentration recorded at ST-2 to the north west of the site was probably associated with construction activities on the Forge Hill road adjacent to the IPODEC site. It is noted that a clearance and reorganisation of the north east corner of the site is likely to have contributed to the elevated results obtained at ST-3. Overall, however, the results are likely to be linked, in part, to the increase in waste throughput at the site.

A total suspended particulate study was carried out by Bord na Móna Environmental Ltd in May 2000. This was carried out in accordance of the requirements of Article 10(2) of the EU Directive 80/779. The results of the investigation are detailed in Table 3.5 below (refer to *Appendix F* for relevant report). The sampling locations used were as those outlined in the Dust Deposition Monitoring Study.

Table 3.5: Results of Total Suspended Particulate Assessment

Sample ID	Description	Total Suspended Particulates mg/m^3
TSP-1	SW Corner	< 0.02
TSP-2	NW Corner	0.04
TSP-3	NE Corner	< 0.03
TSP-4	SE Corner	< 0.03

The European 24hr PM10 limit value for TSP's, as determined using the OECD Gravimetric Method is 300 µg/m^3. The dust levels determined were all in compliance with these limits.

3.1.4. Nuisance

3.1.4.1. Vermin

The nature of certain fractions of waste transferred through the facility, in particular putrescible waste, is such that they provide a food source for vermin. In particular, nuisance vermin in the form of birds, rodents and insects are likely to be drawn to such food sources present at the site. The vermin control system currently in place is successful in minimising vermin at the site.

3.1.4.2. Litter

Windblown litter deriving from waste delivered and handled at the site has the potential to cause a significant nuisance problem and negatively impact on the aesthetics of the site and environs.

The greatest potential for litter is in the region of the transfer area where waste is segregated to the recycling plant or delivered to an ejector trailer.

3.2. Potential Impacts on Human Beings

3.2.1. Noise

The results of the survey carried out determined that the activities on-site are not audible at the nearest noise sensitive location. Furthermore, it was established that the passing traffic on the Forge Hill Road is the primary contribution to noise in the area.

Noise will be generated during the construction works. The major construction works will be undertaken at the rear of the site and is removed from nearby residents. However, this will be a short-term impact and is not considered to be significant.

It is considered that the future noise levels emanating from the proposed new developments at the site will not create a nuisance at the nearest noise sensitive location. No significant impact with regards to noise is anticipated however, the increased traffic movement on-site and activity of plant equipment will cause the noise levels at the boundary of the facility to increase. Given the setback between the facility and the nearest noise sensitive location it is unlikely that the operations at the site will be audible.

Furthermore, all future waste handling operations, will ultimately be enclosed and will further attenuate noise from the site.

The direct impact from noise generated at the site is considered minimal in terms of the overall noise levels in the area. Indirect contributions associated with traffic entering and leaving the site may have a marginal impact on noise levels, however, given the relatively low contribution to traffic overall levels on the Forge Hill road, this is considered negligible. Any noise derived from IPODEC activities will be short-term and will not have any long-term impacts. Finally, it is concluded that the traffic on the Forge Hill Road will remain the main contributor to the elevated ambient noise levels at this location.

3.2.2. Traffic

The potential significant impacts as a result of the traffic associated with the current and proposed activities include air pollution as a result of the exhaust emissions, litter pollution as a result of litter falling from moving vehicles, noise and traffic congestion in main road networks.

The results of the traffic surveys carried out and detailed in Section 3.1.2 illustrate that the current level of activity entering and leaving the site is minor when compared with the overall traffic levels on the Forge Hill Road. With the proposed development of the site the number of vehicles serving the site will increase from the current maximum levels of 20 - 22 traffic movements per hour up to 36 - 38 movements per hour (based on 80,000 tonnes of waste throughput per annum). The percentage contribution by the IPODEC facility to the traffic will remain minor in an overall context, at about 5 – 7%. Furthermore, it is anticipated that the majority of the vehicles entering and leaving the site will be doing so outside of peak hours, thus minimising any impact that the additional traffic may have.

Construction at the site will also result in increased traffic movements to the site. The impact will be short-term (i.e. for the duration of the construction works) and will not be significant.

The increase in traffic volumes as a result of increased waste intake to the site must also be assessed in relation to another proposed waste management facility to be located across the road from the established IPODEC site. This facility will have the capacity to handle 100,000 tonnes per annum. Traffic evaluations indicate a reported 2% increase in traffic movements on the Forge Hill road as a result of this facility, when fully operational. Therefore, the cumulative impact on traffic volumes as a result of increase in traffic volumes from the existing IPODEC site and the proposed adjacent site can be assessed. Overall, the two facilities will result in approximately 5 – 6% increase in traffic movements on the Forge Hill road. It is considered that the Forge Hill carriageway has sufficient traffic carrying capacity to absorb this increase and highway safety will not compromised. These developments should also be viewed in the context of road improvement schemes in the area. Significantly, the proposed upgrade of the Kinsale Road roundabout which is currently heavily congested, to include a flyover conveying traffic on the N25 directly onto the Cork South Ring, will result in less traffic using the Forge Hill road as a by-pass route.

With the likely development of a new landfill outside Cork City there will be a need to transfer the waste over long distances. Thus, the proposed redevelopment by IPODEC of its current site will allow larger vehicles to transfer waste. Thus, the amount of vehicles travelling along the national primary roads will be reduced.

While the impact of traffic due solely to the IPODEC facility will not be significant, the cumulative impact of traffic for both waste transfer facilities on Forge Hill will cause a minimal short-term impact. Traffic noise levels will marginally increase due to the increase in HGV's, but in the long-term this will be mitigated by the decease in traffic using Forge Hill when the proposed upgrade of the Kinsale Road roundabout is complete.

3.2.3. Air

3.2.3.1 Odour

The majority of the waste handled at the IPODEC facility is non-putrescible and does not generate odours. However, when putrecible waste is brought through the facility short term odour incidents are likely to occur and may be detected at adjacent facilities. To this effect, 2 No. odour complaints were received at the site in February 2002 from an adjacent commercial centre to the south of the site. The complaints were recorded and the Operations Manager took appropriate corrective actions.

The proposed redevelopment of the site includes plans to enclose all future waste handling operations and will incorporate an odour suppression system (refer to Section 3.3.3.1).

Odour impacts from this facility are considered to be direct, short-term nuisances. Indirect impacts associated with nuisance odours can include potential impact on property values, however, as the site is located within and industrial estate such indirect impacts are not likely to occur.

3.2.3.2 Dust

The results of dust monitoring conducted indicate elevated levels of dust deposition at the site. In particular, levels of dust deposition have appeared to increase in line with the increased waste throughput at the site. The major sources of dust are fugitive emissions arising from the waste transfer and hardcore area. The dust deposition results indicated dust levels above the stipulated TA Luft guidelines.

Impacts from dust deposition are normally short-term, as measures such as road cleaning ensure that there is not a build up of dust within the site or on the access road. Indirect environmental impacts may include a decrease in the aesthetic value of the area, however this is not applicable to an industrial area such as Forge Hill.

The environmental impacts from dust generated at the site are significantly reduced given the screening afforded by trees and hedgerows surrounding the site. This is also the case in terms of potential adverse effects to the nearest residential house located to the north west of the site. Screening to the north-west of the site is well established and, given the south west prevailing winds, nuisance levels of dust deposition at this location resulting from the activities at the site are unlikely.

The proposed redevelopment will have all transfer operations, have dust curtains, a dust suppression system and all operations areas will be on hardstanding. Dust emissions are expected to reduce accordingly.

3.2.4. Nuisance

3.2.4.1. Vermin

The use of a specialist contractor ensures that vermin populations i.e. rodents and insects at the site are minimised. The placement of netting over the temporary transfer area mitigates against increased bird presence on site.

3.2.4.2. Litter

The site has maintained adequate control over windblown litter escaping the site. Only one complaint was received in February 2002 in relation to litter and debris escaping to an adjoining facility to the south-east of the site. Appropriate measures were immediately taken in order to rectify the situation, which has included moving the waste transfer area and netting same.

Overall, it is considered that the facility has no impact on the surrounding environment in relation to litter. Within the confines of the boundary of the site there is a potential for litter to be windblown and scattered as a result of the loading bay operations. However the mitigation measures taken currently and after the proposed redevelopment of the site, described in Section 3.3.4.2, negate any negative impacts that are likely to occur.

3.3. Mitigation Measures to Minimise the Impact from Noise, Traffic and Air

3.3.1. Noise

The results of noise assessments conducted at IPODEC indicate that elevated noise generation and/or nuisance does not exist from activities conducted at the Forge Hill site. Noise assessments indicated that traffic noise on Forge Hill is the significant contributor to the ambient noise levels recorded in the area.

IPODEC Ireland Ltd. are committed to ensuring that this situation continues and will ensure that measures to reduce noise impact are applied at the site. The enclosure of future waste handling operations within dedicated buildings will significantly reduce noise levels emanating from the grab machine operating at the site. The trees surrounding the site will be maintained thus allowing for natural attenuation of noise at the site.

Other measures to reduce noise impact include:

- All trucks and plant will be regularly serviced
- Trucks will not be permitted to sound horns or rev engines unnecessarily while on-site.
- Maintenance of site roads to reduce noise from vehicle movements.
- All plants used during the construction will be regularly serviced to ensure that noise levels are kept to a minimum.
- Building walls will be double skinned thus reducing noise levels emanating from the building.

3.3.2. Traffic

Traffic surveys conducted as part of this environmental assessment indicate that the traffic generated from the waste transfer activities was low in relation to the overall traffic levels on the Forge Hill road. The following mitigation measures are further proposed by IPODEC Ireland Ltd. to reduce the impacts of operations on traffic.

- Continual servicing of trucks
- Covering of all vehicles entering and leaving the site
- The development of the Forge Hill site has implications for the overall levels of HGV's associated with waste management on the roads. A modern materials recovery facility is critical in the overall efficient management and transport of waste, segregating waste streams and thus reducing mixed waste loads travelling to disposal sites.
- Vehicle engines will be switched off when not in use.

3.3.3. Air

3.3.3.1. Odour

Measures in place to control the release of odours from the site currently include;

- Efficient handling of the waste brought on-site, such that, fast turnaround times are achieved in processing waste to sealed containers prior to removal off-site

- Minimising putrescible waste delivered to the site
- All waste stored in transfer trailers outdoors will be covered

In order to further mitigate against this potential odour nuisance from the site, proposals in conjunction with the enclosure of all waste handling operations, include the installation of an odour neutralising system.

Various alternative methods for an odour treatment system were assessed. For example, the use of a masking agent was investigated, however, this method was discounted given the unreliable performance and the potential generation of secondary odour problems associated with such methodologies. The system chosen will be incorporated within the redeveloped site and is considered the best environmental solution for odour control at the site.

The odour neutralising system will be installed within the waste transfer building (see Drawing D.1.4) where all waste delivered to the site are initially processed. The system uses high pressure water to generate a mist (between 5 and 30 microns in size) which, when mixed with odour eliminating natural oils, neutralises offensive odours. The system has been successfully installed at the IPODEC transfer station in Ballymount Cross, Tallaght, Dublin 24. This is not a continuous system but moreover is manually switched on when odourous wastes are introduced into the waste transfer area. This system may also be preset. The suppression mechanism allows for almost instantaneous reduction of odours. The mist can cover a large area and because very low volumes of water are used, machinery and floors are not wetted.

No odours will be generated during construction activities at the site. The construction schedule will ensure that all waste handling is undertaken undercover.

3.3.3.2. Dust

Results of dust deposition assessments have indicated elevated levels of dust being generated by site activities. The main contributor to these elevated levels was the hardcore area to the rear of the facility. Critical to the successful mitigation of these elevated dust levels is the future enclosure of waste handling operations. This building will also incorporate the installation of plastic curtains at the entrance to the building to reduce fugitive dust emissions.

The odour suppression system proposed will also function as a dust suppression system capable of removing airborne dust generated within any new waste handling buildings.

Other mitigation measures to be undertaken at the site include the following:-

- The site will be regularly swept using a road-sweeper with wetting capabilities.
- The trees and shrubs currently surrounding the site will be maintained to act as a barrier to minimise airborne dust that could be blown onto adjacent sites.
- A dust monitoring programme will be introduced at the site. This monitoring will be conducted for 30-day periods over 3 No. sampling occasions in the year. Appropriate corrective actions will be put in place should dust deposition levels exceed accepted guidelines.
- Throughout the construction of the new facility, the contractor will ensure that dust levels generated will be kept to a minimum. A water bowser will be maintained on site and will be used to dampen roads during periods of extended dry weather.

3.3.4. Nuisance

3.3.4.1 Vermin

The primary solution to vermin problems at such a site is the elimination of available food sources for potential vermin populations. As such, efficient and fast turnaround of putrescible waste in line with improved housekeeping is the principal mitigation measure employed to ensure reduction of vermin populations.

A specialist contractor also provides vermin control. IPODEC has appointed the services of a pest control company for the provision of an Integrated Pest Management Service at the Forge Hill facility.

The system is based on a HACCP approach to include the following system elements:

- *Monitoring Schedules:* Early detection of pest arrival, pest movement and appraisal of action success.
- *Hygiene Programs:* Identification of unsuitable practices and introduction of hygiene programs appropriate to the site and target pests.
- *Pest Prevention Strategies:* Developed in parallel and cross-referenced with monitoring schedules.

The pest control company is responsible for monitoring and control of vermin nuisance at the site and to this end produces an annual biologists report. Specifically the contractor targets rodent and flying insect nuisance as detailed below.

Rodent Monitoring and Control

15 No. external control stations are used as a primary control against rodent incursions. They also provide for rodent monitoring. These stations are tamper resistant. Each station is mapped, numbered and contains block-bait formulation rodenticide for monitoring and control. All stations are checked at each Service Inspection. Each active station is marked on the checklist and the activity is recorded further on the Active Control Point Report vis-à-vis, condition, evidence, corrective action etc. Stations, which have remained inactive and undamaged, are also ticked on the checklist but not on the Active Control Point Report.

When rodent monitors/ control indicates local infestation, which is considered likely to put greater demand on these stations vis-à-vis mass of rodenticide present / number of stations available etc., the number of stations will be augmented on a temporary basis. The addition and removal of extra stations is controlled by entries in the "additional corrective action" section of the service report.

Flying Insect Monitoring and Control

Control of flying insects is achieved by application of insecticides. All insecticide applications are made in strict adherence to product labels, as barrier residues at points of ingress to crawling insects, as crack and crevice treatments or as space spray or fog. The effectiveness of the insecticide residues is indicated by the ongoing monitoring inspections at the time of each service call.

The design of the pest control measures will be reassessed upon construction of the proposed MRF.

3.4. Bird Control

Bird nuisances at the facility will be prevented by:-

- The enclosing of the transfer operations.
- The netting of loads for bulk transfer.
- The installation of plastic curtains.

The plastic curtains flapping in the wind act as deterrent to the birds.

3.4.1.1. Litter

In order to remove the possibility of a nuisance being caused by litter IPODEC has implemented the following procedures.

- Constructed a temporary housing of waste activities in a containerised structure with netting.
- The site is, at a minimum of one-week intervals, inspected for nuisance caused by litter. Furthermore, all litter on the site and its environs is removed to the transfer area on a daily basis.
- Any material or debris that is deposited on the access road to the facility by vehicles entering or leaving the facility is removed as soon as discovered. This includes a daily patrol of the Forge Hill road at the site entrance.
- All vehicles delivering or removing waste from the facility are suitably covered.

In addition, to the above measures once the site is redeveloped the following litter mitigation measures will be implemented:

- All waste handling activities will be carried out under cover.
- No waste will be placed outside the waste transfer area other than baled cardboard and plastic, timber and metal pending removal off-site. It is not considered necessary to cover these, as no loose litter is associated with them. In addition, any of the trailers, which will be used to store waste overnight prior to dispatch the next working day, will be covered with nets.

4. GEOLOGY AND HYDROGEOLOGY

4.1. Geology and Hydrogeology in the Existing Environment

The geological and hydrogeological information provided in this section is based on published literature and available geotechnical reports for nearby sites. There has been no intrusive investigations conducted at the site. Such investigations are not considered necessary in view of the activity being conducted.

4.1.1. Regional Bedrock Geology

The IPODEC facility is located on the south side of the Tramore River Valley, which runs approximately west to east towards the Douglas Estuary. Outcropping bedrock occurs along this side of the valley as seen just east of the Kinsale Road roundabout. The geology of South Cork is structurally complex and is dominated by Devonian and Carboniferous clastic sediments. The regional geologic setting is presented in simplified form in *Drawing C.6.1* within *Appendix A*. This map is taken from the Geological Survey of Ireland Report on the Geology of South Cork.

The bedrock geology is characterised by a series of east to west trending fold structures, which run from Middleton in the east to Macroom in the west. The anticlinal limbs of the folds are composed of Devonian rocks of the Old Red Sandstone facies while the core of the synclines is composed of Carboniferous sediments. The bedrock structure was complicated further by north-northwest south-southeast faulting of the original fold sequence during later deformation events. A geophysical survey carried out at a nearby site has indicated the presence of a fault zone trending east-west located just north of the site. Within the fault zone the rock is highly fractured. To the south of the fault zone the rock comprises the Old Red Sandstone facies. To the north of the fault the bedrock is comprised of blue grey Waulsortian limestone of varying degrees of competence.

The site itself is underlain by the Gyleen Formation of the Old Red Sandstone facies. This formation consists of sandstones with mudstones and siltstones. According to the Geological Survey of Ireland the aquifer rating for the Gyleen Formation in South Cork area is rated as locally important (L1).

4.1.2. Overburden Geology

The unconsolidated subsoil deposits above the bedrock are primarily concentrated above the Carboniferous limestone bedrock to the north of the site. The high ground comprising the anticlinal limbs of the folded Devonian sandstones have much thinner soil cover and are comprised of free draining sandy clay soils. The subsoil thickness in the vicinity of the site is expected to be in the order of 3 metres. The subsoil and unconsolidated deposits above the Carboniferous bedrock vary greatly in thickness and composition. In particular, the river valleys are comprised of vast thickness of alluvium sands and gravel. Many of the sand and gravel sequences are extensive enough to be considered as valuable groundwater resources. Clayey silts and peat deposits also occur within the Tramore River valley to the north of the site.

4.1.3. Hydrogeology

The limestone bedrock to the north of the site has been classified as being a regionally important aquifer. Abstraction from wells in the limestone formations is typically in the order of 200 - 1500m^3/day. A nearby industrial site (approximately 1Km), CMP on the Tramore Road to the north, abstracts 500m^3/day. This yield is indicative of a regionally important aquifer. The sandstone formations are typically less productive. The Toe Head Formation and the Gyleen Formation have well yields of between 200 - 500m^3/day. These well yields are based on tests conducted elsewhere.

Based on guidelines produced from the Geological Survey of Ireland a vulnerability rating can be determined for the site. This rating determines the risk of contamination infiltration to an underlying aquifer and is determined by the depth and type of overburden material at the site. The vulnerability rating for the aquifer underlying the IPODEC site is considered to be high to extreme. This rating is based on the thickness of subsoils overlying the bedrock at the site, which are believed to be in the order of three metres. However, it is noted that the risk of contaminated material released to the subsurface at the IPODEC site is minimal.

There is an on-site well used for vehicle washing and sanitary use (i.e. other than drinking water) which indicates the depth to water of 8 metres from ground level. The productivity of this well has never been tested, however, it is known to run dry during periods of prolonged use. This tends to indicate that the yield of this well is low. No other properties in the vicinity have wells delivering their water supply. All are on the local authority mains water system.

Groundwater flow direction is estimated to be towards the northwest, discharging to the tributary of the Tramore River which runs in a northerly direction to the west of the site. Water level measurements recorded in the on-site well indicates depth to water of 8 metres from ground level.

4.1.4. Groundwater Quality

In order to assess the physico-chemical quality of groundwater underlying the IPODEC site groundwater samples were extracted from the on-site well. As direct access to the well was not possible samples were taken from a tap in the truck wash area of the site (refer to *Drawing J.1.1*). Sampling was conducted on the 16th of May 2000 and the 28th February 2002. Prior to sampling the tap was cleaned and water was purged until conductivity measurements stabilised. The results of analysis are presented in Table 4.1 below.

The sample taken in May 2000 was analysed by Bord na Móna Environmental Ltd, Newbridge, Co. Kildare (refer to *Appendix F)*. The groundwater sample taken on the 1st March 2002 was analysed by Consultus Laboratories based in Cork (refer to *Appendix G*).

Groundwater samples were taken from the on-site well for microbiological analysis on the 27th of November 2001. A copy of the analytical results report generated by Water Technology Ltd. in Cork are presented in *Appendix H*. The results revealed the groundwater samples to be free of total coliform and faecal coliform contamination as indicated by zero coliform numbers for the tests conducted.

The results of the groundwater quality assessments indicate the groundwater underlying the IPODEC site to be of satisfactory quality. Concentrations recorded for the range of parameters targeted did not indicate contamination that can be associated with on-site activities at IPODEC. Significantly, the groundwater analysed was free of bacteriological, metal and organic contaminants. Marginally elevated concentrations barium (246 µg/l) and sulphate (47.6 and 66.0 mg/l) are likely to be reflective of the local geological conditions prevailing at the site. Slightly elevated concentrations of nitrate-N (4.2 and 5.0 mg/l) and chloride (39.3 and 55.0 mg/l) are noted, however, the presence of these compounds is likely to be reflective of the general groundwater quality of the area. Overall, these concentrations are unlikely to be associated with any inputs to the local subsurface from the activities on-site.

Table 4.1: Results of Chemical Analysis of Groundwater taken at the IPODEC Site

Parameter	May 2000	March 2002
pH (pH units)	7.26	6.7
Conductivity (µS/cm)	792	847
Temperature (°C)	10.6	9.5
Alkalinity (mg/l as $CaCO_3$)	-	289
BOD (mg/l)	<2.0	-
COD (mg/l)	<10.0	-
Total Suspended Solids (mg/l)	<5.0	-
Total Dissolved Solids (mg/l)	549	450
Calcium (mg/l)	63.0	89.5
Magnesium (mg/l)	44.0	40.5
Sodium (mg/l)	16.0	18.5
Potassium (mg/l)	1.7	2.1
Ammonia as N (mg/l)	0.2	<0.05
Fluoride (mg/l)	<0.1	0.1
Chloride (mg/l)	39.3	55.0
Nitrate as N (mg/l)	4.2	5.0
Nitrite as N (mg/l)	-	<0.01
Phosphate as P (mg/l)	<0.16	0.05
Sulphate (mg/l)	47.2	66.0
Aluminium (µg/l)	<20	-
Boron (µg/l)	<10	-
Iron (µg/l)	<100	<10.0
Manganese (µg/l)	2.0	<10.0
Copper (µg/l)	<2.0	<10.0
Zinc (µg/l)	12.0	<10.0
Barium (µg/l)	246	-
Arsenic (µg/l)	<2.0	<1.0
Cadmium (µg/l)	<2.0	<1.0
Chromium (µg/l)	2.0	<10.0
Mercury (µg/l)	<1.0	<1.0
Nickel (µg/l)	<2.0	<10.0
Lead (µg/l)	<2.0	<10.0
Antimony (µg/l)	<2.0	-
Selenium (µg/l)	<2.0	<1.0
Tin (µg/l)	<2.0	-
Cobalt (µg/l)	<2.0	-
Silver (µg/l)	<2.0	<10.0
Beryllium (µg/l)	<2.0	-
Volatile Organics (as per USEPA 524.2 (µg/l))	<10.0	-
Non-Volatile Organics (as per GC-FID (mg/l))	<0.5	-
Phenols (µg/l)	-	<1.0
Total Organic Carbon - TOC (mg/l)	-	1.5

4.2. Potential Impacts on Soils and Geology

The GSI have indicated that the Old Red Sandstone facies in South Cork are minor aquifers (i.e. not regionally important). The vulnerability of the bedrock aquifer is rated as high to extreme due to the thickness of the subsoil.

The results of groundwater chemical and microbiological analysis on samples extracted from an on-site supply well indicate the water to be of satisfactory quality. In particular, all parameters that could be linked to waste activities conducted at the site (e.g. coliforms, ammonia-N, and heavy metals) were all deemed to be low or below the detection limit for the analysis conducted.

Potential impacts to the local groundmass or groundwater that could arise from activities conducted at the site include the following:

- Inefficient treatment of domestic wastewater treated in the on-site septic tank and subsequent discharge to a local percolation area
- Uncontrolled discharge of fuels stored onsite
- Uncontrolled discharge of leachate generated on-site

Domestic wastewater is discharged to an on-site septic tank and percolation area. It is not known if this septic tank conforms to SR6 or equivalent, however, there is no indication of contamination that could be associated with this source (e.g. elevated ammonia-N or coliform bacteria) from well water sampled on-site. It is noted that the percolation area in the north-west section of the site is located downgradient of general groundwater flow at the site. As such, potential impacts from this percolation area on the on-site groundwater supply well are minimal.

Fuel is not bulk stored at the Forge Hill site. The IPODEC truck fleet obtains fuel from an off-site fuel depot. Bulk fuel tanks have been previously used at the site but were decommissioned in 2001. The remaining bund structure was inspected as part of this assessment and did not appear to be heavily stained. All barrels and drums containing oil are stored on mobile bunds. Hydrocarbon discharges that could have resulted from historical activities is considered unlikely. The results of the water analysis indicated less than detection limits for the various organic parameters targeted as part of this assessment (e.g. volatile and non-volatile organics, phenols, total organic carbon). Uncontrolled discharges from contaminated water associated with waste delivered to the site are considered minimal. Waste transfer activities currently taking place in the open have the potential to become exposed to rainwater.

As detailed in Section 2.0 of the EIS the waste categories transferred at the site mostly comprise of inert packaging wastes and, as such, the potential for generation of leachate is minimal. In any case, the area where transfer trailers are filled is surrounded by a contained drainage system that allows collection of contaminated water generated from this activity. The volumes are considered low and are further reduced by the rapid turnaround of waste at the site. All containers stored at the site are covered to further reduce rainwater infiltration. The results of groundwater quality assessments confirm this assertion in that all parameters targeted were detected in low concentrations.

In general, all other activities potentially impacting on the local groundmass are conducted on concrete hard standing areas that are connected to the on-site surface water drainage system (e.g. vehicular movements, materials transfer). As such, the potential for uncontrolled discharge is further reduced.

4.3. Mitigation Measures

In general the impact of the current site activities and the new development on the hydrogeology will be minimised by:

- Conducting all waste handling and recycling activities on hardstanding areas
- Conducting all waste operations indoors
- Proposals for connecting to the mains water supply are underway such that the current supply well will be decommissioned and the well will be closed off in accordance with standard procedures
- The decommissioning of the septic tank and the connection of the sewerage system on-site to the main adjacent foul sewer of the local authority
- Ensuring that any leachate generated within the materials recovery facility is diverted to the foul sewer of the local authority, via grit trap and interceptor.
- Ensuring that all skips in the skip storage area are empty
- Ensuring that all storm-water run-off from the site is diverted to surface water drainage system that will incorporate a Class I, full retention, seperator.
- The existing garage area will be removed such that lubricating oils, any fuels and chemicals will not be stored on-site. Spill kits including absorbent mats will be provided on-site
- On site personnel will be trained in the correct use and disposal of spill kits and adsorbent mats
- Site personnel will be made aware of any potential source or operation that could give rise to a potential groundwater pollution incident.

Alternative mitigation systems were assessed for dealing with foul water arisings at the site. The construction of a dedicated foul water storage tank was discounted given that over-ground construction space was not readily available and underground storage tanks would constitute a high environmental risk to adjacent soils and groundwater. The final choice of a connection to the local authority foul sewer was deemed the best practicable solution. This assessment of alternatives also concluded that the inclusion of the truck wash discharge to the local authority foul sewer was required in order to reduce potentially contaminated discharges to surface water.

Connection to the foul line is indicated on *Drawing D.1.3,* discharges will include sanitary wastewater, leachate from the main MRF building, the weighbridge and runoff from a ring drained slab to the front of the MRF building. The volume of foul water to be discharged through this line is estimated at a maximum of 9 litres/sec. This is a worse case calculation, which cumulatively (i.e. taking all neighbouring discharges into account), is considered well within the volumetric capacity of the receiving foul sewer line.

5. HYDROLOGY

5.1. Hydrology

5.1.1. Existing Hydrology and Drainage

The IPODEC site in Forge Hill is located in the catchment of a small stream to the west of the site, which is a tributary of the Tramore River (the local catchment of the area is illustrated in *Drawing C.9.1*). Much of the catchment area consists of Gyleen Formation sandstone terrain. The upper reaches of the stream are steeply sloping. The stream rises at a point approximately 2km south of the site, at an elevation of 140m OD. It flows north and passes within approximately 200m of the site and enters the Tramore River, approximately 500m north of the facility. The Tramore River enters a tidal basin called the Douglas River. This subsequently flows into Lough Mahon.

The Tramore River, while not a designated Salmonid Waters, has in the past carried stocks of brown trout. The South-Western Regional Fisheries Board carried out electro-fishing of the Tramore River in 1988. Three sites were sampled upstream of Douglas village and downstream of the Forge Hill Industrial Area, beside Togher Industrial Estate and a stream at Brook Avenue. The findings of the survey revealed the absence of fish at the Forge Hill site station and the Togher Industrial Estate station. Brown trout were present at the Brook Avenue station.

At present, all surface water drainage from the facility is collected via a network of surface drains throughout the site (refer to *Drawing D.1.1*). This connects at a central manhole adjacent to the site entrance. This manhole discharges to a drain, which runs under Forge Hill to a manhole on the industrial site opposite the facility. This ultimately discharges into the small stream, which is a tributary of the Tramore River.

The surface water emissions from the site are restricted to that of surface water run off from hardstanding areas after a rainfall event and the treated effluent from the truckwash area. The total area of the site that currently discharges to surface water is 6,985m^2. This is calculated on the following basis:-

- Roof area of 1,445m^2 x 100% runoff coefficient,
- Hardstanding areas of 7,180m^2 x 70% runoff coefficient
- Grassed areas of 1,712m^2 x 30% runoff coefficient

The annual average rainfall for the site is 1,194mm (Cork Airport 1962 -1991) and, as such, this results in an approximate annual stormwater run-off of 8,340m^3 from the site.

Waste handling operations on-site is carried out in the transfer area and in the confines of the recycling building. All run-off and leachate from the transfer area is diverted to a sump and subsequently pumped to a holding tank prior to removal off-site by an outside contractor for authorised disposal. The washwater from the truck wash discharges to a sump trap adjacent to the truckwash. Any solids settle in the sump and the supernatant discharges into the surface water drainage network of the site. The sludge in the sump is cleaned out routinely and is disposed of in Rossmore Landfill operated by Cork County Council.

5.1.2. Surface Water Quality

A series of surface water sampling events have been conducted at the IPODEC Forge Hill site. Samples are collected from the final discharge point from the site i.e. SW1 located immediately south of the site entrance. The results of three monitoring events are detailed in Table 5.1 below.

The results obtained to date indicate occurrences of elevated concentrations of suspended solids (range 63 - 198 mg/l) and chemical oxygen demand (COD) (range 63 - 615 mg/l) within the final surface water runoff from the site. In addition, an elevated concentration of aluminium (3.12 mg/l) was detected within a sample collected in May 2000. The reason for the elevated results obtained is likely to be linked to truck washing activities at the site. In addition, surface run-off from the hard standing areas would be expected to contain elevated levels of suspended solids due to truck movements on-site. The high solids content of the samples is likely to contribute significantly to the concentrations of COD and aluminium recorded.

The elevated concentrations of petroleum derived hydrocarbons (total - 7.03 mg/l) detected as part of a January 2002 sampling event are most likely linked to truck washing activities at the site. Analysis targeting possible detergent components of the surface water discharge indicated elevated concentrations of MBAS (0.32 mg/l) in May 2000. This is marginally above the stipulated surface water limit of 0.2mg/l (S.I. 294 of 1989) and is most likely linked to detergent usage in the truck washing area of the site.

Table 5.1: Results of Chemical Analysis of Surface Water taken at the IPODEC site

Parameter	May 2000*	Sept 2001*	January 2002*
pH (pH units)	7.3	8.0	7.1
Conductivity (µS/cm)	102	-	-
Temperature (°C)	15.8	-	-
BOD (mg/l)	16.0	-	-
COD (mg/l)	198	36.4	615
Total Suspended Solids (mg/l)	198	63.0	140
Oil, Fats and Greases - OFG's (mg/l)	11.0	-	-
MBAS (mg/l)	0.36	-	-
Metal Parameters			
Aluminium (µg/l)	3,147	-	-
Boron (µg/l)	16.0	120	<50.0
Iron (mg/l)	3.5	-	-
Manganese (µg/l)	235	-	-
Copper (µg/l)	14.0	<5.0	6.0
Zinc (µg/l)	215	60.0	60.0
Barium (µg/l)	21.0	-	-
Arsenic (µg/l)	<2.0	<2.0	<2.0
Cadmium (µg/l)	<2.0	<0.4	<0.4
Chromium (µg/l)	<20.0	20.0	1.0
Mercury (µg/l)	<1.0	<0.05	<0.05
Nickel (µg/l)	8.0	<10.0	<10.0
Lead (µg/l)	33.0	<5.0	<5.0
Antimony (µg/l)	3.0	-	-
Selenium (µg/l)	<2.0	<50.0	<50.0
Tin (µg/l)	5.0	-	-
Cobalt (µg/l)	2.0	-	-
Silver (µg/l)	<2.0	-	-
Beryllium (µg/l)	<2.0	-	-
Organic Hydrocarbons			
Mineral Oil (mg/l)	-	0.351	1.721
Total Petroleum Range Organics C_4-C_{13} (mg/l)	-	<0.010	2.845
Benzene (mg/l)	-	<0.010	<0.010
Toluene (mg/l)	-	<0.010	<0.010
Ethyl Benzene (mg/l)	-	<0.010	<0.010
Total Xylene (mg/l)	-	<0.010	0.019
Diesel Range Organics (mg/l)	-	0.703	2.459

* Notes: May 2000 results refer to Appendix E
September 2001 results refer to Appendix D
May 2000 results refer to Appendix D

5.2. Potential Impact on Hydrology

The operations at the facility can impact on the receiving surface water network as a result of surface water run-off from the hardstanding areas of the site containing contaminants and the wastewater from the truck wash areas being inadequately treated. The results of surface water physicochemical assessments indicate that this is the case with marginally elevated concentrations for some of the parameters targeted. In particular, elevated concentrations of suspended solids and COD can be linked to sediment laden surface water runoff entering the drainage system. The presence of petroleum derived hydrocarbons is linked to truck movements on the site.

Other causes of contaminated surface water runoff include the material from the hardcore skip parking and truck parking areas been carried onto the hardstanding areas by trucks.

Currently there is no surface water sediment trap/ or oil interceptor on-site to treat the run-off. However, the implementation of a site drainage-cleaning program and the installation of a moat around the transfer loading area to capture any leachate and surface water run-off from the area has resulted in improvements in the overall quality of the surface water emissions from the site. However, as demonstrated the levels of solids being discharged in the final surface water remains elevated.

Emissions of foul water at present are only caused by domestic effluent arising from the canteen and toilets. As detailed in Section 5, all such effluent passes through a septic tank and then into a soak pit located in the north-west corner of the facility.

The impacts of these minor contaminant discharges on the receiving surface water network are considered minimal. The principal contaminants are elevated sediment levels in the final discharge. The Forge Hill section of this tributary of the Tramore River, as indicated, does not appear to support brown trout stock and it is considered that the overall environmental sensitivity of this stream is low. In any case, while elevated sediment levels may have a tainting effect on the stream, the discharges are not inherently toxic to the receiving freshwater biota. However, IPODEC Ireland Ltd. recognises that the current situation is unacceptable and, as such, has embarked on an improvements plan for the site to significantly rectify this problem.

Based on the redeveloped site, with a contributing area of 8,768 m^3, the 30-minute storm duration for a 5 year event is estimated at 63 litres/sec.

5.3. Mitigation Measures

To minimise the impacts of the emissions to both surface waters IPODEC Ireland Ltd. has implemented the following measures:

- The entire drainage network on-site, both surface water and foul sewer, is cleaned out regularly.
- The hardstanding area of the site is swept daily. The loading bay area is cleaned out at least daily
- No waste is allowed to accumulate outside the transfer area.
- All leachate and run-off from the waste loading area is collected in a moat and diverted to a holding tank. This is emptied as required by tanker and brought to the local authority treatment plant.

With the proposed developments at the site, further mitigation measures will be implemented which will include significant alteration to the drainage network. These alterations are detailed below: *Drawing D.1.3* presents details on the proposed future drainage layout for the site.

- The surface water drains from the truck wash area will be diverted to a local authority foul sewer via grit trap and interceptor.
- The new development including the enclosure of all waste handling operations will significantly reduce the potential rainwater infiltration to waste handled on the site. Innocuous rainwater run-off from this building will be connected directly to the surface water drainage system. Any leachate or contaminated water will be collected within the enclosed redeveloped site and diverted to the foul sewer.
- The installation of Class I, full retention interceptor capable of treating all surface water runoff diverted from the site. This interceptor will significantly reduce suspended solids and linked parameters (e.g. COD and aluminium). In addition, it will provide for retention of all petroleum-derived hydrocarbons.
- Spill kits will be put in place to minimise the effect of spillage that may arise as a result of on-site activities.
- All operational areas including bin and truck storage areas will be concrete or asphalted.
- Weekly inspections of the interceptors, grit traps, gullies and drains will take place and these will be desludged if deemed necessary.
- Monitoring of surface water will take place as required in any waste licence issued by the EPA. A new surface monitoring point will be installed downstream of the new interceptor.
- Prior to construction a full retention interceptor will be installed. This will prevent silt laden run-off during construction from entering the surface water.

6. CLIMATE

6.1. Climate in the Existing Environment

Local weather conditions must be considered in the evaluation of a development. In particular, in a development such as the IPODEC Forge Hill waste operations, wind strength, wind patterns and precipitation rates must be considered. While the facility will have no envisaged effects on the climate, climatological factors may have a direct impact on possible water and air emissions from the site. The source and magnitude of these emissions are examined in Sections 3 and 5 respectively.

The long-term weather patterns at the site reflect the regional conditions affecting the South Munster area, dominated by low fronts from the west and south-west in the winter months and more settled conditions during the winter months.

The climate conditions prevalent do not support distinctive flora or fauna, facilitate any agricultural, horticultural or forestry practices, nor enhance landuse amenity.

6.1.1. Wind

The nearest synoptic meteorological station is located at Cork Airport (3 km to the south and give a good approximation of the conditions which prevail in the area. The wind rose for the Cork Airport covering the period 1970 – 1999 is shown in *Appendix I*. Although Cork Airport is relatively close to the facility at Forge Hill it is considered that the wind speeds would be slightly less in Forge Hill due to the fact that there is difference in height of about 100 metres. Wind directions however would be similar. The incidence of low wind conditions indicates that about 55% of hourly observations are less than 3.1m/s with calm conditions occurring about 8% of the year. Based on the windspeed and direction information from Cork Airport meteorological station, the dominant wind direction fluctuates between North Westerly to South Westerly.

6.1.2. Precipitation

Annual rates of precipitation in the area have an average of approximately 1194 mm with the months of September to March receiving the greatest monthly rates. The nearest climatological station with long-term daily rainfall rates is at Cork Airport covering the period 1962 - 1991 (Met Eireann). The results indicate long term monthly mean precipitation rates ranging from 66.4 – 138.3 mm. The maximum daily rainfall for the area is 83.8mm. During winter the rainfall would be commonly associated with Atlantic frontal depressions whereas during the summer months high rainfall amounts tend to be associated with intense thunder showers which may be localised in rainfall intensity. The monthly average precipitation rates for Cork Airport are presented in Table 6.1 below.

Table 6.1: Monthly Precipitation Rates at Cork Airport Climatological Station (mm)

Period	J	F	M	A	M	J	J	A	S	O	N	D	Ann
1962 - 1991	138	116	99	68	83	69	66	89	96	125	111	134	1,194

6.1.3. Temperature

The pattern of long term daily temperatures at Cork Airport 1962 - 1991 is shown in Table 6.2. Again given the height difference between the climatological station and the IPODEC facility the temperatures are likely to be marginally higher at the Forge Hill site.

Table 6.2: Monthly Mean Temperature at Cork Airport Climatological Station (°C)

Period	J	F	M	A	M	J	J	A	S	O	N	D	Ann
1962 - 1991	5.1	5.0	6.2	7.7	10.2	12.9	14.8	14.5	12.7	10.3	7.2	6.1	9.4

6.2. Potential Impacts of the Waste Operations on Climate

The site is located in an industrial estate and therefore, the importance and implications of climatic conditions with regard to land-use, amenity, etc is not significant. Although waste is transferred primarily externally, the transfer methods employed are such that the waste is exposed to the elements for a minimum period of time. Furthermore, the waste has a very short turnaround time. Therefore, coupled with the commercial nature and significant non-organic waste content of the waste there is no potential for the waste to generate any gaseous emissions while on-site. In addition, any leachate generated in the bulk loading process is retained in a moat surrounding the transfer area and pumped to a holding tank before being conveyed for disposal at the local authority's wastewater treatment plant. Finally, due to the relatively low windspeeds and the nature of the operations on-site the possibility of wind-blown dust being carried long distances or in elevated concentrations is minimised.

The emissions of carbon from the vehicles servicing the site are relatively small. Hence, the contribution made to the Greenhouse Effect as a result of the operations at this facility is negligible.

In conclusion it is considered that the current operations and the proposed future operations will not affect existing or future climatic conditions.

6.3. Mitigation Measures

As operations at the site do not and will not affect the existing and future climatic conditions, mitigation measures are not deemed necessary. In addition, regular maintenance of trucks and plant equipment will ensure that emissions are within EU standards.

7. CULTURAL HERITAGE

7.1. Cultural Heritage in the Existing Environment

A desk base archaeological assessment of the site and surrounding area was undertaken to identify the archaeological constraints, if any, associated with the facility at Forge Hill. The purpose of the desk-based assessment was to gain knowledge about the known or potential archaeological resources within a given area or site. This includes the presence or absence, character and extent, date, integrity, state of preservation and relative quality of such resource, in order that a reasonable and well-informed decision can be taken on appropriate management procedures.

A walkover survey of the site was undertaken to look for any visible remains, such as associated earthworks, stray finds etc., which may previously have escaped notice. This survey comprised a single site visit and included not only the area of the development but also the full extent of the study area c.500m offset.

A review of the drawings and information supplied by the Office of Public Works (OPW) indicated that the site has not been designated as a proposed Natural Heritage Area (NHA). Furthermore, information obtained from the OPW's National Monuments & Historic Properties department found that there are no sites of archaeological interest within the vicinity of the site.

A field inspection of the location allowing for the identification of unrecorded archaeological remains and inspection of known sites in the proximity to the site was carried out. No material or structures of archaeological significance were found on the actual site itself during the course of the inspection.

The surrounding area, c.500m offset, was also examined. There were no sites recorded in the Sites and Monuments Records as lying within this study area. This area was also walked as part of the field inspection. There was no evidence of surface traces of archaeological remains in the area.

In summary, there is no evidence to suggest that the facility is of any cultural or historical importance or infringes on any areas of heritage value.

7.2. Potential Impact on Cultural Heritage

The archaeological assessment of the site carried out to estimate the potential impact of the facility on the cultural heritage of the area identified nothing of archaeological significance on the site.

The proposed site redevelopment will involve minor excavations for construction proposes. Given the low archaeological sensitivity of the area this will not have any impact on cultural heritage.

Operations at the IPODEC Forge Hill site will therefore have no negative impacts upon the cultural heritage of the area.

7.3. Mitigation Measures

Mitigation Measures are not deemed necessary as a result of the current or proposed operations, as there are no archaeological remains within the vicinity of the site.

8. ECOLOGY

8.1. Flora and Fauna in the Existing Environment

8.1.1. General Overview of Area

The site is located in an industrially zoned urban area approximately 5km south-west of Cork City centre. The site upon which the facility is located does not lie in a proposed Natural Heritage Area (NHA) as listed by Dúchas. Furthermore, it is not listed as a Special Area of Conservation (SAC) designated in accordance with Council Directive 92/43/EEC and adopted in Ireland under S.I No. 94 of 1997.

The Douglas Estuary, which lies east-northeast of the Forge Hill site, has been designated as a Special Protection Area for Wild Birds and is listed as a proposed Natural Heritage Area (NHA). The Douglas Estuary is also a Wildfowl Sanctuary. This estuary forms part of Cork Harbour. The proposed NHA can be seen in *Drawing C.4.1.*

The existing hydrogeological regime, which maintains the wetland ecosystem, is controlled by a freshwater and seawater input. The freshwater input originates from the Tramore River and its feeder streams, which originate on the hills to the south of the river. The Tramore River catchment upstream of Douglas village is 21km^2. The river enters a tidal basin, below Douglas, where it is called the Douglas River, which in turn flows into Lough Mahon. Refer to *Drawing C.9.1* for the surface water catchment area.

The Tramore River, while not a designated Salmonid Waters, has in the past carried stocks of brown trout. The South-Western Regional Fisheries Board carried out electro-fishing of the Tramore River in 1988. Three sites were sampled upstream of Douglas village and downstream of the Forge Hill Industrial Area, beside Togher Industrial Estate and a stream at Brook Avenue. The findings of the survey revealed the absence of fish at the Forge Hill site station and the Togher Industrial Estate station. Brown trout were present at the Brook Avenue station.

8.1.2. Ecological Survey

Fehily Timoney & Co. carried out an ecological assessment on the floral and faunal habitats recorded on and around the site. To achieve this the character, significance and vulnerability of each habitat was assessed.

Floral Habitats

The western site perimeter, facing the road, is lined with a 2.0m hedgerow. This consists mainly of *Chrysilinia*. This provides a habitat for insects and cover for birds. The southern boundary of the site consists of a mature line of evergreen trees (Leyland Cypress). The eastern and northern site perimeter is lined with mixed deciduous trees and hedgerow.

The plants identified on site, particularly in close proximity to the hedgerows, are considered to be opportunistic. These include bramble *(Rubus fruiticosus),* buttercup *(Ranunculus sps),* nettle (*Urtica dioica)*, and dandelion *(Taraxacunm officinale)*. A full list of the species identified on site is outlined in Table 8.1 below.

Current land use practices within the vicinity of the site are industrial estates and commercial buildings. The land to the south-west of the site is primarily agricultural and is used for grazing. There would also appear to be some arable farming carried out further to the west. (*Drawing B.2.3* outlines the general landuses within 500 m of the site). There is also some derelict land to the northwest of the site. This land is a locally important habitat as it provides a niche for birds and mammal species in what is otherwise a heavily built up area. A tributary of the Tramore River flows through this area before discharging into the Tramore River.

Fauna

A list of the fauna identified on-site is detailed in Table 8.1 below. The fieldwork for this survey concentrated on a qualitative assessment of the habitats. No evidence of mammals was detected in or around the site. A number of bird species were identified (e.g. Blackbird (*Turdus merula),* Blue Tit (*Parus caeruleus*) and Magpie (*Pica pica*)). The trees and vegetation, which occur within the site, are unlikely to provide an important habitat for birds and mammals. Furthermore, the human activities, traffic movements and noise generated on-site render the area unattractive as a habitat. Finally the existing vegetation provides a habitat for several species of insect.

Table 8.1: Flora and Fauna Identified On-Site

	Common name	Latin Name
	Flora	
Flowering Plants	Brambles (Blackberry)	*Rubus fruticosus*
	Brambles	*Rubus saxitilis*
	Buttercup	*Ranunculas repens*
	Common Nettle	*Urtica diocia*
	Dandelion	*Taraxacum oficinale agg*
	Lesser Burdock	*Articum minus*
	Ivy	*Hedera helix*
	Dwarf Thistle	*Cirsium acaulon*
	Clustered Dock	*Rumex conglomeratus*
	Creeping Buttercup	*Ranunculus repens*
	Daisy	*Lanceolate plantain*
	Moss	*Bryophyta*
	Fern	*Dryopteris pseudomonas*
	Gorse	*Ulex europaeus*
	Cow Parsley	*Anthriscus sylvestris*
Trees	Alder	*Alnus glutinosa*
	Willow	*Salix alba*
	Sycamore	*Acer pseudoplatanus*
	Ash	*Fraxinus excelsior*
	Beech	*Fagus sylvatica*
	Laurel	*Prunus lusitanica*
	Elderberry	*Sambucus nigra*
	Smooth leaved elm	*Ulmus carpinifolia*
	Silver Birch	*Betula pendula*
	Blackthorn	*Prunus spinosa*
	Hawthorn	*Crataegus monogyna*
	Rhododendron	*Rhododendron ponticum*
	Leyland Cypress	*Cupressocy Paris leylandii*
	Fauna	
Birds	Blackbird	*Turdus merula*
	Greenfinch	*Carduelis chloris*
	Robin	*Erithacus rubecula*
	Blue Tit	*Parus caeruleus*
	Great Tit	*Parus major*
	Magpie	*Pica pica*
	Pigeon	*Columba palumlous*
	Crow	*Corvus Corvus*

8.2. Potential Impact on Flora and Fauna

Due to the location of the facility within an industrial area and the fact that there are no areas of significant ecological interest within the vicinity of the site, activities at the site do not have a negative impact on flora and fauna in the area. Furthermore, the site is not on, or near, any Natural Heritage Sites or Special Areas of Conservation.

Overall, the site is of very low ecological value and has little potential to sustain any floral or faunal habitats of significance. It is considered that the current and future operations of the Materials Recovery Facility does not pose a risk either to any species of flora or fauna or any ecological habitats in the area.

8.3. Mitigation Measures

The site is of low ecological value with little potential to sustain any floral or faunal habitats of significance. There are no mitigation measures proposed for the protection of flora and fauna in the area as there are unlikely to be any negative impacts as a result of activities at the facility.

Mitigation measures discussed in Sections 3 and 5 (Air and Surface Water respectively) will prevent any possibility of indirect impacts upon water bodies or the atmosphere as a result of activities at the Forge Hill site.

9. LANDSCAPE AND VISUAL ASSESSMENT

9.1. Landscape in the Existing Environment

The area around the IPODEC Forge Hill site is predominantly industrial with a series of industrial estates located in the general vicinity of the site. The area is zoned as industrial in the Cork County Development Plan. Furthermore, it has not being set aside as a proposed scenic route or designated landscape area. The Forge Hill Road is the major distributor road for the area and links the N28 and N27 and also serves the industrial estates in the vicinity of the site.

The northern and southern boundaries of the site are bordered by industrial developments, the eastern boundary by a disused tarmacadam driveway. Across this are further industrial developments. Finally the western boundary of the facility is bordered by Forge Hill Road and across this are located more industrial developments.

The nearest residential property is located approximately 90m to the north-west of the main entrance on the Forge Hill Road. It has however, no direct line of site to the site activities. The site boundary in addition to palisade fencing is surrounded by trees or hedgerows which provide an effective visual barrier for the facility.

A landscape topography map (*Drawing C.7.1*) shows the location of the site in context with the surrounding land.

There are no built features / structures of landscape significance (e.g. castles, estates and gardens) in the vicinity of the site. Apart from the landscaped border there are no other site features such as outcrops, ditches, trees, woodland or surface waters such as rivers, streams, springs, ponds or lakes. In addition, there are no landscape characteristics within the study area of concern.

The screened boundary on the Forge Hill Road disallows a direct line of sight to the nearest residences. Moreover, site operations cannot be viewed except directly at the front gate of the site. As there are no residential properties overlooking the site from these locations there is no impact to visual amenity from any nearby residences. It is emphasised that the site is located in an industrial area and, as such, visual intrusion caused by site operations and infrastructure is minimal. In terms of landscape and visual impact, future site infrastructure developments will not alter the current landscape and visual character and will in general, be similar to other sites and industrial complexes in the area.

9.2. Potential Impact on Landscape

The site is located within an industrial zoned area. As such, it is considered that within this context both the on-site activities and infrastructure are unlikely to be contributing to any negative effects on the landscape.

The only views of the facility are those from the Forge Hill Road (when passing the front gate). The views of the site from the road are not extensive and are not considered to be negative. Furthermore, other than truck and plant movements none of the site operations can be seen.

In conclusion it is considered that the views of the site do not impair the character of the existing landscape. Furthermore, the proposed development will not alter this situation significantly.

9.3. Mitigation Measures

Landscape mitigation measures are not considered necessary and, as such, further landscaping measures are not proposed.

10. LAND USE

10.1. Land Use at the Existing Environment

The site of the facility is located within the Forge Hill area of Cork, an area zoned for industrial use. Hence the primary landuse in the area is industrial. There are two residences on the Forge Hill Road with the nearest being over ninety metres from the main entrance to the site. Refer to *Drawing B.2.3* which indicates the general landuses within 500m of the site.

There are no hospitals, hotels, or other such sensitive amenities in the immediate vicinity of the site.

10.2. Potential Impact on Land Use

The IPODEC facility is one of many industrial premises within this industrial zoned area and indeed was one of the earlier users of the estate. Moreover, it has had no affect on the overall development of the commercial or industrial sectors in the vicinity. A waste management company has applied to Cork County Council for Planning Permission to construct a materials recycling facility at Forge Hill.

In conclusion, it is considered that the site has had no discernible impact, either directly or indirectly, on patterns of employment, landuse or economic activity in the area. Furthermore, it is contended that the redevelopment of the site can only enhance the area and will continue to have no discernible impact.

10.3. Mitigating Measures

No mitigation measures are proposed.

11. MATERIAL ASSETS

11.1. Material Assets in the Existing Environment

The site covers an area of approximately 2.54 acres with the recycling building, garage and offices. The remainder of the site is used for skip storage, truck movement and parking, and, for car parking. The site has been used as a waste management facility since 1987, however, the current site infrastructure was only developed in 1991.

The site is situated in the Forge Hill Area, off the Kinsale Road, of Cork (E1669, N 0687), an area zoned for industrial development. It is located on the outskirts of the Cork City and accepts and manages non-hazardous waste from industries from all over the city.

The facility is easily accessed from the Forge Hill Road that passes the front entrance of the facility. This road is a link road between the Kinsale Road (N27) and the Southern Ring Road (N28). In addition, the site's close proximity to these two National Roads makes it readily accessible via the local road network.

There are no ecologically significant areas or water bodies within the zone of influence of the site.

There are no non-renewable resources associated with the site itself.

In order to maximise the efficiency of the handling and recycling operations given the significant increase in waste quantities delivered to the site a site improvement plan has been initiated. Principal among these improvements include the enclosure of all waste handling operations.

11.2. Potential Impacts on Material Assets

As is evident from Section 11.1, the main material asset associated with the site is that of the infrastructure including roads. These are also utilised by other premises in the industrial estate.

Currently there are approximately 200 truck movements per day associated with on-site activities at the facility. When this is put into context with the general traffic in the locality it is evident that the operations do not have a significant negative effect on the infrastructure of the area. With the proposed development of the site the number of vehicles serving the site will increase from the current levels of 20 - 22 traffic movements per hour up to 36 - 38 movements per hour. The percentage contribution to the traffic will remain minor in an overall context, at about 5 – 8%. Furthermore, it is anticipated that the majority of the vehicles entering and leaving the site will be doing so outside of peak hours, thus minimising any impact that the additional traffic may have. Given the level of traffic occurring in the vicinity and the operations of nearby facilities it considered unlikely that the increased activity will have any significant effect on the material assets of the locality. However, proposals by Celtic Waste to build a materials recycling facility at Forge Hill will add in the short-term to the traffic movements on the road. When the upgrade of the Kinsale Road roundabout is complete it is expected that vehicular traffic on the Forge Hill road will subsequently reduce in the short term.

11.3. Mitigation Measures

As the IPODEC facility does not and will not have significant negative impacts upon the material assets of the area, associated mitigation measures are deemed unnecessary.

12. INTERACTION OF THE FOREGOING

Environmental factors may be interrelated to a minor or significant degree based on various cumulative or synergistic effects between different environmental elements. The IPODEC site at Forge Hill will have positive and negative impacts on the receiving environment. The interactions and interdependencies between these environmental impacts, as discussed in the preceding chapters, are addressed in this section.

12.1. Negative Cumulative Effects

- Increased traffic movement on the Forge Hill Road.
- Increase in noise level due to traffic movement to facility and corresponding decrease in air quality.
- Visual impact of traffic movements.
- Visual impact in the vicinity of the site.

12.2. Positive Cumulative Effects

- The provision of a waste recycling facility in Cork in order to increase recovery and recycling rates within the area and decrease to volumes of waste being delivered to landfill.
- The provision of a properly controlled waste management facility for the efficient transfer of waste produced in Cork.
- The provision of increased local employment.
- Decrease in vehicles going to landfill.
- Reduction in dust emission.
- Improved surface water and foul water emissions.

12.3. Conclusions on the Interaction of the Foregoing

Based on the positive impacts of the existing development, it is considered that the IPODEC Ireland Ltd site in Forge Hill will provide a suitable location for a materials recovery facility in this area of County Cork. This operation expresses an explicit commitment to the process of implementing enhanced recycling and efficient transfer of waste. It thereby furthers national and international policy on both waste management and diversion of waste from landfill.

The interactions of all environmental factors indicate an overall positive development capable of providing efficient materials handling and recycling infrastructure with minimal impacts on the local environment.

REVISION TO

ENVIRONMENTAL IMPACT STATEMENT

FOR A MATERIALS HANDLING AND RECYCLING FACILITY OPERATED BY IPODEC IRELAND LTD. AT FORGE HILL, KINSALE ROAD, CO. CORK

APPENDICES

Volume 3 of 3

Prepared for:

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Dublin 24

Prepared by:
Fehily Timoney & Co.,
Core House,
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Cork

EPA Ref No.	173-1

September 2002

ENVIRONMENTAL IMPACT STATEMENT

FOR A MATERIALS RECOVERY FACILITY OPERATED BY IPODEC IRELAND LTD. AT FORGE HILL, KINSALE ROAD, CO. CORK

ENVIRONMENTAL IMPACT STATEMENT

APPENDICES

User is Responsible for Checking The Revision Status Of This Document

Rev. Nr.	Description of Changes.	Prepared by:	Checked by:	Approved by:	Date:
2	Re-issue to Client	DD	DE		10/09/02

APPENDICES

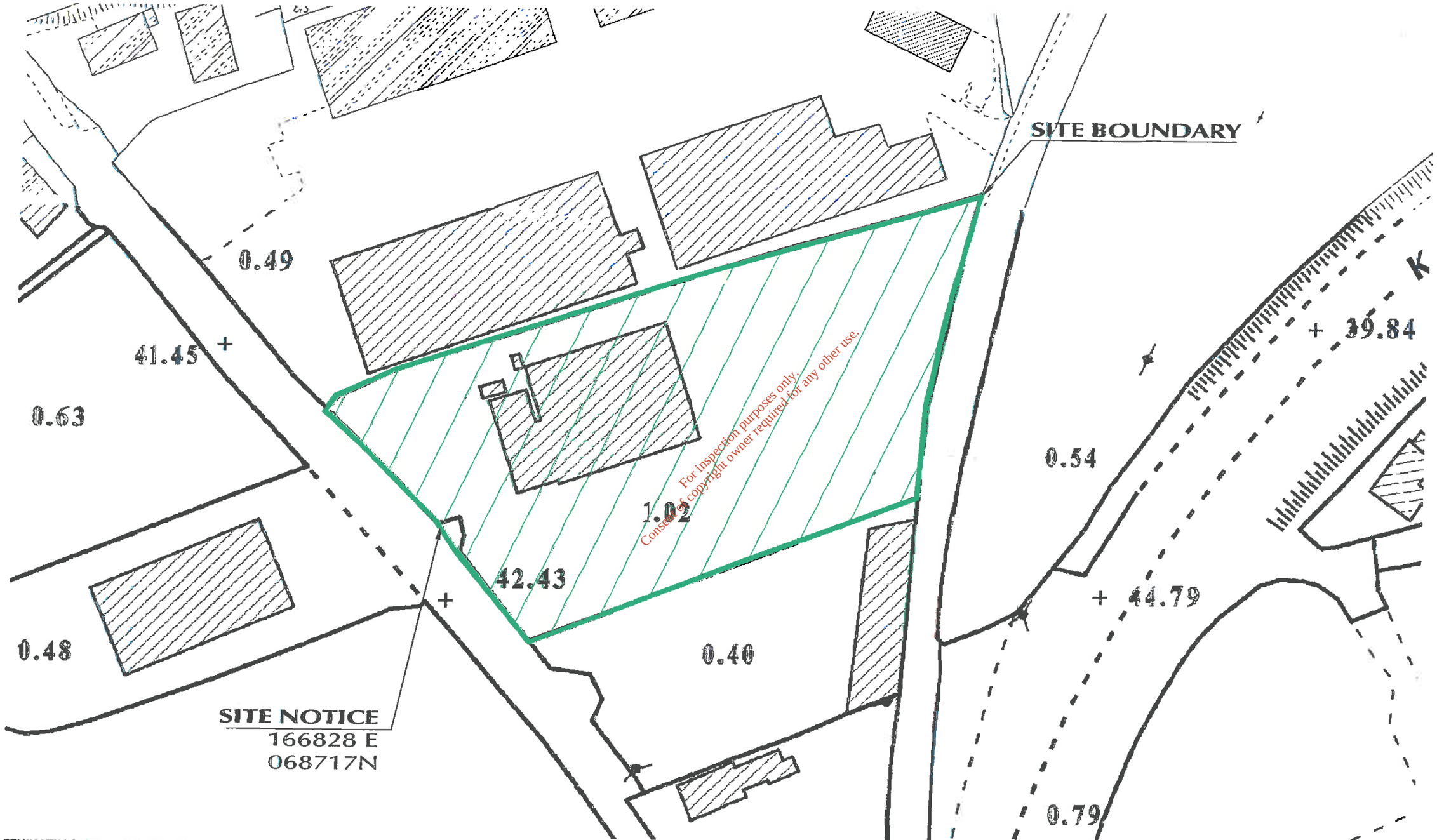
Appendix A Drawings

REVISION A

MAR 2002

2002\1151\01\ipack-EIS_B.1.1.dwg

1:1000 PLAN



FEHILY TIMONEY & COMPANY

SITE OWNERSHIP MAP

WASTE LICENCE APPLICATION
For IPODEC IRELAND Ltd TRANSFER STATION AT FORGE HILL Ind.Estate,CORK

LAND LEASED BY APPLICANT

DRAWING B.1.1

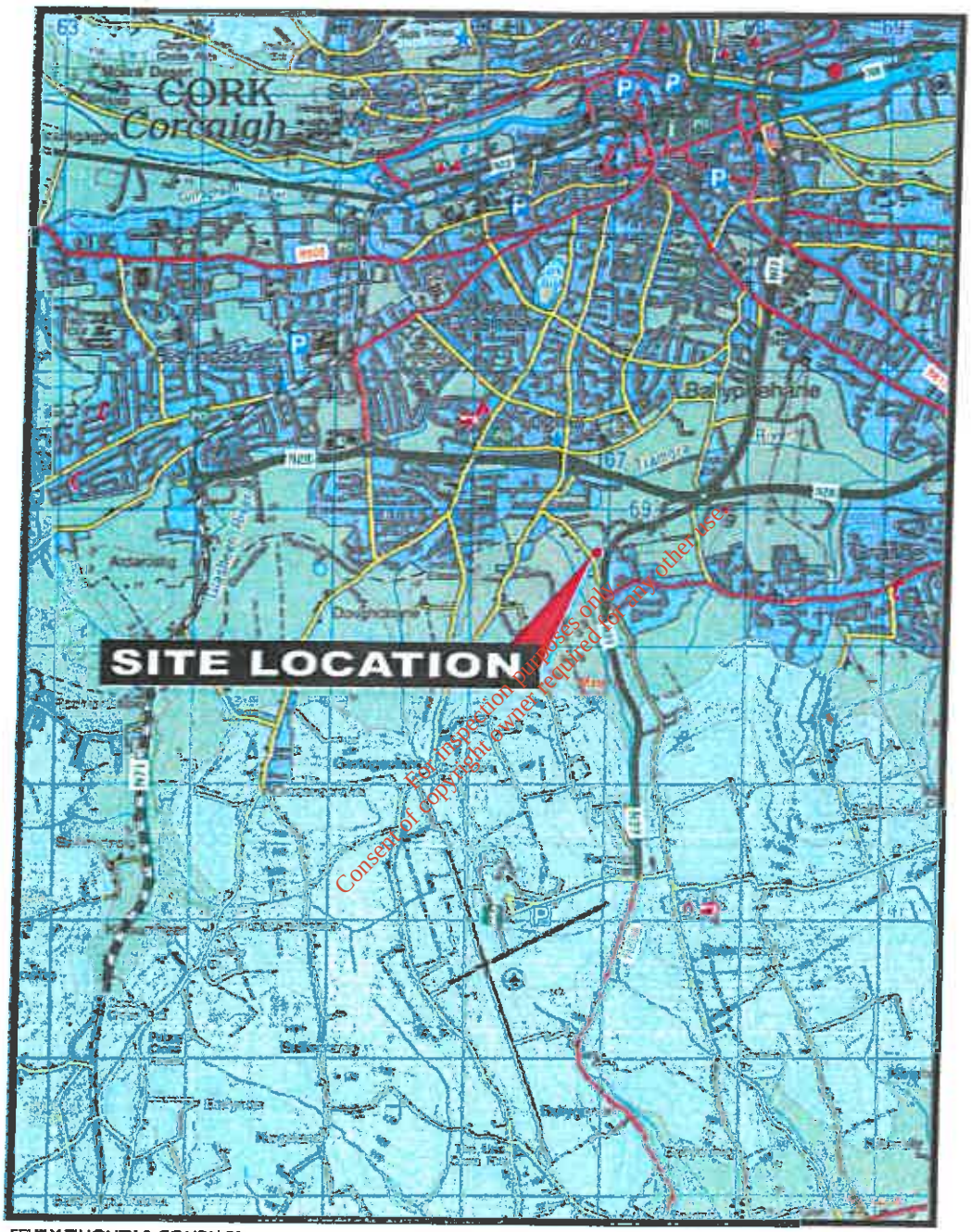
N

1:50,000 PLAN

REVISION A

MAR 2002

OS Discovery Sheet 1:50,000 No. 87



FEHILY TIMONEY & COMPANY

SITE LOCATION MAP

WASTE LICENCE APPLICATION

For IPODEC IRELAND Ltd TRANSFER STATION At FORGE HILL Ind.Estate,CORK

DRAWING B.2.1

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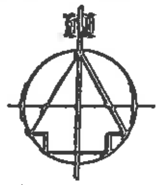
CORK 1:10000 6427-08.09.10, 1:2500 6427 B + D

REVISION A

MAR 2002



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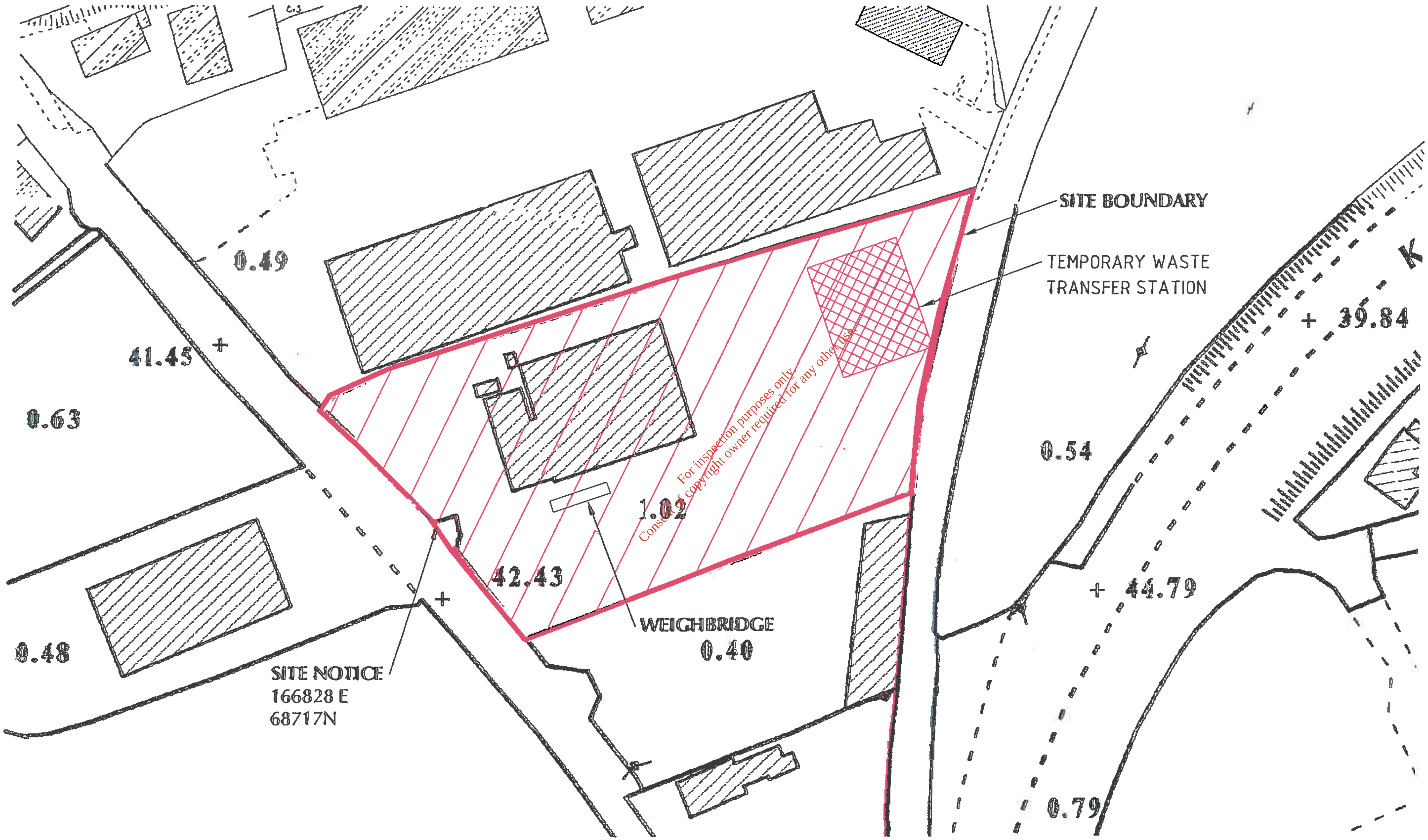

FEHILY TIMONEY & COMPANY

SITE BOUNDARY PLAN

SITE + SITE BOUNDARY

TEMPORARY WASTE TRANSFER STATION

WASTE LICENCE APPLICATION

For IPODEC IRELAND Ltd TRANSFER STATION At FORGE HILL Ind.Estate,CORK

DRAWING B.2.2

N

NOTE

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LEGEND

Denotes Existing Overhead Power Lines — ESB — ESB — ESB — ESB —

Denotes Existing Residential Areas

Denotes Existing Industrial Areas

Denotes Existing Agricultural Areas

Rev.	Drawn	Chkd	Apprvd	Date	Description
A	DM			04.09.2002	ISSUED FOR WASTE LICENCE APPLICATION

Name of Client
IPODEC IRELAND LTD

Name of Job
MRF FORGE HILL

Title of Drawing
LOCATION OF ACTIVITY MAP
INSIDE 500m SITE BOUNDARY

Scales Used
1:5000-A3, 1:2500-A1

Dwg. No. 2002-115-01-B.2.3 Rev. A

FEHILY TIMONEY COMPANY
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REVISION A

MAR 2002

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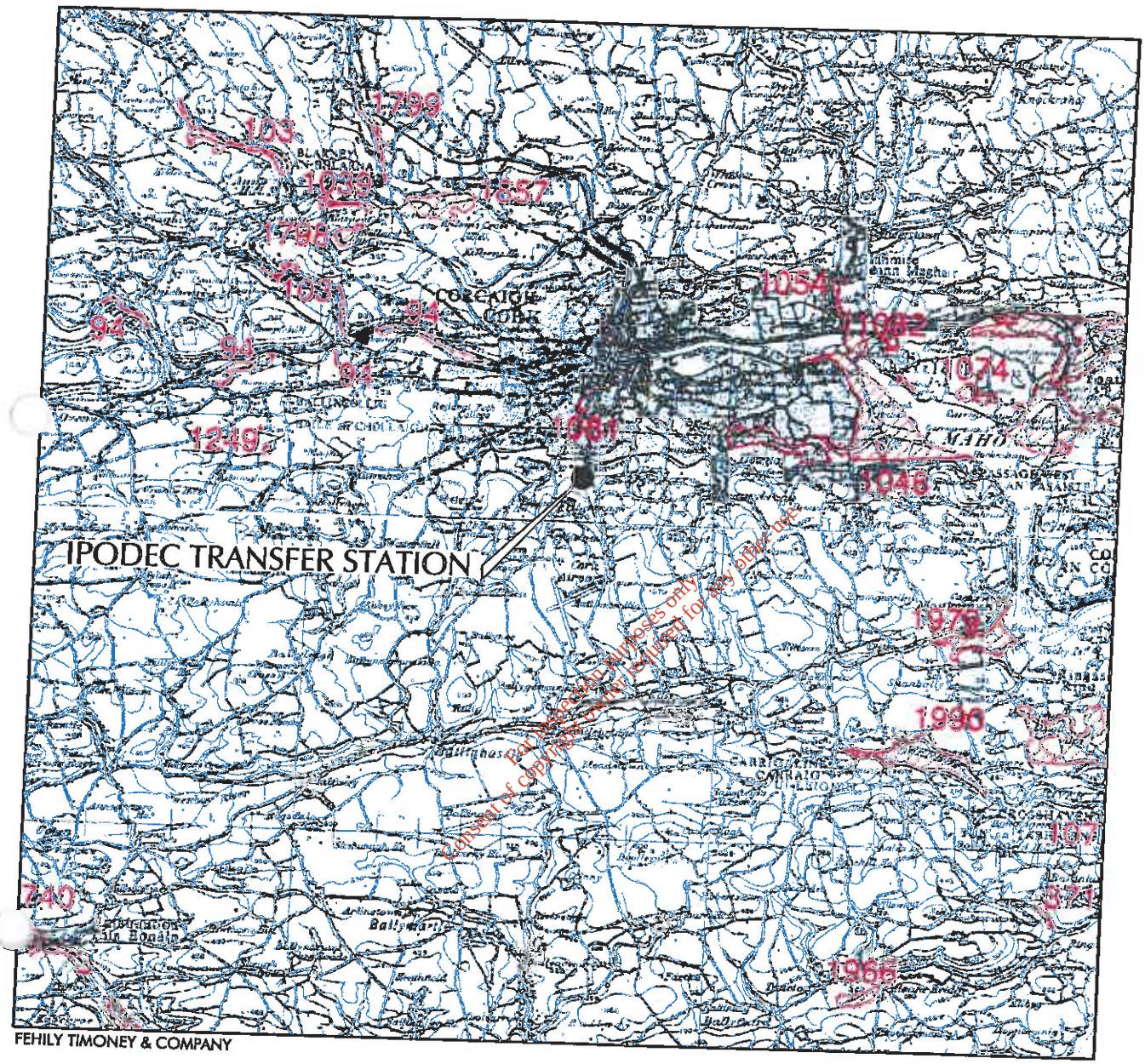

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LOCATION OF PROPOSED NATURAL HERITAGE AREAS AROUND CORK CITY

166889E
068272N

WASTE LICENCE APPLICATION
FOR IPODEC IRELAND Ltd TRANSFER STATION At FORGE HILL Ind.Estate,CORK

DRAWING C.4.1

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REVISION A

MAR 2002

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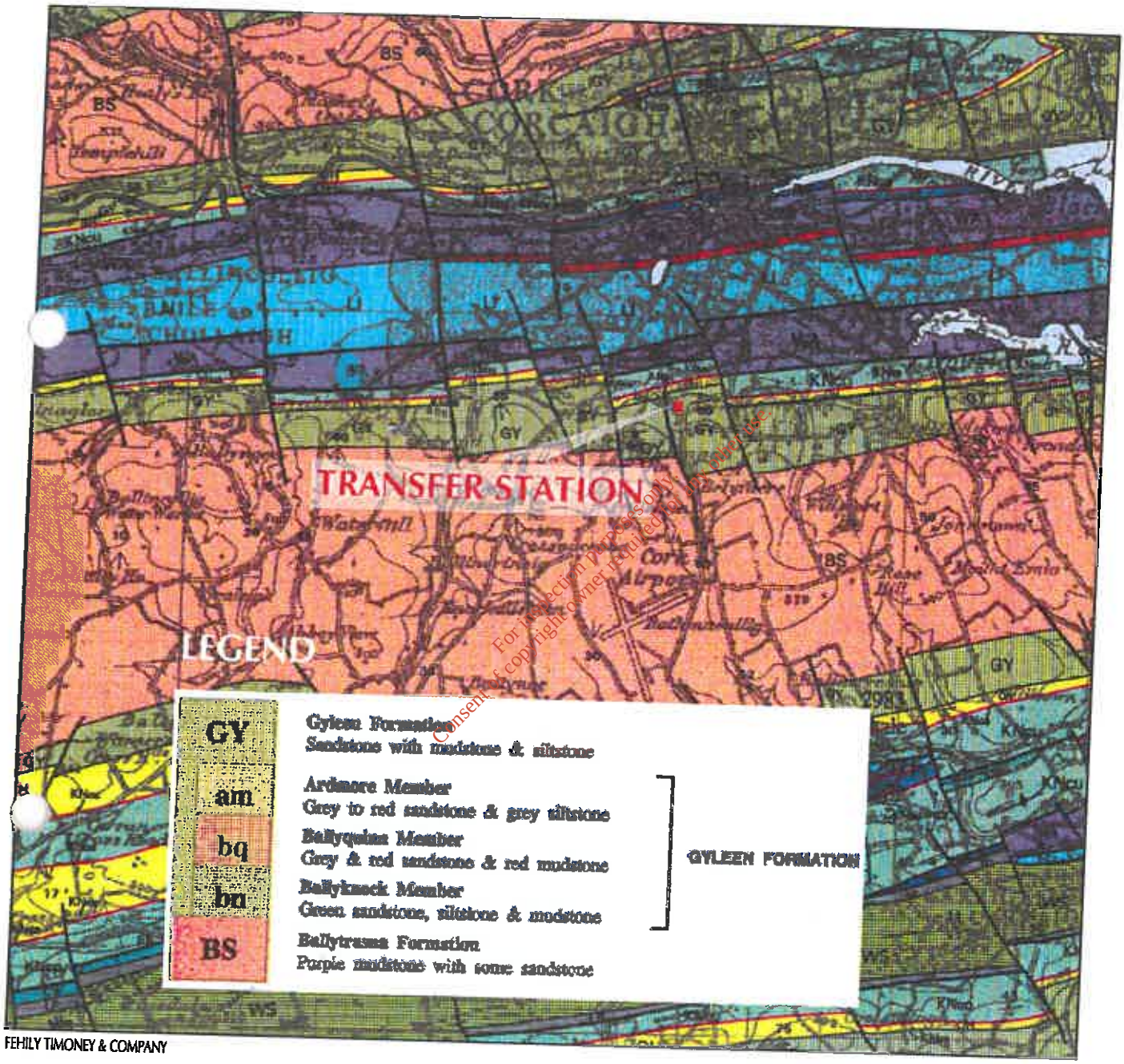

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BEDROCK GEOLOGY MAP

WASTE LICENCE APPLICATION

For IPODEC IRELAND Ltd TRANSFER STATION At FORGE HILL Ind.Estate, CORK

DRAWING C.6.1

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1:50,000 PLAN

REVISION A

MAR 2002

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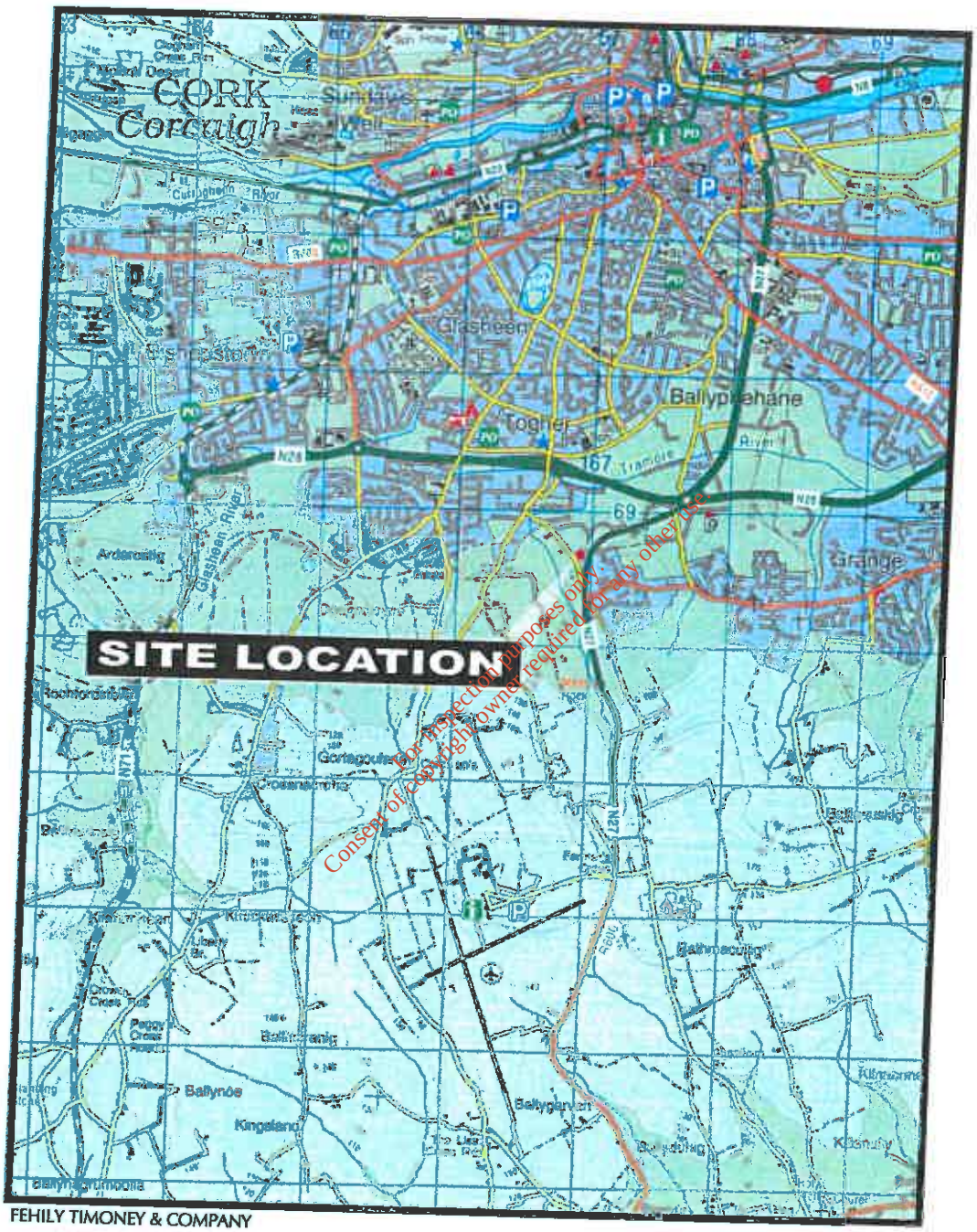

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LANDSCAPE TOPOGRAPHY - GENERAL AREA

WASTE LICENCE APPLICATION

For IPODEC IRELAND Ltd TRANSFER STATION At FORGE HILL Ind.Estate,CORK

DRAWING C.7.1

N

1:50000 PLAN

REVISION A

M\R 2002

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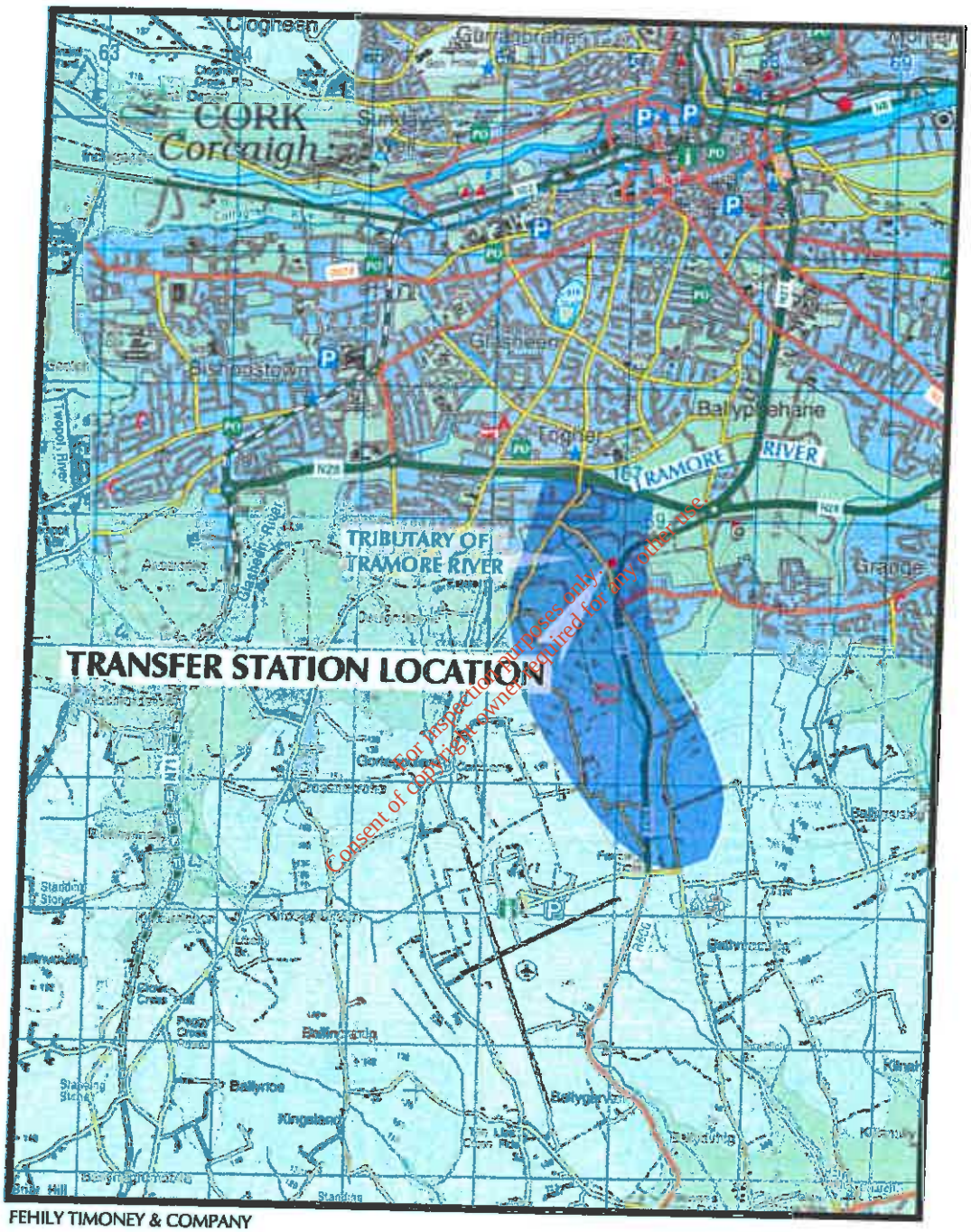
CORK OS Sheet 1:15000 STREET MAP



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SURFACE WATER/CATCHMENT MAP

CATCHMENT AREA

WASTE LICENCE APPLICATION

For IPODEC IRELAND Ltd TRANSFER STATION At FORGE HILL Ind.Estate,CORK

DRAWING C.9.1

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CORK 1:1000 6427-08.09.10, 1:2500 6427 B + D

REVISION B

SEPT 2002

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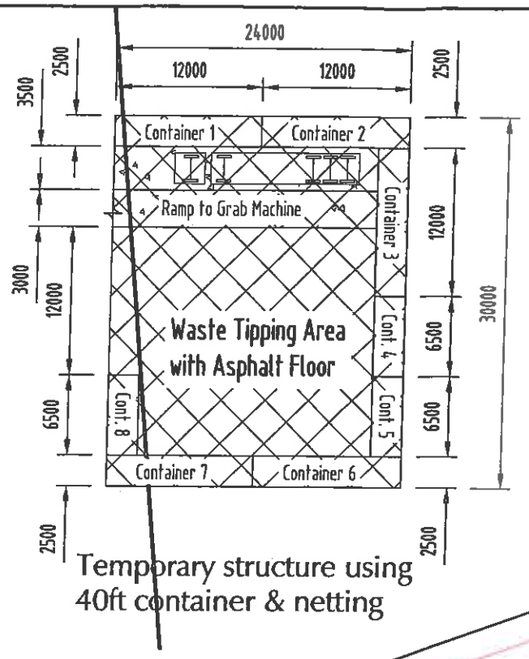
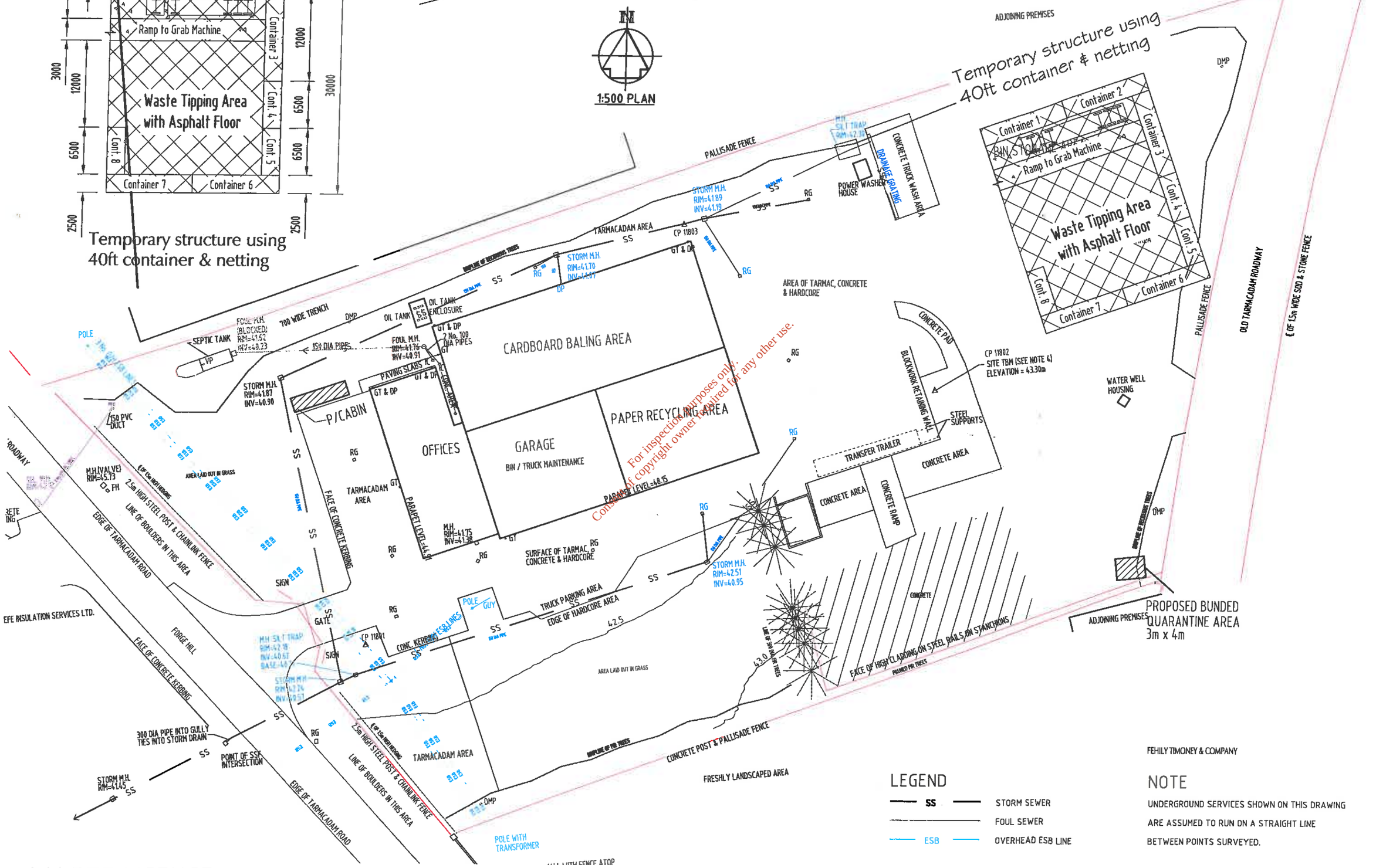


1:500 PLAN



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LEGEND

SS — STORM SEWER

FOUL SEWER

ESB — OVERHEAD ESB LINE

NOTE

UNDERGROUND SERVICES SHOWN ON THIS DRAWING ARE ASSUMED TO RUN ON A STRAIGHT LINE BETWEEN POINTS SURVEYED.

WASTE LICENCE APPLICATION

For IPODEC IRELAND Ltd TRANSFER STATION At FORGE HILL Ind.Estate,CORK

EXISTING SITE INFRASTRUCTURE & SERVICES

DRAWING D.1.1

ADJACENT PROPERTY
(EXISTING BUILDING)

ADJACENT PROPERTY
(EXISTING BUILDING)

DRIPLINE OF DECIDUOUS TREES & HEDGEROW

DRIPLINE OF DECIDUOUS TREES

PROPOSED EXTENSION TO EXISTING BUILDING/
NEW MATERIALS RECOVERY FACILITY

ORIGINAL POSITION OF EXISTING
OFFICE TO BE DEMOLISHED

1.8m HIGH PALISADE FENCE

NEW MATERIALS RECOVERY FACILITY
(EXISTING BUILDING)

PROPOSED RESIDUAL
WASTE TRANSFER AREA
FFL=+4.185m

PROPOSED TRUCK
WASH AREA

GRIT TRAP

OIL/WATER INTERCEPTOR

CONCRETE YARD

GRASSED AREA
(EXISTING)

1.0m HIGH BOUNDARY EARTHEN BERM
2.5m HIGH STEEL POST & CHAINLINK FENCE (EXISTING)

EDGE OF TARMACADAM ROAD

FORGE HILL

TRUCK
& CAR
PARK

PCC KERBING

EXISTING WEIGHBRIDGE

CONCRETE YARD

BOLLARDS

SITE ENTRANCE

SITE NOTICE

PROPOSED NEW ENTRANCE
AND GATE

CAR
PARK

PROPOSED OFFICE BUILDING
FFL=+4.73m

GRASSED AREA

1.0m HIGH BOUNDARY EARTHEN BERM
2.5m HIGH STEEL POST & CHAINLINK FENCE (EXISTING)

EDGE OF TARMACADAM ROAD

DRIPLINE OF FIR TREES

SKIP STORAGE AREA
CONCRETE SLAB

CONCRETE YARD

DRIPLINE OF DECIDUOUS TREES

SITE BOUNDARY

PROPOSED 2.5m HIGH WALL

LEGEND:

EXISTING BUILDING

PROPOSED BUILDING

SITE BOUNDARY

DIRECTION OF ALL TRUCKS

DIRECTION OF SKIPS

DIRECTION OF TRANSFER TRAILERS

Rev.	Drawn	Chkd	Apprvd	Date	Description
A	DM			04.09.2002	ISSUE FOR WASTE LIENCE APPLICATION

Name of Client
IPODEC IRELAND LTD

Name of Job
MRF FORGE HILL

Title of Drawing
PROPOSED SITE LAYOUT

Scales Used
1:500-A3, 1:250-A1

Dwg. No. 2002-115-01-D.1.2 | Rev. A

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Ex MH
CL = 40.85
IL = 37.93
RD = 38.83

0.49

41.45

0.63

1:500 CONTINUATION OF FOUL SEWER TO FINAL CONNECTION POINT

ADJACENT PROPERTY
(EXISTING BUILDING)

PROPOSED TRUCK WASH AREA
GRIT TRAP
OIL/WATER INTERCEPTOR

LEGEND:
- RG — ROAD GULLY
- TB — THRUST BLOCK
- HYD — HYDRANT
- SS — EXISTING SURFACE WATER SEWER
- FS — PROPOSED FOUL SEWER & MANHOLE
- SW — PROPOSED SURFACE WATER SEWER & MANHOLE
- PROPOSED WATERMAIN SEWER
- SITE BOUNDARY

SEE ABOVE FOR CONTINUATION OF FOUL SEWER

FMH CL.=41.9 IL=39.01
FMH CL.=38.89 IL=As Existing GL
METER CHAMBER
150mm uPVC FOUL SEWER AT 1:80 FS
EX. 150 DIA PIPE
PCC SURROUND
Class 1, Petrol Interceptor
FMH CL.=41.9 IL=39.4
FMH CL.=41.9 IL=39.73
FMH CL.=40.2 IL=42.0
EXISTING WATERMAIN
TRUCK & CAR PARK
CONCRETE YARD
SITE ENTRANCE
STORM MH RIM=42.00 INV=40.57
M.H. SILT TRAP RIM=42.00 INV=40.62 INV=40.21
TO EXISTING OUTFALL
Class 1, Petrol Interceptor (full retention)
CAR PARK
FMH CL.=40.91 IL=42.08
EXISTING WEIGHBRIDGE
SMH CL.=41.8 IL=40.75
225mm uPVC @ 63mm CONC. SURROUND
STORM MH RIM=41.87 INV=40.90
STORM MH RIM=41.89 INV=41.79
STORM MH RIM=41.78 INV=41.67
SMH CL.=41.8 IL=40.68
SMH CL.=41.8 IL=39.82
SMH CL.=41.9 IL=41.25
SMH CL.=41.825 IL=40.48
STORM MH RIM=42.51 INV=40.95
FMH-CL=41.825 IL=40.30
RG=41.835
PROPOSED OFFICE BUILDING
FFL=42.20m
FMH - CL=42.08 IL=41.33
FMH-CL=42.05 IL=41.08
PROPOSED RESIDUAL WASTE TRANSFER AREA
FFL=41.85m
NEW MATERIALS RECOVERY FACILITY (EXISTING BUILDING)
SKIP STORAGE AREA
CONCRETE SLAB
Cut-off drain. Accordain of similar
EMBANKMENT FALL 1:2 FROM FENCE
SITE BOUNDARY
DRIPLINE OF TREES OMITTED FOR CLARITY
+42.0m
1:15
Cut-off drain
SMH CL.=42.17 IL=41.27
SMH CL.=42.23 IL=41.36
SMH CL.=42.1 IL=41.23
FMH CL.=42.23 IL=40.88
225mm uPVC IN 63mm CONC. SURROUND
CONCRETE YARD
150mm uPVC FOUL SEWER AT 1:80 RS
90mm 10BAR FOAM RISER PIPE
FMH CL.=42.0 IL=40.7
FMH CL.=41.90 IL=40.65
FMH CL.=41.85 IL=40.51
SMH CL.=41.90 IL=41.13
RG
150mm uPVC FOUL SEWER AT 1:80 FS
225mm UPVC IN 63mm CONC. SURROUND
RG+41.835
CONCRETE YARD

1:250 PROPOSED SERVICES LAYOUT

Rev.	Drawn	Chkd	Appvd	Date	Description
A	DM			04.09.2002	ISSUE FOR WASTE LICENCE APPLICATION

Name of Client: IPODEC IRELAND LTD

Name of Job: MRF FORGE HILL

Title of Drawing: PROPOSED SERVICES LAYOUT

Scales Used: 1:500 & 1:250-A1 (1:1000 & 1:500 A3)

Dwg. No.: 2002-115-01-D.1.3 Rev.: A

FEHILY TIMONEY
CONSULTANTS IN ENGINEERING & ENVIRONMENTAL SCIENCES
CORE HOUSE, POULADUFF Rd, CORK, IRELAND.
Phone:+353-21-4964133, Fax:+353-21-4964464, Email: Postmaster@FTCO.ie
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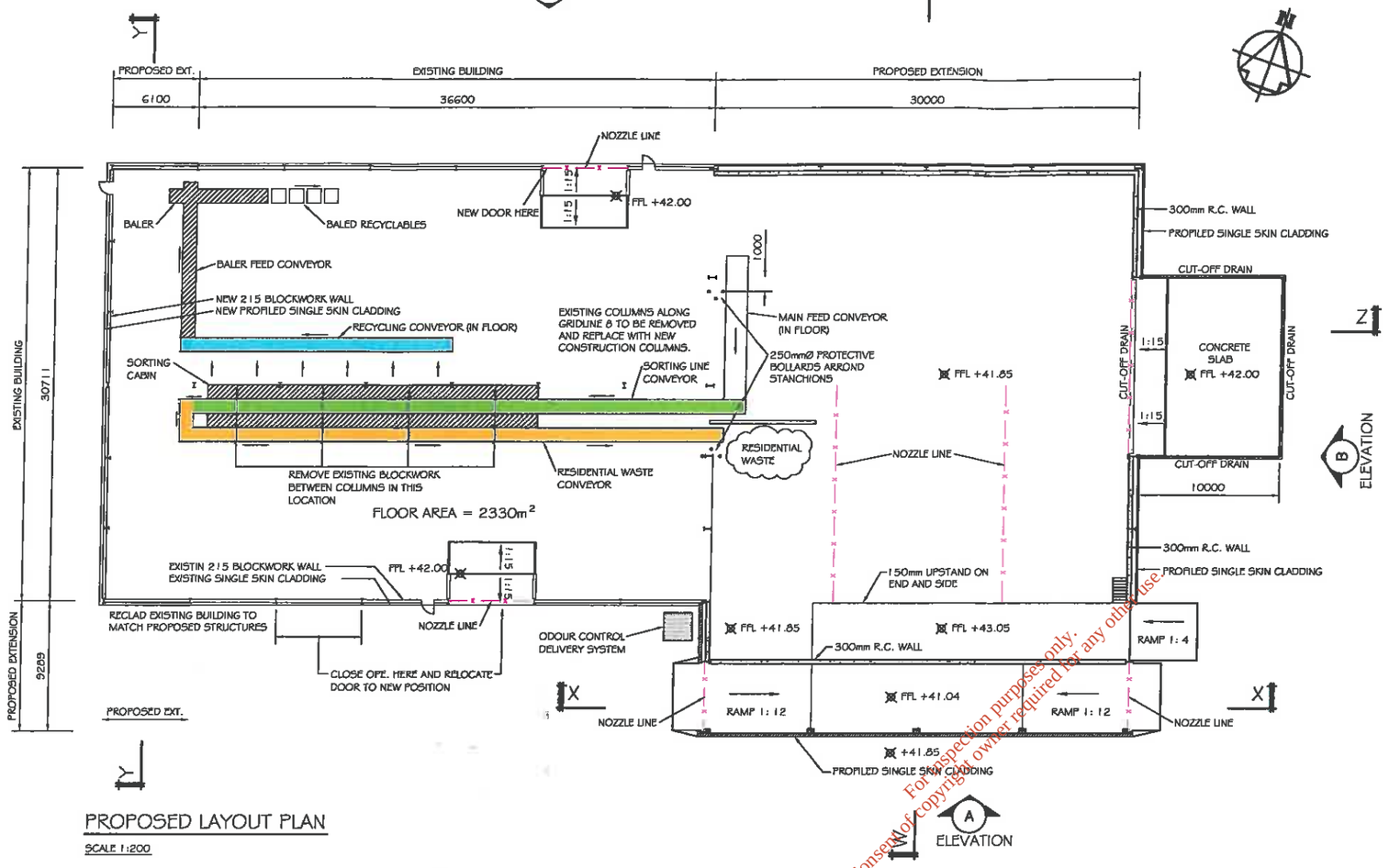
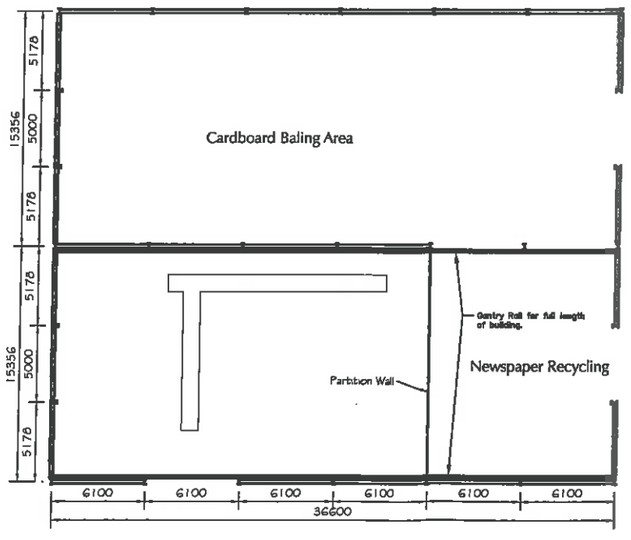


PROPOSED LAYOUT PLAN

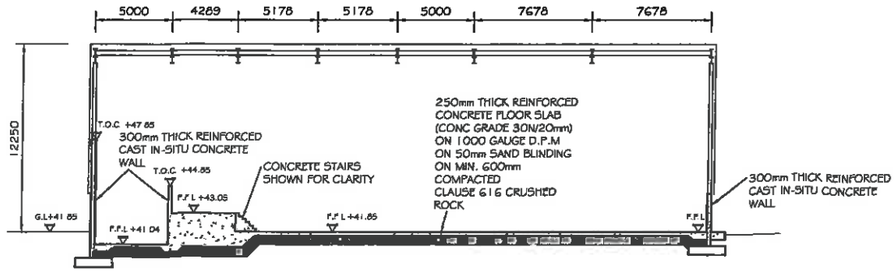
SCALE 1:200



EXISTING BUILDING LAYOUT PLAN

SEE PROPOSED SITE LAYOUT PLAN FOR LOCATION

SCALE 1:200



SECTION W-W

SCALE 1:200

LEGEND:

—x—x—x— ODOUR CONTROL SYSTEM

Rev.	Drawn	Chkd	Aprvd	Date	Description
A	DM			04.09.2002	LICENCE APPLICATION ISSUE FOR WASTE

Name of Client
IPODEC IRELAND LTD.

Name of Job
MRF FORGE HILL, CORK

Title of Drawing
PROPOSED RESIDUAL WASTE TRANSFER BUILDING & EXTENSION TO EXISTING BUILDING,
EXISTING AND PROPOSED FLOOR PLANS

Scales Used
1:200 & 1:100-A1(1:400 & 1:200-A3)

Dwg. No. 2002-115-01-D.1.4 — Rev. A

FEHILY TIMONEY & COMPANY
CONSULTANTS IN ENGINEERING & ENVIRONMENTAL SCIENCES
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WEB SITE: www.fehilytimoney.com

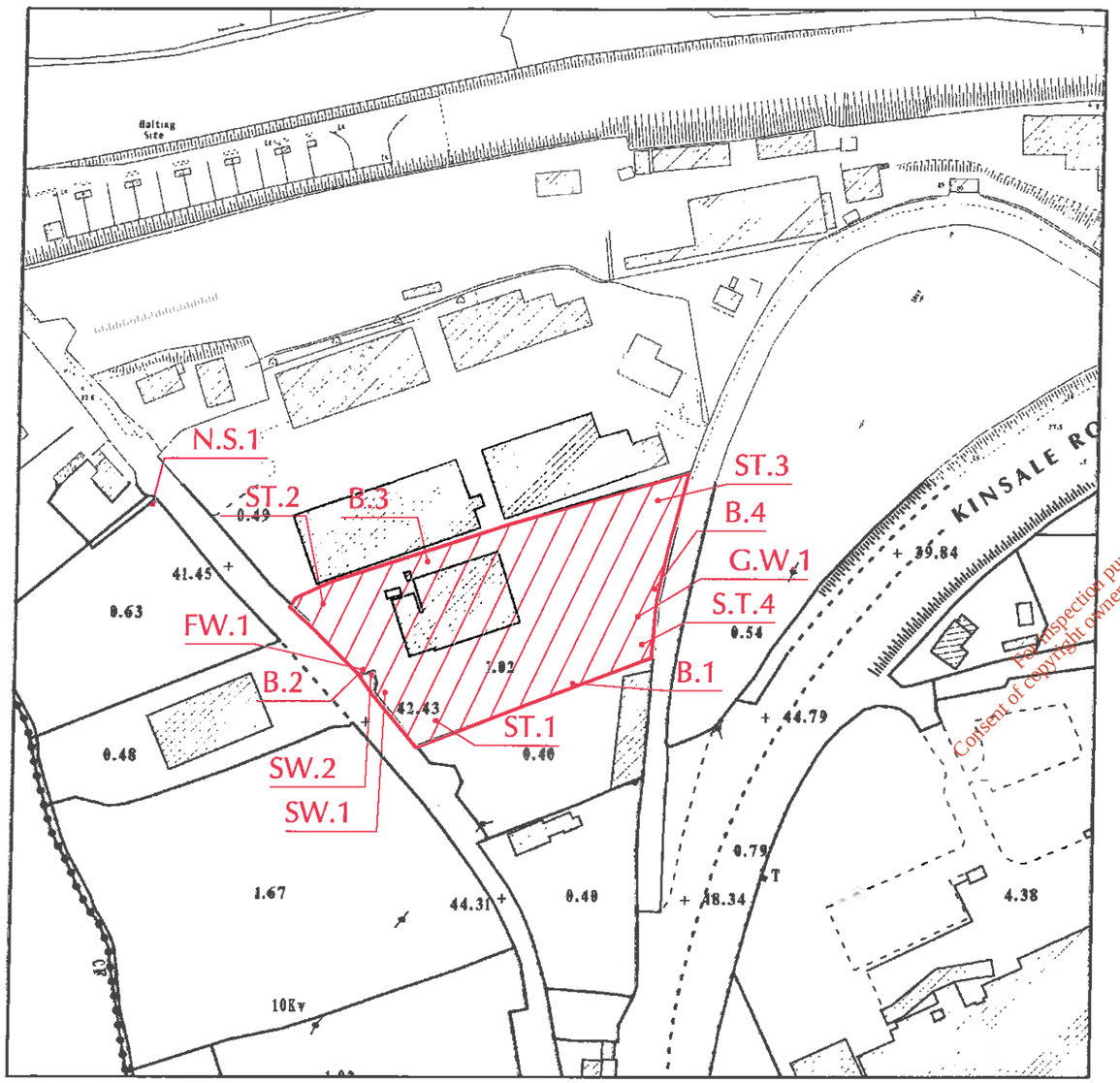
REVISION B

SEP 2002

2002\115\01\ipock-EIS_J.1.1.dwg

Reproduced from Ordnance Survey with Government Permission - Permit No. 46391/98
CORK 1:1000 6427-08,09,10, 1:2500 6427 B+D

1:2500 PLAN



FEHILY TIMONEY & COMPANY

ENVIRONMENTAL MONITORING POINTS

G.W.1
166942E, 068749N.
N.S.1
166739E, 068790N.
SW.1
166839E, 068711N.
SW.2
166832E, 068719N.
ST.1
166859E, 068699N.
ST.2
166811E, 068748N.
ST.3
166950E, 068792N.
ST.4
166945E, 068731N.
B.1
166916E, 068715N.
B.2
166828E, 068720N.
B.3
166854E, 068766N.
B.4
166950E, 068755N.
FW.1
166826E, 068723N.

ST.1
AIR MONITORING LOCATION
SW.1
SURFACE WATER MONITORING LOCATION
B.1
NOISE MONITORING LOCATION
N.S.1
NOISE SENSITIVE LOCATION
FW.1
FOUL WATER MONITORING LOCATION

WASTE LICENCE APPLICATION
For IPODEC IRELAND Ltd TRANSFER STATION At FORGE HILL Ind.Estate,CORK

DRAWING J.1.1

Appendix B IPODEC Waste Management Permit

WASTE MANAGEMENT ACT, 1996 (NO. 10 1996)
AND
WASTE MANAGEMENT (PERMIT) REGULATIONS, 1998
(S.I. NO. 165 OF 1998)

PERMIT

LOCAL AUTHORITY:
Cork County Council

PERMIT REFERENCE NUMBER:
02/01

PERMIT HOLDER:
IPODEC Ireland Limited.

PRINCIPAL PLACE OF BUSINESS:
Forge Hill, Kinsale Road, Co. Cork.

The County Council of Cork, in accordance with the Waste Management (Permit) Regulations, 1998 hereby grants a permit to IPODEC Ireland Ltd. for a facility located at Forge Hill, Kinsale Road, County Cork for the period ending 30th. April, 2004, in accordance with plans and particulars furnished with application received 2nd. February, 2001 to engage in the following activities:

Recycling or reclamation of organic substances (excluding composting or other biological processes); storage of waste intended for submission to a waste recovery facility; recycling or reclamation of metals and metal compounds; recycling or reclamation of other inorganic materials; repackaging of waste prior to submission to a waste disposal facility; storage of waste intended for submission to a waste disposal facility; blending or mixture of waste prior to submission to a waste disposal facility activity; subject to the following conditions:-

1. The Permit Holder shall use BATNEEC (Best Available Technology Not Entailing Excessive Cost) in the recovery of waste brought on site.

2. Comprehensive written operating instructions and procedures shall be prepared in respect of waste control to assist personnel with responsibilities in this area. These procedures shall be made available to the Permitting Authority on request.

3. Employees with responsibilities in the waste control area shall receive training adequate to enable them to execute their tasks in relation to pollution control.

4. The Permit Holder shall keep a record of quantity, nature, origin, destination, frequency of collection, mode of transport and treatment of all waste managed on site. The waste shall be categorised in accordance with the European Waste Catalogue.

5. The surface water discharging from the site shall be tested for the parameters indicated below. The tested parameters shall not exceed the limit values indicated as follows:-

C.O.D.	125 mg/l
Total Suspended Solids	30 mg/l
Mineral oils and hydrocarbons of petroleum origin	5 mg/l
Heavy Metals	0.1mg/l
pH	Range 6 to 9

The frequency of testing for all parameters shall be quarterly.

6. The Permit Holder shall provide a sampling point on the discharge for the use of any Statutory Body having responsibility for Water Pollution Control. The Permit Holder shall ensure that direct access to the sampling point is available at all times.

7. The Permit Holder shall carry out a daily visual inspection of the surface water from roofs and hardstanding areas to discharge points and any abnormalities in water quality shall be noted. In the event of any such abnormalities, the Permit Holder shall immediately notify Cork County Council and initiate an investigation into the possible cause of the abnormalities.

8. All storage tank areas and drum storage areas shall be rendered impervious to the materials stored therein. In addition, storage tank areas shall be bunded to a volume of 110% of the largest tank within each individual bunded area. Drum storage areas shall be bunded to a volume equal to 110% of the sum of the volumes of the largest ten drums likely to be stored therein.

9. The integrity and watertightness of all the bunded structures and their resistance to penetration by water or other materials stored therein shall be tested and demonstrated by the Permit Holder to the satisfaction of the Permitting Authority.

10. The Permit Holder shall ensure that all operations on-site shall be carried out in a manner such that air emissions including dust and/or odours do not result in impairment of or significant interference with amenities or the environment beyond the site boundary.

11. Dust deposition arising out of activities on site shall not exceed 250 mg/m^2 /day at the site boundary averaged over 30 days. The method of measurement and interpretation shall be as specified by the Permitting Authority.

12. Activities on site shall not give rise to noise levels off site at noise sensitive locations which exceed the following sound pressure limit (Leq, 15 min).

During Permitted Operating Hours 55 dBA

There shall be no clearly audible tonal component or impulsive component in the noise emission from the activity at any noise sensitive location.

13. The volume of all wastes managed on site shall be recorded by the Permit Holder. All such wastes shall be detailed as to source, route and type of recycling or disposal, final destination and classification under the European Waste Catalogue. This information shall be included in the annual summary report which must be returned to the Permitting Authority under the terms of this permit.

14. All paper/cardboard, glass, plastic, metals, wooden pallets, oil and batteries shall be recycled or recovered in so far as is practicable. All waste management options utilised shall be agreed in advance with the Permitting Authority. Residual wastes shall be disposed of only to permitted or licensed facilities.

15. While awaiting disposal, all wastes for recycling/recovery and by-products/residual wastes for disposal shall be collected and stored in designated areas protected against spillage and leachate run-off. Skips containing residual wastes shall be covered when not actively in use. A maximum of three skips shall be used for the retention of residual wastes.

16. All residual waste delivered to site between Monday and Thursday of any week shall be removed off site within 24 hours.

17. Cardboard waste for recycling/recovery shall be baled prior to storage and dispatch. Wooden pallets shall be stacked neatly in a designated area.

18. The Permit Holder shall establish procedures to ensure that corrective action is taken should the specified requirements of this permit not be fulfilled. The responsibility and authority for initiating further investigation and corrective action in the event of a reported non-conformity with this permit shall be defined.

19. The Permit Holder shall ensure that a person in charge shall be available on-site to meet with authorised persons of the Permitting Authority at all reasonable times.

20. The Permit Holder shall put in place a programme to ensure that members of the public can obtain information concerning the environmental performance of the Permit Holder at all reasonable times.

21. The Permit Holder shall maintain sufficient and continuous vermin control at the site.

22. The permitted hours of operation shall be 07.00 to 19.30 hours Monday to Saturday unless otherwise agreed with the Permitting Authority.

23. The annual intake of all wastes managed at the facility shall not exceed 5,000 tonnes.

24. The granting of this permit does not exempt any development from complying with the requirements of the Planning Acts or with other pieces of legislation.

25. The Permit Holder is legally responsible for all aspects of the operation and maintenance of the site. Nothing in the granting of this permit in anyway reduces the legal liabilities of the site owner.

26. The Permit Holder will be responsible for the control of litter in the vicinity of the site.

27. The Permit Holder shall grant immediate and unhindered access to the site, including sewers and pipes to any authorised personnel representing any Statutory Body having responsibility for environmental pollution control at all reasonable times to carry out such inspections, monitoring and investigations as the body deems necessary.

28. The Permit Holder shall keep records of all monitoring carried out and shall retain such records for a minimum period of three years. These records shall be available for inspection by authorised personnel representing any Statutory Body involved in water pollution control at all reasonable times. Any non-compliance with the terms of the permit shall be highlighted and the reason(s) why such non-compliance occurred shall be stated. The measures taken to ensure full compliance shall be stated. The percentage compliance with permit values for each parameter shall also be indicated.

29. Before January 15th. of each calendar year, the Permit Holder shall submit a summary of all monitoring carried out in the previous year. This report shall evaluate the operation of the facilities available on site to minimise environmental impacts in the light of the results achieved in the previous year. The report shall also outline the intentions of the Permit holder with regard to the upgrading of site facilities where warranted. All reports shall be certified accurate and representative by the Permit Holder.

30. Adequate Fire Extinguishers and emergency response equipment shall be maintained on site.

31. Fires shall not be permitted on the site. Any outbreak of fire shall be considered an emergency and a notifiable incident. If a fire occurs, the Permit Holder shall immediately arrange to have it extinguished. If the fire (or emission of smoke) continues for longer than 30 minutes, the Permit Holder shall arrange to have it extinguished by the Local Authority Fire Brigade at the expense of the Permit Holder.

32. The site shall be adequately fenced at all times in order to prevent unauthorised access outside of operating hours.

33. In the event of any incident which may result in water, soil or air pollution, the Permit Holder shall immediately report the incident to Cork County Council by telephone or telefax and shall confirm the communication in writing within twenty-four hours. The Permit Holder shall take all possible steps to ensure that emissions or discharges not in accordance with the provisions of this permit do not occur and shall consult with Cork County Council on the best practicable means of rectification.

34. The Permit Holder shall notify Cork County Council within seven days of-

(i) the imposition of any requirement on the permit holder by order under section 57 or 58 of the Waste Management Act, 1996, or

(ii) any conviction of the permit holder for an offence prescribed under section 34(5) or 40(7) of the Waste Management Act, 1996.

35. The permit holder shall hold a copy of the permit at all times at the principal place of business and at the facility to which the permit applies.

36. The Permit Holder shall pay to Cork County Council the sum of £400 in respect of this permit. The Permit Holder shall also pay such annual contributions towards the cost of monitoring the site operations as Cork County Council considers necessary for the performance of its duties under the Waste Management Act taking account of the actual costs of monitoring as incurred.

37. The permit is valid from the date of issue until the 30th. April, 2004.

Appendix C AWN Consulting - External Acoustic Survey

AWN Consulting Limited
IDA Industrial Estate
Carrigaline,
Co. Cork

Tel: +353 21 4377950
Fax: +353 21 4373975
Email: awn.info@awnconsulting.com

External Acoustic Survey

of

Ipodec Waste Handling Facility
at
Forgehill, Cork.

Completed in May 2000

For: **Kieran Mullins,**
Ipodec Ireland Ltd.
Ballymount Cross
Tallaght
Dublin 24

By: Noel Lynch, MA, MAI, MIOA

30 May 2000

CONTENTS

1.0 Survey

1.1 Summary:

The Ipodec facility at Forge Hill has an intermittent operating pattern with specific levels around the boundaries that are generally less than 55 dBA. Note that the background levels are less than 50 dBA at all boundary locations. In addition, the activities of the facility are not perceptible at the adjacent sensitive area.

The facility would meet a specific criteria of 55 dBA at the 'nearest occupied private residence'. In the absence of the impact of traffic as it is currently operated, it would meet a boundary criteria of 55 dBA $L_{Aeq,T}$, where T is 30 minutes or more.

1.2 Introduction:

The noise survey of Ipodec facility at Forge Hill, Kinsale Road, Cork was carried out in order to meet the requirements of a Waste Licence Application. The survey was carried out using a Bruel & Kjaer Type 1 instrument capable of measuring within +/- 0.1 dB(A) in L_{Aeq} and Sound Pressure Levels (SPL) in 'A' scale with a one third octave filter. The instrument records the L_{Aeq} and L_{AF10}, L_{AF90} and L_{AF95} percentiles simultaneously, with full third octave frequency analyses - the instrument has been calibrated using references to National Standards and was last calibrated in November 1999. The unit was calibrated prior to commencing the survey using the recommended calibration procedure.

All boundary and sensitive area measurements were taken in the L_{Aeq} mode (L_{Aeq} is an average exposure over the time interval chosen) at 30-minute sampling intervals. In addition, analytical measurements were taken on shorter sampling periods closer to the facility and on the site to determine the impact of the on-site sources. In all cases, the data was recorded across all third octave bands and the back-up instrument download data are available for inspection and/or future reference. The data is reported in octave bands and the 1/3 octave data are outlined in Appendix II.

Each of the measurements has been recorded and is summarised in the appropriate tables for the boundaries and sensitive areas attached in Appendix II. These L_{Aeq} levels are outlined in the tables as follows:

Table A Noise Emissions

Table B Ambient Noise Measurements

No corrections have been applied to the measurements for tonal or impulsive characteristics. For the purposes of discussion, a sound with a tonal characteristic is defined as one which is either clearly audible, or for a given frequency (third octave band), exhibits levels which are 5 dB above the flanking frequency (third octave) bands.

1.3 Sensitive Areas:

The survey was used to determine the impact of the facility on the environs and in particular on local sensitive areas. Each of the sensitive area measurements is recorded in Table B, which is attached in Appendix II. The local sensitive area was determined to be:

S1: The property, S1 is the nearest adjacent private residence located directly north-west of the facility. The property is located adjacent the site on the opposite side of the road; there is a line of sight from S1 to the entrance of the site but not to the main transfer facility.

1.4 Boundary references:

The Ipodec facility is located in an industrial area and is directly adjacent to several industrial facilities. The site is bounded on two sides with industrial facilities; the rear of the site overlooks the busy Kinsale /Airport road; there has been considerable recent development in the area. An industrial facility is located directly opposite the entrance to Ipodec on the Forgehill Road. In addition, the Forgehill road serves as access to several industrial estates to the West of the facility and as a slip road to the Kinsale /Airport road.

The site is relatively small extending some 80 meters from North to South and some 150 meters from East to West. The offices for the facility are located in a single storey structure towards the front of the site. Behind the offices there is a warehouse divided into two separate areas that house a repair workshop and a recycling area. Each of these areas has an opening for access facing towards the rear of the site. In addition, the workshop has a second door facing South. The recycling area was primarily being used for storage of bales of cardboard at the time of the survey. There was a bailer was in use during the survey.

The compacting area is located outside towards the rear of the site, on the workshop side. Unloading of waste takes place at the South east corner of the site directly into the compactor; the excavator is used intermittently in the event that the waste truck cannot access the compactor. The compacted materials are then removed from site. The site activity during the survey was intermittent and this appeared to be representative of the operation of the site.

Each of the boundary measurements is recorded in Table B, which is attached in Appendix II. A description of each boundary location is as follows:

South Boundary B1:

The South boundary location for all measurements is referred to as B1 in all summary tables below. The boundary is shared with adjacent industrial premises. A palisade fence with foliage defines the boundary, which partially obstructs the line of sight to the adjacent facility. There are no residential properties visible along this boundary. The position for the measurement was chosen at approximately 2 meters inside the boundary.

West Boundary B2:

The West boundary location for all measurements is referred to as B2 in all summary tables below. The boundary is directly along the Forgehill Road through which access is made to the site. This boundary is fenced with a light foliage screen. The position for the measurement was chosen at approximately 5 meters inside the boundary and approximately 2 meters North of the entrance to the facility. The residential property at S1 is partly visible from this location.

North Boundary – B3:

The North boundary location for all measurements is referred to as B3 in all summary tables below. The boundary is shared with adjacent industrial premises. A palisade fence with foliage defines the boundary, which partially obstructs the line of sight to the adjacent facility. There are no residential properties visible along this boundary. The position for the measurement was chosen at approximately 2 meters inside the boundary.

East Boundary – B4:

The East boundary location for all measurements is referred to as B4 in all summary tables below. This boundary is defined by a palisade fence and heavy foliage; it overlooks a main road, and an open area. The position for the measurement was chosen at approximately 5 meters inside the boundary. The location has a line of sight to all site activities.

1.5 Sources:

Within the facility, there are two significant sources. These sources operate outside the building. The sources are referred to as NS1 and NS2 in the summary tables below and the source data is recorded in Table A attached in Appendix II. The sources are as follows:

NS1 - Excavator:

The excavator on site was noted to be a JCB type and was used to manage waste deposited in the compactor area. It operates on an as-needed basis depending on the waste truck delivering the waste. It operated intermittently during the survey period. The unit was recorded during its idle mode and under normal operating conditions at a distance of approximately 5 meters.

NS2 – Baler /Compactor:

There is only one compactor on the site; which is used to compact all materials. The unit operates as needed with a 5 minute operating interval and automatic stop on completion of the cycle. Operation is on demand and operator driven. The primary

noise source for the baler is the hydraulic pump. The unit is in a fixed location and was recorded during normal operation at a distance of approximately 2 meters.

1.6 Measurement Conditions:

The survey was carried out during good dry sunny weather conditions with light winds. The wind speed was measured at less than 1 m/s from a variable Westerly direction. The ambient temperature was noted at 14 °C during the measurement period.

2.0 Results & Observations:

2.1 Results:

The detail of each of the measurements taken is outlined in the tables attached in Appendix II. The 1/3 octave A-weighted data is appended for reference.

Source Measurements:

Table A summarises the source measurements taken at an appropriate reference distance during normal operations. These measurements are detailed by frequency in both linear and A-weighted format to characterise the source.

Ambient Measurements:

Table B summarises the daytime levels recorded both at the sensitive area and boundaries for the appropriate sampling intervals by frequency.

2.2 Observations:

The following discussion should be referenced to the site map and the appropriate table in Appendix II for specific location and direction. Observations from the tables are:

2.2.1 Noise Emissions:

1. The noise source, NS1 the excavator /shovel exhibits low frequency components consistent with the engine and exhaust frequencies; during normal operations, the unit exhibits components at 100, 160 and 200 Hertz. During normal operation with elevated revs, the components at these frequencies are elevated. The unit exhibited operating levels that varied from an idle of 72 dBA to an operating level of 82 dBA at 5 meters.
2. The operation of the excavator /shovel was generally not audible at the public boundaries; it was clearly audible at the rear boundary B4.

3. The Compactor /Baler NS2 is fixed and exhibited dominant frequencies at 800 Hertz; this moderate tone was generated by the operation of the hydraulic pump. The unit exhibited an operating level of less than 67 dBA was thus only audible within the building or close to open doors.

2.2.2 Ambient Noise Measurements:

The ambient data noted are summarised into the table below. Some observations in relation to the ambient measurements include:

4. The South boundary position, B1 is located directly opposite the side entrance to the workshop; the ambient noted at this location was contributed to by maintenance activity on a skip involving the use of an angle grinder. The ambient level noted at the location was noted at 56 dBA with a background level of 47 dBA.

Ambient Measurement Summary

		2000			
Ref.	Description	L_{eq}	L_{10}	L_{90}	L_{95}
B1	South Boundary	56.3	58	47	46
B2	West Boundary	61.6	65	48	46
B3	North Boundary	49.2	51	41	40
B4	East Boundary	64.1	68	49	48
S1	Sensitive Area 1	70.2	74	51	49

5. The West boundary position, B2 is directly adjacent to the Forgehill Road. The effects of local traffic impact the boundary position giving an ambient level of 61 dBA with a background level at 48 dBA. Truck movements to and from the site impact the location; however, the operations of the waste handling facilities were not audible at this location.

6. The North boundary position, B3 is located adjacent to the recycling area where there was little activity noted at the time of the survey. The baler was perceptible during the background periods at B3.

7. The East boundary position, B4 is generally shielded by the building from the site activities. Note that the ambient level at this location was noted at less than 50 dBA with a background level of 41 dBA.

8. The ambient level at sensitive area, S1, was largely determined by the traffic on the Forgehill Road. The operations of the waste handling facility were not audible or perceptible at this location. The movement of traffic into and out of the site was visible but was not significant relative to the overall levels of traffic on the Forgehill Road. The ambient level at the location was noted at 70 dBA due to the increased traffic.

2.2.3 Tonal & Impulsive Characteristics

For the purpose of this report, we have defined Tonal Characteristics per IS 1996-3, which suggests that a noise source is tonal if a particular frequency is either clearly audible or 5 dB greater than the flanking frequencies.

9. The maintenance operation creates impulsive characteristics that are audible at the South boundary position. In addition, the waste handling and truck loading /unloading operations also create impulsive characteristics that are audible at the East boundary position; the impulsive characteristics are primarily due to material handling activities.

10. The measurement for NS1 contains low frequency tonal components, when the unit is operational; the components are eliminated when the unit is idle. These low frequency components are audible at the East boundary position B4.

11. The measurements for NS2 contain tonal components at 800 Hertz; however, the tones are generally not audible at the boundary positions.

2.2.4 Attenuation:

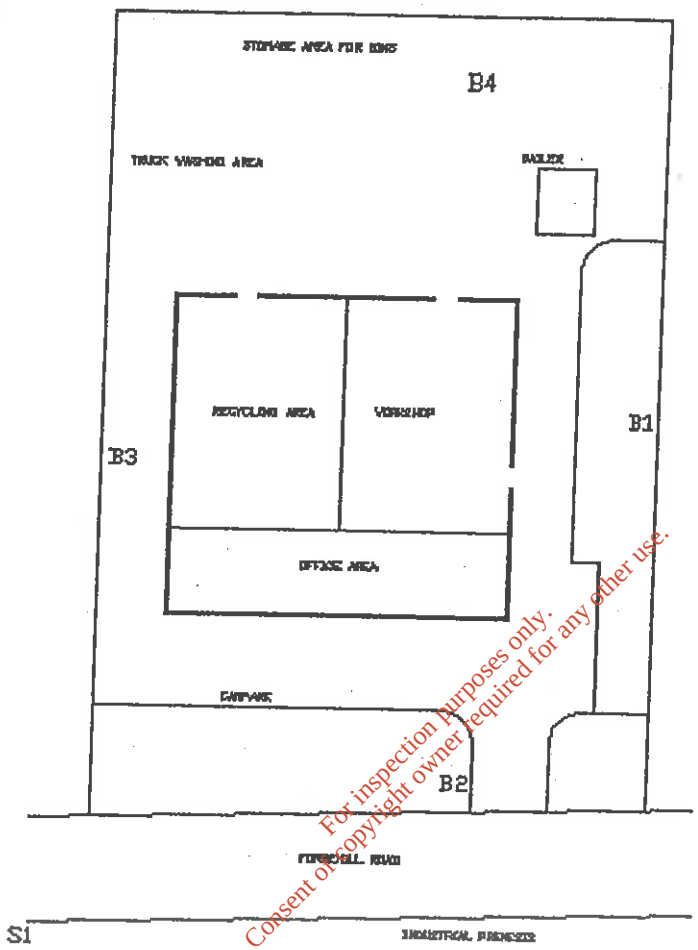
NS1 - Excavator:

The excavator is fitted with a standard exhaust silencer with an engine hood.

NS2 – Baler /Compactor:

There is no attenuation fitted to the baler / compactor at this time.

Appendix I - Site Map & Locations



Appendix II - Table A, Noise Emissions

Site: **Ipodec Ltd.**
Address: Forgehill, Cork

Date: 24-May-00

Measurement Detail				Octave Bands (Hz)											
Description	**Ref. No.**	**Ref. Dist (M)**	**dB Wgt**	**63**	**125**	**250**	**500**	**1k**	**2k**	**4k**	**8k**	**Leq dBA**	**Impulsive qualities**	**Periods of Emission**	**Other Comments**
Excavator (operational)	NS1	5.0	L_{Aeq}	60	64	65	73	76	77	74	65	81.6	None	8 hour	Low Frequency components at 100, 160 & 200 Hertz
			L_{Leq}	86	80	74	76	76	76	73	66				
Excavator (idle)	NS1	5.0	L_{Aeq}	44	48	55	62	68	66	60	52	71.2	None	8 hour	Broadband
			L_{Leq}	70	64	64	65	68	65	59	53				
Baler	NS2	2.0	L_{Aeq}	35	47	52	61	63	54	55	54	66.5	None	8 hour	Dominant at 800 Hz
			L_{Leq}	61	63	61	64	63	53	54	55				

Appendix II - Table B, Ambient Noise Measurements

Site: **Ipodec Ltd.**
Address: Forgehill, Cork

Details of Measurements				Frequency								LAxx Data				24-May-00
No.	Ref.	Description	Type	63	125	250	500	1k	2k	4k	8k	Leq	L10	L90	L95	Notes /Comments
1	B1	South Boundary	30min L_{Aeq}	41	43	46	47	51	51	45	36	56.3	58	47	46	Site activities dominant
			30min L_{Leq}	67	59	55	50	51	50	44	37					Traffic audible
2	B2	West Boundary	30min L_{Aeq}	46	49	50	54	57	56	48	40	61.6	65	48	46	Road Traffic dominant
			30min L_{Leq}	72	65	59	57	57	55	47	41					
3	B3	North Boundary	30min L_{Aeq}	36	37	40	42	45	42	34	26	49.2	51	41	40	Site activities shielded
			30min L_{Leq}	62	53	49	45	45	41	33	27					Baler audible
4	B4	East Boundary	30min L_{Aeq}	47	49	53	57	59	59	54	46	64.1	68	49	48	Site activities dominant
			30min L_{Leq}	73	65	62	60	59	58	53	47					Traffic movement to site
5	S1	Sensitive Area 1	30min L_{Aeq}	51	54	57	62	66	65	59	51	70.2	74	51	49	Road Traffic dominant
			30min L_{Leq}	77	70	66	65	66	64	58	52					

Appendix II – 1/3 Octave A-weighted Data

	Location /Source	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k	10k	12.5k	A
B1	South Boundary	32	37	38	38	38	39	40	42	42	42	42	43	45	46	47	48	47	45	42	41	38	34	30	25	24	56.3
B2	West Boundary	35	42	44	45	43	44	46	45	46	47	49	51	52	53	52	52	52	48	46	43	41	38	35	30	24	61.6
B3	North Boundary	28	31	33	32	31	34	33	35	37	36	37	38	38	39	42	39	36	34	31	29	26	21	21	21	21	49.2
B4	East Boundary	40	42	43	44	44	45	46	49	49	50	52	53	53	54	54	56	54	52	51	49	47	43	40	36	29	64.1
S1	Sensitive Area 1	36	44	50	48	49	50	51	52	54	55	57	59	60	62	62	62	60	58	56	53	51	49	46	43	38	70.2
NS1	Excavator (operational)	60	40	47	61	53	61	61	57	61	64	64	71	69	73	72	72	72	71	72	68	65	63	60	55	51	81.6
NS1	Excavator (idle)	38	39	40	41	42	45	46	47	54	56	56	60	62	64	63	63	60	58	57	56	52	50	47	42	37	71.2
NS2	Baler	25	30	32	43	39	43	43	48	49	53	58	58	62	55	51	51	49	48	49	48	52	51	49	48	43	66.5

Appendix D RPS Environmental Sciences Ltd. - Surface water and Noise Monitoring Reports.

IPODEC IRELAND LTD.

SURFACE WATER MONITORING AT

FORGE HILL WASTE TRANSFER STATION,

FORGE HILL, KINSALE ROAD, CORK.

FEBRUARY 2002

RPS ENVIRONMENTAL SCIENCES IRELAND LIMITED

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This report has been prepared by RPS Environmental Sciences Ltd

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PREPARED BY:	**Darragh Kingston**
REVIEWED BY:	**Dr. Edward Molyneaux**

CONTENTS

LIST OF APPENDICES

1. INTRODUCTION

RPS Environmental Sciences (RPSES) were requested by IPODEC Ireland Ltd., to carryout all works necessary to conduct quarterly surface water monitoring at the IPODEC Waste Transfer Station located at Forge Hill, Kinsale Road, Cork; as required by the company's waste permit requirements. IPODEC Ireland Ltd., were granted a waste permit by Cork County Council (Waste Permit Reference No. 02/01) for the facility in February 2001.

RPSES Consultants subsequently visited the site on the 17th January 2002 to conduct the surface water sampling. As per Condition 5 of the Waste Permit, IPODEC Ireland Ltd., is required to carry out surface water monitoring at the discharge point from the site on a quarterly basis. This report details the findings of this assessment.

1.1 SITE DESCRIPTION

The IPODEC Ireland Ltd., waste transfer station is situated off Forge Hill, adjacent to City Link Industrial Park to the south and Forge Hill Industrial Estate to the north. The site is bounded to the east, by a closed section of the old Kinsale Road, and to the west by Forge Hill at the entrance to the facility. The nearest residence to the site is located approximately 90m northwest of the site (on the western side of Forge Hill).

2. METHODOLOGY

2.1 SAMPLING

There is no surface water stream or other surface water bodies on-site at the waste transfer station. Surface water drainage at the site is collected in a storm water drainage (sewer) network that discharges off-site near the site entrance to the municipal mains drainage system that runs beneath Forge Hill. Surface water samples were collected from the final discharge point from the site. The drainage system of the site may be accessed from a manhole at SW1, immediately south of the site entrance on the grass verge. The location of the surface water monitoring point (SW1) is given in Appendix 1. Samples were collected in laboratory prepared sample containers and sealed for shipment under controlled chain of custody to the accredited analytical laboratory for analysis.

2.2 ANALYSIS

Samples were analysed for the following parameters: -

- Chemical Oxygen Demand (COD),
- Total Suspended Solids (TSS),
- Heavy Metals (B, Se, Zn, Hg, As, Cd, Cr, Cu, Ni and Pb),
- pH, and
- Mineral oils and hydrocarbons of petroleum and diesel origin.

Grab samples of surface water were collected directly from the storm sewer drain (accessed via a manhole) to polypropylene containers in accordance with standard procedures. Surface water samples were placed in special laboratory prepared sampling containers. After completion of sampling, the samples were sealed, labelled and dispatched to Alcontrol Geochem (UKAS Accredited Laboratory) by courier at 3-8°C for analysis. The COD was determined by standard method (atomic absorption spectrophotometry). Total Suspended Solids were determined by gravimetric titration. The heavy metals were determined by acid digestion followed by atomic adsorption spectrophotometry. The pH was determined using a pH electrode meter. The total volatiles (petroleum range organics) and BTEX (Benzene, Toluene, Ethyl Benzene and Total Xylene) were determined by gas chromatography using a flame ionising detector. Diesel range organics and mineral oil residues were determined by gas chromatography using a flame ionising detector.

3. RESULTS

The results for the COD, TSS, heavy metals, pH, mineral oils and hydrocarbons of petroleum and diesel origin of the surface water samples are given in Table 3.1. Certificates of Analysis from the analytical laboratory are provided in Appendix 2.

Table 3.1 Surface Water Monitoring Results

Parameter	SW1	Waste Permit Limit Values
pH (pH units)	7.1	≥6.0 and ≤9.0
Chemical Oxygen Demand (COD) (mg/l)	615.2	125
Total Suspended Solids (TSS) (mg/l)	140	30
Zinc (mg/l)	0.06	0.1
Nickel (mg/l)	<0.010	0.1
Chromium (mg/l)	0.001	0.1
Cadmium (mg/l)	<0.0004	0.1
Copper (mg/l)	0.006	0.1
Lead (mg/l)	<0.005	0.1
Arsenic (mg/l)	<0.002	0.1
Mercury (mg/l)	<0.00005	0.1
Selenium (mg/l)	<0.05	0.1
Boron (mg/l)	<0.05	0.1
Mineral Oil (mg/l)	1.721	5
Total Volatiles C_4-C_{13} (mg/l)	2.845	5
Benzene (mg/l)	<0.010	5
Toluene (mg/l)	<0.010	5
Ethyl Benzene (mg/l)	<0.010	5
Total Xylene (mg/l)	<0.010	5
Diesel Range Hydrocarbons (mg/l)	2.459	5

4. COMMENT

Surface water monitoring results presented in Table 4.1 indicate that all the parameters analysed at SW1 except for Chemical Oxygen Demand (COD), (615.2 mg/l) and Total Suspended Solids (TSS), (140 mg/l) are within the emission limit values specified in the waste permit.

The elevated COD level may be associated with the organic matter that has been added to the surface water in the drain in the form of the total suspended solids. There are no direct hazard implications of raised COD levels in surface water as COD is an indicator of overall water quality, (Environmental Protection Agency, Parameters of Water Quality: Interpretation and Standards, 2001). If the level of TSS emitted in the surface water is reduced, it is likely that the COD level will also be reduced.

TSS levels may be associated with contamination of surface water drainage with material deposited on the hardstanding area, due to truck movements at the site and washing of tyre dirt into the surface water drains during periods of rainfall. It should be noted that there was a significant period of rainfall in the days prior to collecting the surface water samples. The surface water drain runs along the southern side of the garage/workshop to the rear of the site. This is the route also taken by refuse collection and skip trucks at the site. Part of the skip storage area to the rear of the site is concrete hardstanding but a portion of the yard to the rear of the site is unsurfaced. The area is covered by hardcore (gravel) but surface water drainage from this area may wash suspended solids into the storm water drainage system.

The total suspended solids result for the surface water sampling carried out in September 2001 (63 mg/l) was also in excedance of the waste permit emission limit value of 30mg/l. It is recommended that unsurfaced areas at the site are concreted, and/or regular sweeping of hardstanding/concreted areas of the site is carried out in order to reduce the solids content of the surface water discharge from the site. Measures should be implemented at the site to reduce the suspended solids that are washed into the surface water drainage system discharging from the site to the public sewer. Initially, the area of the site yard that is unsurfaced should be concreted and improved housekeeping practices should be employed at the site, such that more frequent sweeping of the hardstanding/concreted areas is carried out.

In the event that, after the recommended remedial measures are put in place and surface water sampling indicates that suspended solids are consistently in excess of the permitted emission limit value (30mg/l), it may be necessary to install further surface water drainage infrastructure, (such as an appropriately sized oil/solids interceptor) at the site to improve the quality of surface water discharging from the site.

IPODEC IRELAND LTD.

SURFACE WATER MONITORING AT

FORGE HILL WASTE TRANSFER STATION,

FORGE HILL, KINSALE ROAD, CORK.

OCTOBER 2001

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LIST OF APPENDICES

1. INTRODUCTION

RPS Environmental Sciences (RPSES) were requested by IPODEC Ireland Ltd., to carryout all works necessary to conduct quarterly surface water monitoring at the IPODEC Waste Transfer Station located at Forge Hill, Kinsale Road, Cork; as required by the company's waste permit requirements. IPODEC Ireland Ltd., were granted a waste permit by Cork County Council (Waste Permit Reference No. 02/01) for the facility in February 2001.

RPSES Consultants subsequently visited the site on the 5th September 2001 to conduct the surface water sampling as per Condition 5 of the Waste Permit. IPODEC Ireland Ltd., is required to carry out surface water monitoring at the discharge point from the site on a quarterly basis. This report details the findings of this assessment.

1.1 SITE DESCRIPTION

The IPODEC Ireland Ltd., waste transfer station is situated off Forge Hill, adjacent to City Link Industrial Park to the south and Forge Hill Industrial Estate to the north. The site is bounded to the east, by a closed section of the old Kinsale Road, and to the west by Forge Hill at the entrance to the facility. The nearest residence to the site is located approximately 90m north west of the site (on the western side of Forge Hill).

2. METHODOLOGY

2.1 SAMPLING

There is no surface water stream or other surface water bodies on-site at the waste transfer station. Surface water drainage at the site is collected in a storm water drainage (sewer) network that discharges off-site near the site entrance to the municipal mains drainage system that runs beneath Forge Hill. Surface water samples were collected from the final discharge point from the site. The drainage system of the site may be accessed from a manhole at SW1, immediately south of the site entrance on the grass verge. The location of the surface water monitoring point (SW1) is given in Appendix 1. Samples were collected in laboratory prepared sample containers and sealed for shipment under controlled chain of custody to the accredited analytical laboratory for analysis.

2.2 ANALYSIS

Samples were analysed for the following parameters:-

- Chemical Oxygen Demand (COD),
- Total Suspended Solids (TSS),
- Heavy Metals,
- pH, and
- Mineral oils and hydrocarbons of petroleum origin.

Grab samples of surface water were collected directly from the storm sewer drain (accessed via a manhole) to polypropylene containers in accordance with standard procedures. Surface water samples were placed in special laboratory prepared sampling containers. After completion of sampling, the samples were sealed, labelled and dispatched to Alcontrol Geochem (UKAS Accredited Laboratory) by courier at 3-8°C for analysis. The COD was determined by standard method (atomic absorption spectrophotometry). Total Suspended Solids were determined by gravimetric titration. The heavy metals were determined by acid digestion followed by atomic adsorption spectrophotometry. The pH was determined using a pH electrode meter. The total volatiles (petroleum range organics) and BTEX (Benzene, Toluene, Ethyl Benzene and Total Xylene) were determined by gas chromatography using a flame ionising detector. Diesel range organics and mineral oil residues were determined by by gas chromatography using a flame ionising detector.

3. RESULTS

The results for the COD, TSS, heavy metals, pH, mineral oils and hydrocarbons of petroleum origin of the surface water samples are given in Table 3.1. Certificates of Analysis from the analytical laboratory are provided in Appendix 2.

Table 3.1 Surface Water Monitoring Results

Parameter	SW1	Waste Permit Limit Values
pH (pH units)	8.04	≥6.0 and ≤9.0
Chemical Oxygen Demand (COD) (mg/l)	36.37	125
Total Suspended Solids (TSS) (mg/l)	63	30
Zinc (mg/l)	0.06	0.1
Nickel (mg/l)	<0.010	0.1
Chromium (mg/l)	0.020	0.1
Cadmium (mg/l)	<0.0004	0.1
Copper (mg/l)	<0.005	0.1
Lead (mg/l)	<0.005	0.1
Arsenic (mg/l)	<0.002	0.1
Mercury (mg/l)	<0.00005	0.1
Selenium (mg/l)	<0.05	0.1
Boron (mg/l)	0.12	0.1
Mineral Oil (mg/l)	0.351	5
Total Volatiles C_4-C_{13} (mg/l)	<0.010	5
Benzene (mg/l)	<0.010	5
Toulene (mg/l)	<0.010	5
Ethyl Benzene (mg/l)	<0.010	5
Total Xylene (mg/l)	<0.010	5
Diesel Range Hydrocarbons (mg/l)	0.703	5

Note[1] NLE - No Limit Established

4. COMMENT

Surface water monitoring results presented in Table 4.1 indicate that all the parameters analysed at SW1 except for Total Suspended Solids (TSS) and Boron are within the emission limit values specified in the waste permit.

The elevated TSS levels may be associated with contamination of surface water drainage with material deposited on the hardstanding area, due to truck movements at the site and washing of tyre dirt into the surface water drains during periods of rainfall. The surface water drain runs along the southern side of the garage/workshop to the rear of the site. This is the route also taken by refuse collection and skip trucks at the site. Part of the skip storage area to the rear of the site is concrete hardstanding but a portion of the yard to the rear of the site is unsurfaced. The area is covered by hardcore (gravel) but surface water drainage from this area may wash suspended solids into the storm water drainage system. It is recommended that these areas be concreted and/or regular sweeping hardstanding/concreted areas is carried out in order to reduce the solids content of the surface water discharge from the site.

IPODEC IRELAND LTD.

NOISE MONITORING AT

FORGE HILL WASTE TRANSFER STATION,

FORGE HILL, KINSALE ROAD, CORK.

OCTOBER 2001

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LIST OF APPENDICES

1. INTRODUCTION

RPS Environmental Sciences (RPSES) were requested by IPODEC Ireland Ltd., to carryout all works necessary to conduct annual noise monitoring at the IPODEC Waste Transfer Station located at Forge Hill, Kinsale Road, Cork; as required by the company's waste permit requirements. IPODEC Ireland Ltd., were granted a waste permit by Cork County Council (Waste Permit Reference No. 02/01) for the facility in February 2001.

RPSES Consultants subsequently visited the site on the 5th September 2001 to conduct the daytime noise monitoring survey as per Condition 12 of the Waste Permit. The waste permit does not require that a night-time noise monitoring survey be carried out. This report details the findings of this assessment.

1.1 SITE DESCRIPTION

The IPODEC Ireland Ltd., waste transfer station is situated off Forge Hill, adjacent to City Link Industrial Park (formerly part of Forge Hill Industrial Estate) to the south and City Link Industrial Park to the north. The site is bounded to the east, by a closed section of the old Kinsale Road, and to the west by Forge Hill at the entrance to the facility. The nearest residence to the site is located approximately 90 metres north west of the site (on the western side of Forge Hill).

2. METHODOLOGY

2.1 NOISE MONITORING

The noise survey was conducted to be representative of the daytime period, representative of the permitted operating hours of the waste transfer station. This comprised of a noise survey that was conducted during the daytime noise monitoring period (08:00 – 22:00). Noise measurements were taken over appropriate sampling times, i.e. 15 minutes duration as per Condition 12 of the waste permit. A number of acoustical parameters were noted for each sample period namely, the L_{Aeq}, L_{A10}, L_{A90}, L_{A95}, L_{AMax} and the L_{AMin} were recorded.

The noise monitoring was carried out using a Larson Davis Type 1 Modular Precision Digital Sound Level Meter (SLM), capable of measuring within +/- 0.1dB(A) in L_{eq} and sound pressure levels (SPL) in 'A' scale with an octave filter. The instrument records the L_{Aeq}, L_{A10}, L_{A90}, L_{A95}, L_{AMax} and L_{AMin} percentiles simultaneously. The instrument was calibrated in accordance with ISO 1996-1: 1982[Note1] prior to commencing the survey using the recommended calibration procedure and a known pure tone noise source. The unit was again calibrated on completion of the survey to record drift during the course of the day. Drift is normally associated with battery fade and temperature. The unit had not drifted. All measurements were taken in accordance with ISO 1996-1, under suitable weather conditions. Wind speeds during the noise monitoring were less than 5m/sec.

In order to understand the terms used, appropriate definitions are outlined as follows:

L_{Aeq} Is the A-weighted equivalent continuous sound level during a sample time period and effectively represents an average value, i.e. the average level recorded over the sampling period. The closer the L_{Aeq} value is to either the L_{AF10} or L_{AF90} value indicates the relative impact of the intermittent sources and their contribution. The relative spread between the values determines the impact of noise on the background.

L_{AF10} Refers to those levels in the top 10 percentile of the sampling interval; it is the level that is exceeded for 10% of the measurement period. It is used to determine the intermittent high noise level features of locally generated noise.

L_{AF90} Refers to those levels in the lower 90 percentile of the sampling interval; it is the level that is exceeded for 90% of the measurement period. It is used to estimate a background level.

L_{AF95} Refers to those levels in the lower 95 percentile of the sampling interval; it is the level that is exceeded for 95% of the measurement period. It is used to estimate a background level.

[Note1] ISO 1996-1:1982 (Description and Measurement of Environmental Noise: Part 1 – Guide to quantities and procedures).

L_{AMax} The L_{AMax} is the maximum reading measured at the sound level meter. It gives an indication of the highest noise produced by a varying noise source.

L_{AMin} The L_{AMin} is the minimum reading measured at the sound level meter. It gives an indication of the highest noise produced by a varying noise source.

A-weighting is the process by which noise levels are corrected to account for the non-linearity of human hearing.

2.2 NOISE MONITORING LOCATIONS

In accordance with Condition 12 of the Waste Permit, noise measurements were taken over 15 minute intervals during the daytime. Measurements were recorded at the site boundaries and a noise sensitive location as outlined in Table 2.1. The locations of the noise monitoring points are outlined in Appendix 1. Levels at the noise sensitive location were compared to the 55dB(A) daytime levels permitted by the waste permit. Octave band analysis was recorded at each noise monitoring location, to determine the presence of tonal components.

Table 2.1 Noise Monitoring Locations

Measurement No.	Reference No.	Monitoring Period	Description
1	B1	Daytime	Southern Site Boundary
2	B2	Daytime	Western Site Boundary
3	B3	Daytime	Northern Site Boundary
4	B4	Daytime	Eastern Site Boundary
5	NS1	Daytime	Noise Sensitive Location

3. RESULTS

3.1 MONITORING CONDITIONS

Noise monitoring was carried out at four boundary positions (B1 – B4 as specified in Table 2.1) at the waste transfer station site. Monitoring was carried out representative of the daytime noise monitoring period. There are no operations carried out at the site during the night. The weather conditions during the monitoring period were dry and mild with a very slight westerly breeze of approximately 1m/s.

3.2 SITE BOUNDARY NOISE MONITORING

Southern Site Boundary (B1)

Noise monitoring at B1 was conducted at the southern site boundary. The southern site boundary is delineated by a hedge and palisade fence. The southern site boundary is adjacent to another industrial unit to the south of the IPODEC site. The road was quite busy with a continuous flow of traffic during the monitoring period.

Western Site Boundary (B2)

The noise measurement at B2 was conducted at the western site boundary. The western site boundary is adjacent to Forge Hill. There was a constant flow of traffic on Forge Hill during the monitoring period. There were no truck movements on-site when monitoring was conducted at B2.

Northern Site Boundary (B3)

Noise monitoring at B3 was carried out at the northern site boundary of the IPODEC site. The northern site boundary is adjacent to the City Link Industrial Park, north of the IPODEC site. The boundary is delineated by a palisade fence between the two sites. There was a forklift working in the recycling building of the IPODEC waste transfer station on the northern side of the building. The forklift was fitted with a front shovel type pushing plate, for moving waste within the recycling building. Activities at the industrial estate (City Link Industrial Park) adjacent to the northern boundary of the IPODEC site were also evident during the noise monitoring measurement at monitoring location B3. There were no truck movements at the rear of the IPODEC site during the monitoring period.

Eastern Site Boundary (B4)

Noise monitoring at B4 was carried out at the eastern site boundary of the IPODEC facility. The eastern site boundary is adjacent to a closed and disused section of the Old Kinsale Road. The monitoring position was in an area where skips are stored. This area of the site is where waste is received and processed (sorted and compacted etc.). Skips are stored in this area of the site also and the recycling building receives waste from the eastern side of the building. All of these activities do not combine throughout the day. The loading and unloading of skip trucks etc. is an intermittent activity and the compactor only operates on a number of occasions as waste must be separated prior to sufficient quantities being isolated for compaction.

3.3 NOISE SENSITIVE NOISE MONITORING

Noise Sensitive Location (NS1)

Noise measurements at NS1 were undertaken at the nearest noise sensitive location to the IPODEC facility, which is located adjacent to a residence situated approximately 90 metres north-west of the western site boundary of the IPODEC site, on Forge Hill. The residence is opposite the entrance to the site occupied by MW Consultants and Campbell Catering, situated adjacent to the western side of Forge Hill.

3.4 RESULTS

The noise levels recorded at each monitoring location (B1 – B4 and A1) for daytime monitoring requirements are given in Table 3.1. A noise source is considered tonal if a particular frequency is clearly audible or if a 5dB(A) or greater noise level exists between flanking frequencies.

Table 3.1 Daytime Noise Measurements recorded at IPODEC Ltd. (5th September 2001).

Reference No.	Description	Measurement	Frequency A-Weighted									dB(A)					
			31.5	63	125	250	500	1k	2k	4k	8k	L_{Aeq}	L_{A10}	L_{A90}	L_{A95}	L_{AMax}	L_{AMin}
Daytime																	
B1	Southern Site Boundary	08:00 – 22:00 15 mins	58.6	54.5	45.7	39.3	43.8	47.0	41.7	39.4	34.4	60.4 Tonal @ 25 Hz	57.8	51.1	50.5	67.4	49.9
B2	Western Site Boundary	08:00 – 22:00 15 mins	54.0	53.2	41.1	36.9	37.9	41.1	36.6	30.3	31.5	64.5 Tonal @ 40 Hz	64.2	48.7	47.9	70.9	46.5
B3	Northern Site Boundary	08:00 – 22:00 15 mins	61.8	47.2	40.3	44.0	44.3	50.2	44.7	39.2	37.1	58.9 Tonal @ 20 Hz & 40 Hz	55.1	46.6	46.3	74.7	45.9
B4	Eastern Site Boundary	08:00 – 22:00 15 min	54.3	55.7	56.5	44.2	44.3	43.4	41.1	34.3	33.0	59.6 Tonal @ 125 Hz	58.6	47.3	46.9	77.2	46.0
A1	Noise Sensitive Location	08:00 – 22:00 15 mins	50.2	60.2	49.3	42.3	42.3	41.7	38.0	31.0	32.0	75.0 Tonal @ 63 Hz & 400 Hz	73.8	52.5	51.6	87.5	49.2

4. DISCUSSION

Daytime sound pressure levels and octave (tonal) measurements were recorded at site boundary locations and a noise sensitive location. The noise levels measured at the IPODEC Ireland Forge Hill Waste Transfer site (B1 – B4) and the noise sensitive location (A1) are compared to the noise emission limits specified in the waste Permit for the facility of 55dB(A) off-site at noise sensitive locations.

4.1 SOUTHERN SITE BOUNDARY (B1)

The dominant noise source at B1 was traffic noise on Forge Hill. Other noise sources evident were IPODEC truck movements on-site. The peak noise level was due to a truck horn that was sounded a number of times. The L_{Aeq} measured at B1 was 55.4dB(A). However, a tonal component of noise was detected at B1 (at a frequency of 25 Hz) and thus the L_{Aeq} was subject to a penalty of addition of 5dB in accordance with ISO 1996 – 1:1982. The actual L_{Aeq} at B1 is thus 60.4dB(A) but the source of this tonal noise is possibly attributable to traffic noise on Forge Hill. IPODEC Ireland Ltd., have no control over noise emanating from sources off-site in the vicinity of their facility. The dominant noise source at B1, i.e. traffic noise on Forge Hill was responsible for the L_{A10} level of 57.8dB(A). The road was quite busy with a continuous flow of traffic.

4.2 WESTERN SITE BOUNDARY (B2)

The dominant noise source at B2 was traffic noise from vehicles on Forge Hill. Background noise derived from birdcall was also noticeable but not significant during the noise measurement. The L_{Aeq} monitored at B2 was 59.5dB(A). The noise measurement at B2 was tonal in nature (at a frequency of 40 Hz) and was also penalised by the addition of 5dB. The actual daytime L_{Aeq} at B2 was thus 64.5dB(A). The dominant source of noise at B2, i.e. traffic noise is represented by the L_{A10} level of 64.2dB(A). While there was a constant flow of traffic on Forge Hill during the monitoring period, the nature of noise emanating from traffic on Forge Hill was not constant. The frequency of the noise varied with the different types of vehicles (e.g. noise from mopeds, cars, vans and heavy goods vehicles etc.) and differing speeds at which the traffic was travelling. There were no truck movements at the IPODEC site during the monitoring period at B2.

4.3 NORTHERN SITE BOUNDARY (B3)

The dominant source of noise at B3 was a forklift in the recycling building. Activities at the industrial estate (City Link Industrial Park) adjacent to the northern boundary of the IPODEC site were also a significant source of noise during the noise monitoring measurement at monitoring location B3. The daytime L_{Aeq} measured at B3 was 53.9dB(A). However, a tonal component of noise was detected at B3 and thus the L_{Aeq} was subject to a penalty of addition of 5dB in accordance with ISO 1996 – 1:1982. The actual L_{Aeq} at B3 was thus 58.9dB(A). The source of the tonal component of the noise is from the forklift in the recycling building of the IPODEC waste transfer station and also activities at the industrial unit adjacent to the northern boundary of the IPODEC site in the City Link Industrial Park. There were no truck movements at the rear of the IPODEC site during the monitoring period.

4.4 EASTERN SITE BOUNDARY (B4)

The dominant noise source at B4 was a skip truck that was unloading a full skip and loading another empty skip onto the back of the truck. During the unloading and loading of the skips the engine of the truck was revving such that it was a significant source of noise during the monitoring period. In the absence of the skip truck the compactor in the recycling building was the most notable source of noise evident at B4. For a period of the noise monitoring at B4, neither the compactor nor the skip truck were emitting any noise (i.e. equipment was not operating) and during this time, traffic noise on Forge Hill was audible but not dominant. However, as described in Section 3.2, all of these sources do not operate continuously throughout the day. These are intermittent sources of noise whereas the traffic noise from vehicles on Forge Hill is a much more constant noise source during the operating hours of the IPODEC facility and due to the level of traffic on Forge Hill. The noise levels monitored at monitoring location B4 are thus variable as a result of the separate noise sources evident at this location. Monitoring position B4 is situated at the rear of the IPODEC site. The L_{Aeq} monitored at B4 was 54.6dB(A). The noise measurement at B4 was tonal in nature and was also penalised by the addition of 5dB. Thus the actual daytime L_{Aeq} at B4 was 59.6dB(A). As previously stated the dominant noise source at B4 was noise emanating from a skip truck unloading and loading skips at the rear of the IPODEC site but this was only evident for a period of the noise measurement. Noise emanating from the compactor in the recycling building was evident almost throughout the noise measurement at B4. The tonal component of the noise may be attributable to the compactor in the recycling building and the skip truck. The doors of the recycling building were open during the monitoring period.

4.5 NOISE SENSITIVE LOCATION (NS1)

The dominant noise source at NS1 was traffic noise from vehicles on Forge Hill. No noise from the IPODEC site was audible at NS1. The daytime L_{Aeq} monitored at NS1 was 70.0dB(A). However, the noise measured at NS1 was also tonal in nature. The L_{Aeq} was penalised by the addition of 5dB. Therefore, the actual L_{Aeq} at NS1 was 75.0dB(A). This level is in exceedance of the 55dB limit for noise levels at noise sensitive locations in the vicinity of the IPODEC site but the source of noise measured at NS1 was traffic noise from vehicles on Forge Hill and as stated above no noise from the IPODEC site was audible at NS1. The L_{Aeq} at NS1 exceeds the limit specified in the IPODEC's waste permit for the waste transfer facility but the noise monitored at NS1 derives from vehicular traffic on Forge Hill and is not associated with IPODEC site operations. Furthermore, it is reiterated that no clearly audible tonal or impulsive component from noise emissions emanating from the IPODEC waste transfer facility was recorded at NS1. In this regard IPODEC Ireland Ltd., are not in breach of the noise emission limit values specified in Waste Permit for the waste transfer facility at Forge Hill, as the exceedance is not due to activities at the facility.

4.6 SUMMARY

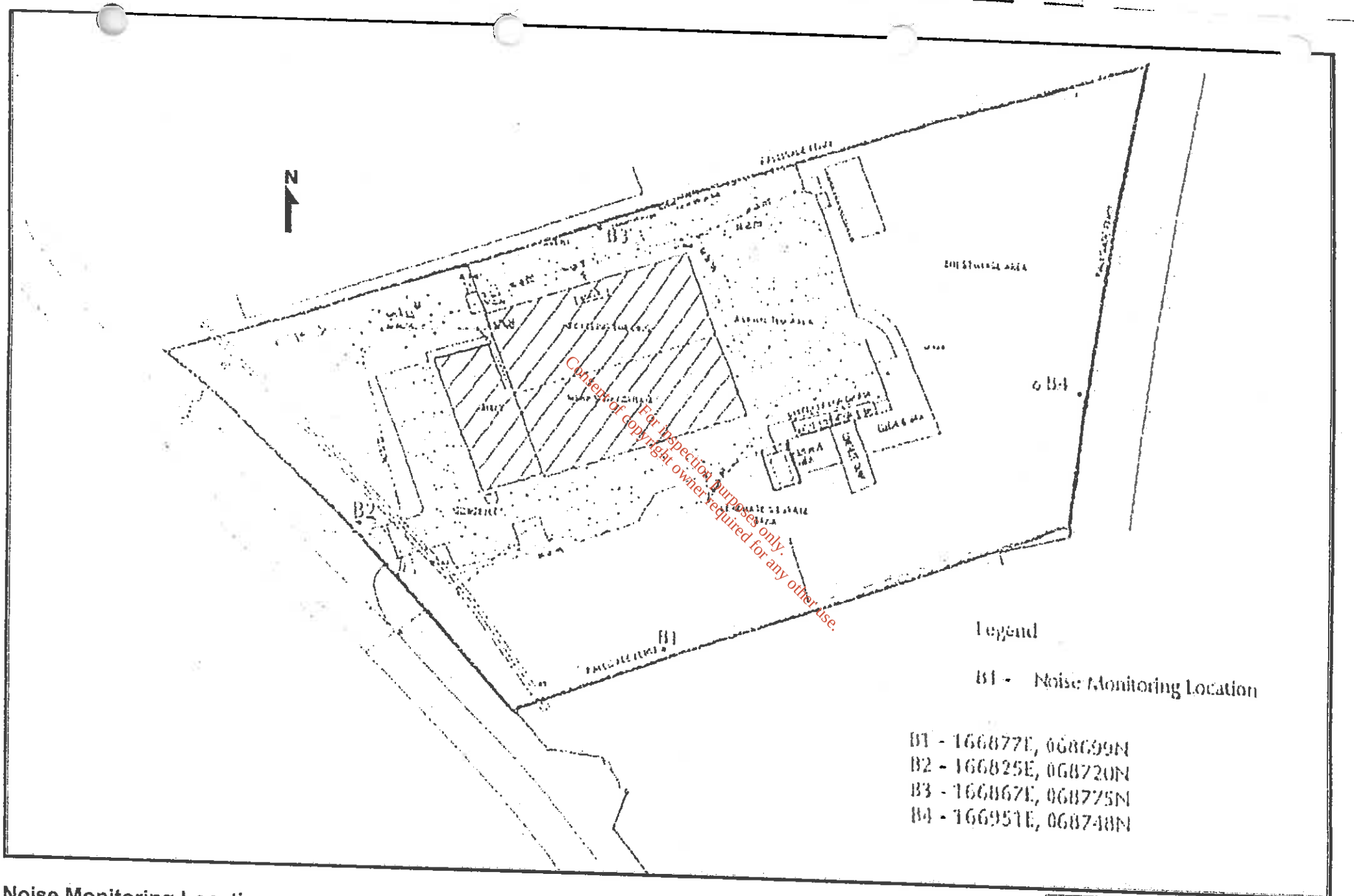
Noise levels monitored were found to be elevated at all boundaries of the IPODEC waste transfer station site. The noise levels monitored at the southern site boundary (B1, L_{Aeq} of 60.4dB(A)), the western site boundary (B2, L_{Aeq} of 64.5dB(A)), the northern site boundary (B3, L_{Aeq} of 58.9dB(A)) and the eastern site boundary (B4, L_{Aeq} of 59.6dB(A)) were all subject to the addition of a 5dB penalty due to a tonal component of the noise monitored at each of the boundary locations. The noise level monitored at the noise sensitive location was also elevated (NS1, L_{Aeq} of 75.0dB(A)). The noise measurement at NS1 was also tonal in nature and was thus subject to the addition of the 5dB penalty.

The elevated L_{Aeq} level measured at B1, B2 and NS1 was due to traffic noise on Forge Hill. The elevated L_{Aeq} level monitored at B3 was due to noise from two sources; the fork lift in the recycling building of the IPODEC waste transfer station and activities at the industrial unit in City Link Industrial Park located adjacent to the northern site boundary of the IPODEC facility. The elevated L_{Aeq} level monitored at B4 as at B3 is attributable to two noise sources; the skip truck loading and unloading skips and the compactor in the recycling building.

Condition 12 of the waste permit requires IPODEC to ensure that activities on-site shall not give rise to noise levels at off-site noise sensitive locations of 55dB(A) during permitted operating hours. While, daytime noise levels at the noise sensitive location (NS1) were above waste permit limit requirements of 55dB(A), the exceedance was attributable to traffic noise from vehicles on Forge Hill rather than noise attributable to activities at the IPODEC waste transfer station.

APPENDIX 1

Noise Monitoring Locations



Noise Monitoring Locations

RPS ENVIRONMENTAL SCIENCES IRELAND LIMITED

Figure 1

Appendix E Traffic Count Data

Traffic Counts on Forge Hill Road (16th May 2000)						
Time	Cars	Trucks	Vans	Motorcycles	Total Vehicles	Cumulative Total
07.15 - 07.30	28	7	8	1	44 (2)	44 (2)
07.30 - 08.00	168	11	23	4	207 (7)	251 (9)
08.00 - 08.30	288	13	30	6	339 (10)	590 (19)
08.30 - 09.00	222	15	42	6	288 (11)	878 (30)
09.00 - 09.30	176	15	64	5	261 (13)	1139 (43)
09.30 - 10.00	143	7	57	4	211 (6)	1350 (49)
10.00 - 10.30	142	11	55	1	213 (11)	1563 (60)
10.30 - 11.00	114	18	51	0	183 (12)	1746 (72)
11.00 - 11.30	149	20	39	0	210 (6)	1956 (78)
11.30 - 12.00	105	7	43	1	156 (10)	2112 (88)
12.00 - 12.30	128	20	41	0	189 (13)	2301 (101)
12.30 - 13.00	157	12	39	1	209 (6)	2510 (107)
13.00 - 13.30	219	12	48	3	284 (12)	2794 (119)
13.30 - 14.00	190	15	29	4	240 (4)	3034 (123)
14.00 - 14.30	148	22	43	1	217 (13)	3251 (136)
14.30 - 15.00	157	22	48	1	230 (8)	3481 (144)
15.00 - 15.30	151	12	56	4	223 (6)	3704 (150)
15.30 - 16.00	169	15	55	2	243 (4)	3947 (154)
16.00 - 16.30	216	19	45	3	283 (11)	4230 (165)
16.30 - 17.00	172	24	59	3	260 (9)	4490 (174)
17.00 - 17.30	227	18	58	8	313 (12)	4803 (186)
17.30 - 18.00	284	14	61	5	364 (14)	5167 (200)
18.00 - 18.30	189	10	25	8	234 (5)	5401 (205)

Table: Distribution of Traffic at IPODEC Facility (16/05/2000)		
Time	**Total Trucks In and Out ***	**Cumulative Total**
07.15 - 07.30	2	2
07.30 - 08.00	3	5
08.00 - 08.30	2	7
08.30 - 09.00	4	11
09.00 - 09.30	4	15
09.30 - 10.00	0	15
10.00 - 10.30	4	19
10.30 - 11.00	5	24
11.00 - 11.30	3	27
11.30 - 12.00	2	29
12.00 - 12.30	4	33
12.30 - 13.00	3	36
13.00 - 13.30	2	38
13.30 - 14.00	1	39
14.00 - 14.30	4	43
14.30 - 15.00	2	45
15.00 - 15.30	3	48
15.30 - 16.00	3	51
16.00 - 16.30	6	57
16.30 - 17.00	6	63
17.00 - 17.30	4	67
17.30 - 18.00	3	70
18.00 - 18.30	1	71
TOTAL	**71**	**71**

* Trucks Only

IPODEC EIS

Road Traffic Survey - Thursday 7th March 2002

	8.30 - 9.00		9.00 - 9.30		9.30 - 10.00		11.00 - 11.30		11.30 - 12.00		12.00 - 12.30	
Pedal Cycles	1	1	0	1	0	0	0	0	0	0	0	0
Motorcycles	3	2	0	1	1	0	0	0	1	0	0	0
Motor cars	110	109	109	92	112	72	113	79	87	72	90	78
Light Goods	19	23	49	28	35	22	25	25	21	23	25	20
Buses	0	0	0	0	0	0	0	0	0	0	0	1
Trucks	8	3	8	4	10	5	12	5	12	4	5	14
Articulated	2	0	1	2	3	0	0	1	3	1	2	2
Total (A)	**143**	**138**	**167**	**128**	**161**	**99**	**150**	**110**	**124**	**100**	**122**	**115**
Total (B)	281		295		260		260		224		237	
Total (C)	3205											
Total IPO	14		5		13							
Total (D)	836						10		11		9	
							721					

Traffic Count	836	721	793	855	**3205**
NRA Expansion Factors	9.71	11.72	10.82	8.77	
	8117.56	8450.12	8580.26	7498.35	
Confidence Limits	20	8	8	10	

AADT **8161.5725** **6.20%**

TOTAL

Motor Cars	2377	74.1653666
Light Goods	597	18.6271451
HGV's	188	5.86583463

IPODEC EIS

Road Traffic Survey - Thursd (Continued)

14.00 - 14.30		14.30 - 15.00		15.00 - 15.30		16.30 - 17.00		17.00 - 17.30		17.30 - 18.00		
0	0	1	1	1	0	1	0	0	0	0	0	Pedal Cycles
1	2	0	0	0	3	4	4	4	1	3	2	Motorcycles
111	93	98	71	111	95	139	85	131	106	119	95	Motor cars
30	20	28	32	28	14	24	27	19	31	8	21	Light Goods
0	0	0	0	0	2	1	0	0	0	0	0	Buses
9	9	6	3	11	7	3	5	5	3	4	6	Trucks
2	2	0	1	1	0	2	1	1	0	0	0	Articulated
153	**126**	**133**	**108**	**152**	**121**	**174**	**122**	**160**	**141**	**134**	**124**	**Total (A)**
279		241		273		296		301		258		Total (B)
10		9		9		9		13		12	**124**	Total (C)
793						855						**Total IPO**
												Total (D)

Appendix F Bord na Mona Environmental Ltd. - Dust, suspended particulates, groundwater, and surface water monitoring reports

BORD NA MÓNA

BORD NA MÓNA ENVIRONMENTAL LIMITED

Report No: ELS-J680

Date: 16th June 2000

CONFIDENTIAL REPORT

Client: IPODEC Ireland Ltd.,
Ballymount Cross,
Tallaght,
Dublin 24.

Report Title: Analysis of dust guage, ground water and surface water samples

Attention: Mr. Kieran Mullins

Order No:	211938	Date Received:	17/5/00

Project Code:	ELS-J680	Commen. Date:	17/5/00	Compl. Date:	16/6/00

Report by: Mary Mc Fadden
Laboratory Manager

Sharon Mc Guinness
Approved By Quality Manager

CONDITIONS:

1. *Reports shall not be reproduced except in full, without the approval of the Bord na Móna EnvironmentalLimited.*
2. *Results contained in this report relate only to the items tested.*
3. *All comments concerning this report or its contents should be forwarded to the Laboratory Manager.*

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REGISTERED OFFICE: MAIN STREET, NEWBRIDGE, CO. KILDARE
REGISTERED IN IRELAND NUMBER: 303313

1.0 SAMPLE RECEPTION

Four dust gauges, two groundwater and two surface water samples were delivered to the Bord na Mona Environmental Limited laboratory on behalf of IPODEC Ireland Ltd. The samples were assigned the laboratory identification number ELS J680 and stored between 2 and 8 °C.

2.0 ANALYSIS REQUIRED

(i) BOD
(ii) COD
(iii) OFG
(iv) Suspended Solids
(v) Ammonia
(vi) MBAS (Detergents)
(vii) Total Wt. Dust
(viii) Organic scan
(ix) Major anions and cations
(x) Total Dissolved Solids
(xi) Metal Scan

3.0 METHOD OF ANALYSIS

COD:	G/03
BOD:	G/04
Suspended Solids:	G/19
OFG:	Based on APHA, 19th Edition, 1995, Method 5520B.
Ammonia:	G/02
Fluoride, Chloride, Nitrate Phosphate and Sulphate:	G/39
Organic scan:	G/14, US EPA 524.2
MBAS:	Based on APHA, 19th Edition, 1995, Method 5540C.
TDS:	G/18
Metal Scan:	ICP-MS

3.0 TEST PROCEDURE FOR TOTAL DUST METHOD:

The contents of each gauge were rinsed from the container through a pre-weighed 1.2μm pore sized filter paper. Extraneous material such as insects and algae was then removed from the filter paper prior to drying overnight in an oven at 105^{0}C. The weight of the contents of the dust gauges was then determined using a calibrated balance.

4.0 SAMPLE IDENTIFICATION

Laboratory ID.	Client ID.
J680-1	ST1
J680-2	ST2
J680-3	ST3
J680-4	ST4
J680-5, 5a	Cork TS Surface water
J680-6, 6a	Cork TS Ground water

Note:
A composite sample was prepared from J680-5 & J680-5a before analysis commenced. A composite sample was also prepared from samples labelled J680-6 & J680-6a.

5.0 RESULTS

Table 2: Chemical Analysis		
Parameter	J680-5,5a	J680-6,6a
BOD mg/L (TCMP)	16	< 2
COD mg/L	198	< 10
Suspended Solids mg/L	198	< 5
*OFG mg/l	11	-
*MBAS mg/L	0.36	-
Total Dissolved Solids mg/L	-	549

4.0 RESULTS CONTD.

Table 3: Anions & Cations	
Parameter	J680-6
*Calcium mg/l	63
*Magnesium mg/l	44
*Sodium mg/l	16
*Potassium mg/l	1.7
Ammonia as N mg/l	0.2
Fluoride mg/l	<0.1
Chloride mg/l	39.3
Nitrate as N mg/l	4.2
Phosphate as P mg/l	<0.16
Sulphate mg/l	47.6

Table 4: Organic Scan	
Parameter	J680-6
*US EPA 524.2 µg/l **	< 10
Methanol mg/l	< 0.5
Acetonitrile mg/l	< 0.5
Ethanol mg/l	< 0.5
Acetone mg/l	< 0.5
Isopropanol mg/l	< 0.5
*TOH mg/l	< 0.5

5.0 **RESULTS CONTD.**

Table 5: *Metal Scan		
Parameter	J680-5	J680-6
Aluminium µg/l	3147	< 2
Boron µg/l	16	< 1
Iron mg/l	3.5	< 0.1
Manganese µg/l	235	2
Copper µg/l	14	< 2
Zinc µg/l	215	12
Barium µg/l	21	246
Arsenic µg/l	< 2	< 2
Cadmium µg/l	< 2	< 2
Chromium µg/l	20	2
Mercury µg/l	< 1	< 1
Nickel µg/l	8	< 2
Lead µg/l	33	< 2
Antimony µg/l	3	< 2
Selenium µg/l	< 2	< 2
Tin µg/l	5	< 2
Cobalt µg/l	2	< 2
Silver µg/l	< 2	< 2
Beryllium µg/l	< 2	< 2

Table 6: Dust results	
Laboratory ID.	*Dust Deposition mg/Gauge
J680-1	5
J680-2	15
J680-3	10
J680-4	15

< = Less than

* = Non-ILAB Accredited test method

- = Analyses not requested

** = No other compound on the US EPA list below were detected at concentrations greater than 10µg/l

VOC USEPA 524.2

Dichlorodiflouromethane.	Chloromethane	Vinyl chloride
Bromoethane	Chloroethane	Trichloroflourmethane
1,1-Dichloroethene	Methylene Chloride	trans-1,2-Dichloroethene
1,1-Dichloroethane	cis-1,2-Dichloroethene	2,2-Dichloropropane
Bromochloromethane	Chloroform	1,1,1-Trichloroethane
Carbon tetrachloride	1,1-Dichloropropene	Benzene
[illegible]ichloroethane	Trichloroethene	1,2-Dichloropropane
Dibromomethane	Bromodichloromethane	cis-1,3-Dichloropropene
Toluene	trans-1,3-Dichloropropene	1,1,2-Trichloroethane
Tetrachloroethene	1,3-Dichloropropane	Dibromochloromethane
1,2-Dibromoethane	Chlorobenzene	1,1,2,2-Tetrachloroethane
Ethylbenzene	m-Xylene	p-Xylene
o-Xylene	Styrene	Bromoform
Isopropylbenzene	Bromobenzene	1,2,3-Trichloropropane
n-propylbenzene	2-Chlorotoluene	1,3,5-Trimethylbenzene
4-Chlorotoluene	tert-Butylbenzene	1,2,4-Trimethylbenzene
sec-Butylbenzene	1,3-Dichlorobenzene	n-Butylbenzene
1,2-Dichlorobenzene	1,2-Dibromo-3-chloropropane	1,2,4-Trichlorobenzene
Hexachlorobutadiene	Naphthalene	1,2,3-Trichlorobenzene
[illegible]2-Tetrachloroethane	p-Isopropyltoluene	1,4-Dichlorobenzene

BORD NA MÓNA

BORD NA MÓNA ENVIRONMENTAL LIMITED

AIR MONITORING SURVEY FOR TOTAL SUSPENDED PARTICULATES AT AN IPODEC IRELAND LTD. SITE IN KINSALE, CO. CORK

ATTENTION: Mr Kieran Mullins
IPODEC Ireland Ltd.
Ballymount Cross
Tallaght
Dublin 24

PREPARED BY: Lisa Blyth
Environmental Consultant

REVIEWED BY: John Conway
Senior Environmental Consultant

DATE: 27th June 2000

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REGISTERED OFFICE: MAIN STREET, NEWBRIDGE, CO. KILDARE
REGISTERED IN IRELAND NUMBER: 303313

Executive Summary

An Environmental Consultant from Bord na Móna Environmental Limited visited an IPODEC Ireland Ltd. site in Kinsale, Co. Cork on 17th May 2000 for the purpose of conducting an ambient air monitoring programme for Total Suspended Particulate Matter. Four perimeter sampling locations were chosen in consultation with the client to reflect potentially highest particulate emissions.

On comparison with acceptable ambient air concentrations for suspended particulates, it was found that all samples were within the standard specified therein.

This report is certified as accurate and representative of the sampling and associated analysis carried out.

Respectively Submitted

Ms. Lisa Blyth
Environmental Consultant

Mr. John Conway
Senior Environmental Consultant

1.0 INTRODUCTION

Bord na Móna Environmental Limited was commissioned by IPODEC Ireland Ltd. to conduct an ambient air monitoring programme for Total Suspended Particulate Matter at an IPODEC Ireland Ltd. site in Kinsale, Co. Cork.

Four perimeter locations around the site were chosen in consultation with the client to reflect potentially highest particulate emissions. An Environmental Consultant from Bord na Móna Environmental Limited visited the site on 17th May 2000 to conduct the sampling.

This report presents details of both the methodologies employed and results obtained.

2.0 METHODOLOGY

2.1 Sampling Locations

Table 2.1: Sampling Locations

Sample I.D.	Location	Sampling Period (mins)
L657-1	Front of the Site, RHS, at ESB pole	1472
L657-2	Front of Site, LHS, at corner of fence	1469
L657-3	Back of Site, LHS, at corner of fence	1187
L657-4	Back of Site, RHS, at corner of fence	1241

2.2 Total Suspended Particulates

In consultation with the client, sampling for Total Suspended Particulates was carried out using 7-holed filter cassette assemblies. In each case a measured volume of sample air was drawn through a 7-holed filter assembly containing a glass fibre filter at a flow rate of approximately 1500ml/min by means of an intrinisically safe SKC air pump. Each pump was calibrated before and after the sampling event by means of a calibrated film flow meter. Analysis of Total Suspended Particulate levels was carried out gravimetrically, using a 5-point analytical balance, whereby the filters were conditioned and weighed prior to and after sampling.

5.0 RESULTS

The results of the monitoring program are outlined in Table 4.1.

Table 5.1: Results of Particulate Levels	
Location	Total Dust mg/m^3
Front of the Site, RHS, at ESB pole	<0.02
Front of Site, LHS, at corner of fence	0.04
Back of Site, LHS, at corner of fence	<0.03
Back of Site, RHS, at corner of fence	<0.03
Air Quality Standard for Suspended Particulates[1]	***0.25 (98 percentile of yearly daily values)***

Note 1: S.I. No. 244 of 1987: Air Pollution Act, 1987 (Air Quality Standards) Regulations, 1987.

6.0 COMMENT

The results tabulated in *Table 5.1* represent the levels of suspended particulates recorded at the IPODEC site in Kinsale, over a single 24-hour period on 17th-18th May 2000. With respect to acceptable ambient air concentrations for suspended particulates, reference is made to The Air Pollution Act, 1987 (Air Quality Standards) Regulations, 1987 which stipulates an air quality standard for total suspended particulates of 250µg/m^3 (98 percentile of yearly daily values). Although the samples taken only represent a single daily measurement, it is clearly evident that the values recorded are well below the stipulated standard.

BORD NA MÓNA

BORD NA MÓNA ENVIRONMENTAL LIMITED

CONTROLLED CHAIN OF CUSTODY

SITE		TRANSPORT		LABORATORY
Sampling and packaging of all samples will be carried out by Bord na Móna Technical Team: Dr. M. Donlon/Ms Lisa Blyth	Transport Document Form →	Transport to laboratory by Bord na Móna Technical Team.	Sample Reception Form →	Receiving of samples at Bord na Móna Environmental Laboratory complex by: Ms. McFadden, Laboratory Manager (Secure laboratory complex access to authorised personnel only) ↓ Storage of all samples for 1 month period after report issue. ↓ Supervised Disposal

Appendix G Consultus Laboratories - Groundwater analytical results

2002-115-01

CONSULTUS laboratories

Consult-Us Ltd.
Glanmire Industrial Estate, Glanmire, Co.Cork.
[tel] 021 4822288 [fax] 021 4866342
[email] info@consultus.ie
[web] www.consultus.ie

FEHILY TIMONEY & Co.
Received by
Date 19 MAR 2002
Action
Distribution DD.
Job No:
Correspondence No: 7.
Comment:

Client ID : FT

MR DERMOT DOLAN
FEHILLY TIMONEY
CORE HOUSE
POULADUFF ROAD
CORK

Report No : 7718E

Date of Receipt : 01/03/02
Delivery Mode : Hand
Date testing Initiated : 01/03/02
Date of Report : 14/03/02
Sample Condn. on Receipt : Satisfactory

No. Of Samples : 1
Sample Type : Water
Order Number : 200211505

CERTIFICATE OF ANALYSIS

Sample No : 7718E1
Client Reference : GW-1 9.35 1/3/02

Test	Test Description	Test Result	Unit	Method
124	pH VALUE	6.7		ET1241/APHA1998:4500 H:B
056	CONDUCTIVITY @ 25°C	847	µS/cm	ET0561/APHA1998:2510:B
038	AMMONIA NITROGEN as N	<0.05	mg N/l	ET0383/MEWAM1981
254	CALCIUM (Ca)	89.5	mg/l	APHA 1998 3111:B
251	CADMIUM (Cd)	<1	µg/l	APHA 1998 3111:B
250	CHROMIUM (Cr)	<10	µg/l	APHA 1998 3111:B
244	CHLORIDE (Cl)	55	mg/l	ET2443/APHA98 4500Cl:D
245	COPPER (Cu)	<0.01	mg/l	APHA 1998 3111:B
246	IRON (Fe)	<10	µg/l	APHA 1998 3111:B
249	LEAD (Pb)	<10	µg/l	APHA 1998 3111:B
[illegible]	MAGNESIUM (Mg)	40.5	mg/l	APHA 1998 3111:B
[illegible]	MANGANESE (Mn)	<10	µg/l	APHA 1998 3111:B
262	MERCURY (Hg)	<1	µg/l	APHA 1998 3114:B C
264	NICKEL (Ni)	<10	µg/l	APHA 1998 3111:B
253	POTASSIUM (K)	2.1	mg/l	APHA 1998 3111:B
252	SODIUM (Na)	18.5	mg/l	APHA 1998 3111:B
045	SULPHATE (SO4)	66	mg/l	ET0452/APHA98 4500SO4:E
247	ZINC (Zn)	<10	µg/l	APHA 1998 3111:B
058	ALKALANITY (AS CaCO3)_(pH 4.5)	289	mg/l	APHA 1998 2320:B
235	TOTAL OXIDISED NITROGEN(water)	5	mg N/l	ET2352/APHA98 4500NO3:I
261	ARSENIC (As)	<1	µg/l	APHA 1998 3114:B C
268	FLUORIDE (F)	0.1	mg/l	APHA 1998 4500 F:C
263	SELENIUM (Se)	<1	µg/l	APHA 1998 3114:B C
260	SILVER (Ag)	<10	µg/l	APHA 1998 3111:B
043	NITRITE (NO2 as N) IN WATER	<0.01	mg N/l	ET0431/APHA98 4500NO3:D

SEE REVERSE FOR CONDITIONS

Continued.....

CONSULTUS laboratories

Consult-Us Ltd
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Client ID : FT

MR DERMOT DOLAN
FEHILLY TIMONEY
CORE HOUSE
POULADUFF ROAD
CORK

Report No : 7718E

Date of Receipt : 01/03/02
Delivery Mode : Hand
Date testing Initiated : 01/03/02
Date of Report : 14/03/02
Sample Condn. on Receipt : Satisfactory

No. Of Samples : 1
Sample Type : Water
Order Number : 200211505

CERTIFICATE OF ANALYSIS

Sample No : 7718E1
Client Reference : GW-1 9.35 1/3/02

Test	Test Description	Test Result	Unit	Method
044	NITRATE NITROGEN (NO3 as N)	5	mg N/l	ET0443/APHA98 4500NO3:I
079	PHENOLS (as C6H5-OH)	<1	µg/l	APHA 1998 5530:C
047	SOLUBLE ORTHOPHOSPHATE (P)	0.05	mg/l	ET0471/APHA1998:4500P
B88	TOC AS NPOC (WATER)	1.5	mg/l	ET137 APHA1998 5310:B
060	TOTAL DISSOLVED SOLIDS	450	mg/l	ET0601/APHA1998:2540:C
615	TOTAL CATIONS	8.67	mg/l	CALCULATED
616	TOTAL ANIONS	9.06	mg/l	CALCULATED
860	Cation-Anion Balance (% Diff)	2.23		CALCULATED

Authorised By:

Shirley Gallagher
Manager Env. Services Div.

SEE REVERSE FOR CONDITIONS

Appendix H Water Technology Ltd. - Groundwater bacteriological results

WATER TECHNOLOGY Ltd.
Solving water quality problems throughout Ireland since 1976

Togher Industrial Estate, Cork, Ireland. Tel: (021) 4965 600 Fax: (021) 4313 876
Tel: (023) 52967 Email: info@wtlireland.com

Bacteriological Analysis Report Sheet

RESULTS for : Karl Murphy

Laboratory Reference No : **WT** 18119
Date Submitted : 27/11/01

Note: Results reflect conditions at time of sampling only

EU Directive GL - MAC Guide - Maximum		Parameter	your sample results
		Bacteriological Analysis	
10	N/A	Total Bacteria Count 24 hrs, 37°C	9
10	N/A	Total Bacteria Count 48 hrs, 37°C	53
100	N/A	Total Bacteria Count 72 hrs, 22°C	60
0	0	Total Coliform	nil
0	0	Faecal Coliform	nil

Appearance: Clear
Odour: None

Bacteriological results : expressed as: Total Bacteria Counts per millilitre of sample, and Coliforms per 100 millilitres of sample.
Legends: **EU Directive - GL** Guide Level, **MAC** Maximum Allowable Concentration, **N/A** not applicable n-d non-detect,. **TNTC** too numerous to count, > greater than, < less than

COMMENTS & RECOMMENDATIONS: WT 18119
If you require more background information please call us at 021-965600.

BACTERIOLOGICAL: Results from the sample meet the EU Bacteriological Directive for water intended for human consumption. This is good quality potable water.

For Water Technology Ltd.
Carola Paterson

Appendix I Climate data

CORK AIRPORT

monthly and annual mean and extreme values
1962-1991

lat. 51° 50' N
long. 8° 29' W
height 154 metres above mean sea level

TEMPERATURE *(degrees Celsius)*	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	year
mean daily max.	7.6	7.5	9.3	11.3	13.8	16.6	18.5	18.2	16.0	13.1	9.9	8.5	**12.5**
mean daily min.	2.6	2.5	3.1	4.2	6.5	9.2	11.1	10.9	9.4	7.5	4.5	3.7	**6.3**
mean	5.1	5.0	6.2	7.7	10.2	12.9	14.8	14.5	12.7	10.3	7.2	6.1	**9.4**
absolute max.	12.6	13.5	15.5	20.5	23.6	25.7	28.7	27.5	24.7	19.0	15.9	13.6	**28.7**
absolute min.	-8.5	-8.6	-6.1	-2.4	-0.9	2.4	4.8	4.9	2.3	-0.4	-3.3	-5.9	**-8.6**
mean no. of days with air frost	6.7	5.6	3.4	1.8	0.1	0.0	0.0	0.0	0.0	0.0	2.4	3.9	**24.0**
mean no. of days with ground frost	15.0	12.7	12.0	9.4	2.9	0.2	0.0	0.0	0.4	2.6	9.5	12.2	**76.8**
RELATIVE HUMIDITY *(%)*													
mean at 0900UTC	90	90	88	83	81	81	83	86	88	91	90	90	**87**
mean at 1500UTC	84	80	75	71	71	72	72	73	76	82	83	86	**77**
SUNSHINE *(hours)*													
mean daily duration	1.70	2.28	3.51	5.21	6.02	5.73	5.40	5.14	4.13	2.80	2.16	1.56	**3.80**
greatest daily duration	7.3	9.3	11.8	13.8	15.4	15.9	15.4	14.2	12.8	9.9	8.5	6.7	**15.9**
mean no. of days with no sun	11	9	6	4	2	3	2	2	4	7	9	12	**69**
RAINFALL *(mm)*													
mean monthly total	138.3	115.6	98.7	67.7	83.4	68.8	66.4	88.7	96.4	125.4	111.1	133.8	**1194.4**
greatest daily total	55.1	48.2	39.3	44.9	49.3	43.3	83.8	64.8	51.8	86.7	69.9	52.2	**86.7**
mean no. of days with >= 0.2mm	20	17	18	14	16	15	14	16	16	19	19	20	**204**
mean no. of days with >= 1.0mm	16	13	13	10	12	10	9	11	12	15	14	16	**151**
mean no. of days with >= 5.0mm	9	8	6	4	6	5	4	5	6	8	7	8	**75**
WIND *(knots)*													
mean monthly speed	12.9	12.6	12.3	11.0	10.6	9.5	9.1	9.2	10.3	11.2	11.6	12.4	**11.1**
max. gust	94	83	70	63	60	51	57	54	64	75	66	68	**94**
max. mean 10-minute speed	58	54	44	41	41	36	40	38	45	48	46	46	**58**
mean no. of days with gales	3.2	2.2	1.7	0.7	0.4	0.1	0.1	0.2	0.7	1.2	1.8	2.5	**15.0**
WEATHER *(mean no. of days with...)*													
snow or sleet	4.5	4.7	3.0	1.1	0.2	0.0	0.0	0.0	0.0	0.0	0.6	2.3	**16.4**
snow lying at 0900UTC	2.7	1.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	**5.6**
hail	1.0	1.1	1.9	1.9	1.1	0.3	0.1	0.1	0.1	0.4	0.3	0.6	**8.8**
thunder	0.4	0.1	0.1	0.2	0.4	0.5	0.8	0.5	0.2	0.4	0.1	0.1	**3.7**
fog	7.4	7.3	7.9	5.9	7.7	8.6	8.5	9.8	10.7	10.4	7.3	8.0	**99.5**