1.0 INTRODUCTION

The environmental impact assessment concept originated in North America in the late 1960's. It was developed in response to a number of environmental "catastrophes" which had highlighted a failure in the integration of environmental matters in the project planning process. The concept was introduced in Europe in the late 1970's but was not until 1985 that the procedural requirements were harmonized throughout the EC with the adoption of a directive on Environmental Impact Statements (EIS). This directive was enacted in Irish Law by the European Communities (Environmental Impact Assessment) Regulations, 1989 (S.I. 349 of 1989).

The First Schedule of the 1989 Regulations lists the infrastructural developments for which an EIS is required. The Second Schedule details information, which must be contained in such a study. In accordance with paragraph 29(c), Second Schedule of the regulations, the impacts of a proposed development must be examined under the following headings:

Human Beings	Flora and Fauna
Water	Soil
Air	Climate
Landscape	Material Assets
Cultural Heritage	Interactions of the above

1.1 Scope

This report presents the results of an Environmental Impact Study on the Onyx Ireland Ltd. Waste Transfer and Recycling Station at Carrignard, Six Cross Roads Business Park, Waterford. The facility requires an Environmental Impact Statement under S.I. 93 of 1999 as the quantities of waste that will pass through the facility will increase to close to 50,000 tonnes by the end of 2006. This is in excess of the permitted quantities under the waste license 177-2 issued by the EPA (Appendix I). Due to the fact that the tonnage increase is *"50% greater than the appropriate threshold"* (i.e. 50% greater than the amount permitted in the Waste Licence), under SI 93 of 1999 an Environmental Impact Statement must be prepared to provide data on which an assessment of the likely environmental impacts of the waste transfer station can be based

This document has been prepared in accordance with the guidelines provided by the EPA in the following publications:

(i) Guidelines on the Information to be contained in Environmental Impact Statements.

This document conforms to the EC Directive on the preparation of Environmental Impact Statements (EC 85/337) and subsequent amendments. This document also conforms to the European Communities Environmental Impact Assessment (Amendment) Regulations, 1999 9S.I. No. 93 of 1999).

This report is presented in two volumes. The first volume contains the non-technical summary with the second volume containing the Main EIS and Appendices.

In accordance with Article 12(3) (a) of the Waste Management (Licensing) Regulations, 2004, Waste License 177-2 is being reviewed in order to provide for the increase in tonnage at the facility from the permitted 31,250tonnes to 55,000tonnes per annum and ultimately 80,000tpa.

The application for a Review of a Waste Licence submitted with this EIS in respect of the Onyx Ireland Ltd. Waste Transfer and Recycling Facility initiates a formal public consultation process that enables submissions from public / interested parties regarding the application and/ or accompanying EIS to be made in writing to the EPA before a specified date (i.e. within a period of one month following the making available for inspection by the Agency). In addition a notice was published in a national newspaper and also placed at the entrance to the facility indicating the company's intention to apply for a Waste Licence (Appendix I). Furthermore, Waterford City Council was informed in writing of the company's intention to apply for same (Appendix I).

A scoping exercise was conducted during the initial stages of the environmental impact statement. 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, surface water quality were identified as potential issues and appropriate monitoring programmes were put in place to assess the 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.

1.2 Contributors

This EIS was prepared by Onyx Ireland Ltd. Specialist contractors were employed with reference to specific portions of the study, a list of whom are given below.

Contributor	**Subject**
Chemical Analysis	Bord na Móna Environmental Ltd., Consult–Us Ltd., Envirolab Ltd.
Ecology	RPS-MCOS Consultants
Archaeology	RPS-MCOS (formerly RPSES) Consultants
Hydrogeology	RPS-MCOS (formerly RPSES) Consultants
Drawings	Fehilly, Timoney & Co.

1.3 Onyx Ireland Ltd.

Onyx Ireland Ltd. is a fully owned subsidiary of Veolia Environnement, an international utilities group with activities in the waste, water, energy, construction, transport and communications sectors. The Onyx Group is the largest waste management company in Europe and the 2nd largest worldwide with a 150-year history of provision of municipal services. and operates 220 sorting, transfer and recycling facilities recovering more than 7 million tonnes per annum, 100 composting facilities treating 2 million tonnes per annum, 70 waste-to-energy plants treating 8 million tonnes per annum, and 152 landfill sites worldwide

Onyx Ireland Ltd. is one of Ireland's leading waste management/ recycling company whose management and staff have been providing services across the spectrum of Irish industry for more than thirty years. With facilities located in Dublin, Cork, Limerick, Waterford and Newry the company handles over 275,000 tonnes of commercial and industrial waste per annum and 250,000 of domestic waste. All of the company's facilities are licensed by the Environmental Protection Agency (EPA) in the Republic of Ireland, follow health and safety directives and are Repak approved.

Onyx offers a one-stop service solution for both hazardous and non-hazardous waste covering every facet of waste minimisation, collection, recycling, treatment and disposal. The company oversees the waste management requirements, throughout the island of Ireland, for over 3,500 industrial and commercial clients ranging from small-scale operations to semi-state bodies, major national and multinational organisations, and state contracts. The company specialises in minimising waste disposal costs by implementing

innovative solutions to waste management concerns. By working closely with its clients the company implements and manages turnkey on-site waste separation techniques and consistently ensures that its customers' facilities are maintained to the highest standards.

1.3.1 Waterford Transfer Station.

The Onyx Waste Transfer Facility at Carrignard, Waterford accepts non-hazardous industrial, commercial and domestic waste. Approximately 32,000 tonnes of waste was transferred through the facility in 2005. This quantity is expected to increase substantially to close to 55,000tonnes over the coming years as a result of several factors. Ultimately the levels are likely to exceed this figure but only with the construction of an extension to the current waste transfer and recycling building. The landfills in Kilbarry, Waterford City and Tramore, Waterford County have closed with the next available landfill located in Carlow. As a result the bulk loading and transferring of waste is required as opposed to direct transfer to landfill from collection. Secondly, Onyx Ireland's activities in the Waterford region have increased significantly through organic growth since 2003 and are continuing to grow beyond budgeted expectations. Onyx also has a policy of expansion through selected acquisition. It is expected that in the coming years Onyx will acquire some of the other waste operators in the area resulting in an increase in tonnages collected for disposal or recycling.

1.4 Waste Management Policy in Waterford

A *Review of the Joint Waste Management Plan for the South East Region* is currently ongoing and outlines the waste management policy for the counties in that region, one of which is Waterford. The document aims to continue and develop further the approach taken in the original plan to waste management in the region up to 2021. In line with both government and EU policy the plan 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 key proposals, including *"the region shall provide for a minimum of six waste transfer facilities, to facilitate the movement of recyclables, biowaste and residual waste to their respective treatment facilities"* and *"the region shall encourage the provision of an adequate range of waste recovery and recycling infrastructure and shall have due regard to the requirements of scale for economic viability"*.

1.5 Need for the Waste Transfer and Recycling Facility

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 the region, Onyx Ireland Limited 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 promoted by the Current and Proposed Joint Waste Management Plan and, as illustrated, it specifically details the requirement for transfer and recycling facilities in meeting the targets set. Onyx has been in operation in Waterford since the 1970's with waste management activities taking place on the current site since the beginning of 2001. The site is ideally located in an industrial zone to the south of Waterford City where other waste management facilities operate and to date has operated without environmental or social concerns being raised.

To date Onyx Ireland Limited has typically handled 30,000 tonnes of waste per annum in the South-East Region. Significantly Onyx handle 40% of commercial waste produced in the region. Onyx, in recent years, have been working with the local councils by providing services for the collection and disposal of recyclables, out of it facility, at various amenity sites throughout the region. Furthermore, the company has provided its facility to the local authorities so that transfer of the local authority collected waste can be affected.

In conjunction with the waste collection service operated by Onyx Ireland Ltd. in the South East area, the volume of waste handled by the company will significantly increase. It is envisaged that given the closure of landfills in the Waterford area the waste throughput at the site will increase to 55,000 tonnes per annum.

The requirement, therefore, to permit the Onyx site to accept the level of waste discussed in this document is critical in maintaining adequate infrastructure in the South East region to handle this waste volume. Without the Materials Handling and Recycling facility and all associated Onyx collection activities in the region, the consequences would severely impact on the waste management infrastructure in the region.

1.6 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. In addition, the site is located in an area zoned for

industrial development, has a close proximity to the Waterford City where the majority of waste is produced in the South-East region, is set-back sufficient distance from the nearest residential properties and finally is close to the proposed ring road around Waterford city.

Given the increase in waste throughput at the site the company has investigated alternative strategies in order to improve efficiency and minimise environmental impacts associated with this increase. This has been further crystallised in light of the decrease in the availability of landfill in the region and the closure of landfills in Kilbarry and Tramore. As a result alternatives to the current methods of operations of the site were considered.

In the light of increasing waste tonnages as a result of landfill quotas, bulk transfer of waste and business expansion it was felt that the site, with operational/ logistical modifications, would be capable of coping with tonnages greater than the current 32,000 tpa. Hence, the do nothing approach to the overall facility layout with improved operational efficiencies was considered a viable alternative.

2.0 DESCRIPTION OF SITE

2.1 Location

The site is situated at Carrignard, Six-Cross Roads Business Park, an area zoned for industrial development, the location of which is shown in Drawing A.1.a (Appendix II). The Lacken road that passes the front entrance to the Business Park is the main route for traffic in the area. This route is accessible from the Waterford - Cork road, the N25 via the Ring Road which was opened in 2005. The Green Road along which the waste delivery and collection vehicles access and leave the site borders the western boundary of the site. This road is a Cul-de-Sac and used at present solely for the purpose of the Onyx facility and the adjacent compost facility owned by Waterford City Council. The predominant land use in the area is industrial. The north-east boundary is bordered by the Waterford City composting facility while the east and south-east boundaries are bordered by industrial premises.

The nearest residential property is located 200m to the north-east of the main entrance of the business park. The Ballybeg housing estate is located approximately 500m to the north of the Transfer station. The Lacken Road is the main road for the Business Park in the area and is also used by other private waste contractors in the area.

2.2 The Site

Current

The site covers an area of approximately 2.5 acres with the waste transfer and recycling building, offices recyclables storage building covering areas of 1,060m^2, 97.5m^2 and 370m^2 respectively. The remainder is used for skip storage, truck movement and parking, and, for car parking. In addition bunded fuel storage facilities, a truck wash bay and a weighbridge are located on the premises. The entire site at the facility is enclosed by palisade fencing approximately 2.4metres in height. The perimeter fencing also incorporates two entrances – one off the Green Road for HGV and car access and one off the Industrial Estate for cars only (restricted height access). The site surrounded on three sides by industrial/ commercial/ waste facilities with the fourth side bordering the green Road. The facility is located in an industrial zoned area with much of the surrounding land occupied by industrial units. Onyx Ireland Ltd. leases the site (Drawing B.1.b. Appendix II) from Bronwar Developments Ltd., Ballindud, Waterford.

Future

Further development of the site will includes the addition of extra covered areas for the Waste transfer and recycling building. The layout of this structure has not of yet being decided. Furthermore, it would require planning permission. With this extension the facility will be able to cope with over 80,000 tonnes of waste per annum. It is not however proposed to exceed the level of 55,000 tonnes without this extension.

2.3 Planning and Licensing Context

Current

The Waterford site at Carrignard has been in operation since January 2001. Previous to this, Onyx Ireland Ltd. was operating a waste collection service for the Waterford region at Kilbarry Cross, Waterford. Initially, this site was used as a transport depot operated by William O'Brien Plant Hire Ltd., during which time both cranes and waste vehicles operated from the premises.

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 Onyx Ireland Ltd. in 1991.

Planning permission for the operation of the current Waste Transfer and Recycling Station was granted by Waterford Corporation in July 2000 (Appendix II). In December 2000 a Waste Permit was granted by the same local authority to operate a Waste Transfer and Recycling Station at the facility in accordance with the Waste Management (Permit) Regulations 1998, S.I 165 of 1998. Due to the increase in activity at the facility Onyx applied to the EPA for a waste license in September 2002 and was granted this in November 2003(177-1). An extension to the site was granted planning permission in June 2004(Appendix II) and a review of the license was instigated in February 2004. The review application was submitted to the EPA in December 2004 and awarded in January 2006 (177-2) – Appendix I.

Future

Due to the expected growth in the operations of Onyx in Waterford and the corresponding increase in tonnages likely to pass through the facility, the company has decided to apply to the Environmental Protection Agency for a review of the Waste Licence 177-2 to ensure compliance with the Waste Management Act of 1996 and associated Waste Management Licensing Regulations.

The relevant activities of the operation in the Third and Fourth Schedules of the Waste Management Acts 1996 and 2001, and as amended in the European Communities (Amendment of Waste Management Act 1996) Regulations 1998, S.I. 166 of 1998 are:

***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 household, 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.

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, etc) to be sent for reprocessing.

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 household, commercial and industrial non-hazardous wastes and wood or timber waste received at the facility prior to recovery at an alternative appropriate facility.

From a planning viewpoint any proposed extension, as discussed in Section 2.2 of the waste transfer and recycling building will require planning permission from the local authority. This will be applied for at the appropriate time. There is not an immediate need for this as the current facility is capable of handling 55,000 tonnes per annum. However, to prevent having to apply for another review of the waste Licence Onyx are proposing that a tonnage of 80,000 be licensed by the EPA subject to the agreed infrastructure being installed on-site. Until then Onyx are requesting that the license limit be set 55,000 tonnes.

2.4 Nature and Quantity of Waste

Current and Future

The waste types that are accepted at the Onyx facility are non-hazardous commercial/industrial waste, residual household waste and construction/demolition waste. Non-hazardous white goods (cookers, washing machines, dishwashers etc,) are accepted at the facility also as part of the WEEE Ireland Electronic recycling scheme. Whereas the sources of waste come from most of those listed in the EWC Catalogue the principal sources are from:

15 Waste Packaging; Absorbents, Wiping Cloths, Filter Material and protective Clothing Not Otherwise Specified.

17 Construction and Demolition Wastes (including excavated soil from contaminated sites).

19 Wastes from Waste Management Facilities, Off-Site Waste Water treatment Plants and the Preparation of Water Intended for Human Consumption and Water for Industrial Use.

20 Municipal Wastes (Household Waste and Similar Commercial Industrial and Institutional Wastes) Including Separately Collected Fractions.

No liquid waste is handled, stored on site (temporarily or otherwise) or transferred through the facility. Table 2.4.1 below is indicative of the breakdown of the primary waste stream composition at present. With future development the composition of the waste stream may alter primarily resulting in an increase in Rubble and Municipal Waste. It is not possible at present to predict accurately how significant these changes will be.

Table 2.4.1 Approximate Composition of Waste Entering the Site

Material	Percentage of Waste Stream
Cardboard	12.0
Wood	2.5
Paper	6.7
Metal	3.0
Rubble	5.0
Mixed Plastic	1.3
Glass	0.3
Mixed Packaging	1.9
Mixed Municipal Waste	67.3

Since Onyx commenced operations in Carrignard all waste loads entering the facility have been recorded using the on-site weighbridge. This has allowed Onyx to obtain accurate quantities of waste transferred for disposal and recycling. Table 2.4.3 presents the tonnages for the year 2002 to 2005 inclusive transferred through the Onyx facility and brought directly to landfill/ recycling facilities. The waste sent directly to landfill/recycling facilities is either sludge, putrescible waste that would generate significant odours on-site, non-acceptable waste or large volumes of recyclable materials that make economic sense to send directly to recyclers. The customer profiles enable Onyx to assess the loads and make this decision.

Table 2.4.3 Waste Handled by Onyx Waterford Operations for the year 2002 to 2005			
Month	**Transferred via Onyx facility (Tonnes)**	**Directly to Disposal/ Recycling (Tonnes)[μ]**	**Total Year (Tonnes)**
2002	10,802	8,904	19,706
2003	18,981	2,573	21,554
2004	24,443	2,280	26,723
2005	32,800	5,650	38,450

The significant growth of the Onyx activity at its facility in Waterford in 2005 will continue in 2006. This has predominantly being caused by the closure of the local authority landfills in Waterford City and County. Now all this residual waste collected from their segregated collection schemes of the local authorities must be transferred out of the county and city to Powerstown landfill in Carlow. Furthermore, neither authority has a transfer station of their own and consequently must use private operators to transfer their waste. Onyx has the largest facility in the area and is at present the only one capable of handling the volumes involved (c. 17,000 tonnes per annum). In relation to the Onyx commercial activities, with the increases in recycling, materials that were formerly sent to landfill directly are now being brought to the transfer facility for sorting and recovery for recycling. The Table 2.4.4 below indicates the expected growth in tonnages over the next five years.

Table 2.4.4 Approximate Quantities of Waste Entering the Onyx Facility	
Year	**Tonnage**
2006	49,000
2007	55,000
2008	60,000
2009	66,000
2010	> 70,000

2.5 Waste Acceptance Procedures

Current and Future

Waste received at the transfer station comes primarily from known commercial customers of Onyx or new customers subject to initial profiling. Once a commercial customer is approved their waste generation information is stored on Onyx's management information system (DIVA). In addition, casual collections are made from private houses. With each casual collection the customers are advised as to the nature of waste material they can and cannot discard in the skip bins. This profiling ensures that Onyx is aware of the waste types that it will be receiving on-site before it arrives. Furthermore, it minimises the likelihood of

hazardous or non-acceptable waste been disposed of at landfill or brought to the facility. Waste brought to the Carrignard facility is predominately collected by Onyx waste collection vehicles, local authority collection vehicles or by other commercial waste collection contractors who have approved access to the facility and have valid waste collection permits. No public vehicles are allowed access to the site.

The waste types that are accepted at the facility are Municipal Waste, Commercial and Industrial Waste of similar composition to Municipal Waste and the wastes listed in Section 2.4. No liquid waste is handled, stored on-site (temporarily or otherwise) or transferred through the facility. The majority of the waste that is currently transferred through the facility is commercial and industrial waste.

When the waste is collected from a customer a service docket is filled out and signed by the customer confirming collection. All waste that arrives on-site is weighed on the weighbridge (Figure 2.5.a), checked that the load is covered or enclosed, and documented. In addition, the originator of the waste is recorded. Dedicated software is used for the recording of weights. This information is stored on a database, which also provides the date, time, origin, quantity of waste and EWC code. Both collection and weigh dockets are filed for billing and archiving. Copies of both dockets are shown in Appendix II. In the event that a load is uncovered the vehicle is refused access. This applies to all commercial vehicles other than Onyx vehicles, as all Onyx drivers are aware of the requirements to cover loads. The time, vehicle registration and carrier of the rejected load are recorded. If the load returns covered this is subsequently processed through the facility. Records of loads that do not return are retained on-site.

Figure 2.5.a. Truck on Weighbridge

Once weighed the weighbridge operator directs the load to the Waste Transfer and Recycling Building (Figure 2.5.b) or the recyclable waste compound. As all vehicles entering the facility are covered or enclosed, inspection of the waste cannot be conducted until the vehicles are tipped on site, in the recycling compound or in the transfer building. At the tipping areas the driver is directed, to the most appropriate location for maximum efficiency of handling and recovery of the waste. Once deposited on the floor the load is inspected by an experienced and trained operative. Only following this visual inspection is the load processed for disposal or recovery. It is proposed that the drivers of the waste collection vehicles will be trained to assess loads when the tonnage levels passing through the facility increase. Only loads that have material of a hazardous or unacceptable nature are recorded. Any materials that are of a suspect nature (i.e. hazardous or not acceptable at the facility) are diverted to the Waste Quarantine Area within the Transfer and Recycling Building for further examination and processing. Clean cardboard, timber, plastic and metal are removed to the appropriate location for recycling purposes. Non-recyclable waste is stockpiled within the building prior to bulk loading for removal off-site.

Figure 2.5.b. Waste Transfer and Recycling Building

2.6 Waste Handling Procedures

Waste arriving at the facility is described, for handling purposes, as non-recyclable, recyclable or hazardous/non-acceptable. The handling of each is described in detail below. All waste that arrives on-site is deposited within the Waste Transfer and Recycling Building or the Recyclable Waste Compound (Drawing D.1.a (Revision1), Appendix II) for further processing. No mixed waste or non-recyclable loads are tipped in the waste compound.

2.6.1 Non-recyclable Waste

Current

Once the waste deposited on the Waste Transfer and Recycling Building Floor is deemed to be non-recyclable it is pushed into a stockpile using a Volvo Front End-Loader to await bulk loading to 70m^3 ejector trailers. Bulk loading is carried out using a Grab machine. The ejector trailers are covered with netting or tarpaulin and subsequently removed off site to a licensed disposal facility.

Due to the operating hours of the facility and the opening hours of the landfills it is not always possible to clear the floor of the Building at the end of every day. However, no non-recyclable waste remains on-site for more than 56 hours with the exception of bank holidays where up to 62hrs may be the timeframe. Every evening all the available ejector trailers are loaded with this waste. These remain on-site overnight in the Building and/or on the hardstanding area at the front of the Building (all containers stored outside are covered with netting or a tarpaulin) prior to dispatch the following morning, with the exception of Sundays and Bank Holiday Mondays. Any residual waste remaining on the floor is removed the following morning or the next day that the facility is open.

The weighbridge operator records the weight and destination of the non-recyclable material.

Future

It is proposed to continue to use the 70yd^3 ejector trailers to transfer the waste to landfill /disposal sites, with the exception that additional trailers will be utilized to ensure that the tonnage throughput is managed efficiently. It is expected that an additional 4 No. trailers will be available. This will allow up to 55,000 tonnes to be transferred through the facility. To exceed this figure will require a building extension. Onyx would propose to construct this in the medium term to enable the capacity to reach 80,000 tonnes; however, until such time as the extension is constructed the tonnage capacity of 55,000 tonnes will not be exceeded. The same scenario is likely to arise in the future operations with some waste being left on the floor of the building overnight and the remainder stored in the ejector trailers. This will be primarily due to the landfill opening hours, the long haul distances and the opening hours of the facility. All loaded ejector trailers will be covered and stored outside overnight and/ or throughout the day in the truck parking area.

2.6.2 Recyclable Waste

Current and Future

There are several solid waste types that are considered to be recyclable at the Onyx facility (Cardboard, Metal, Timber, Paper, Glass, Rubble and Plastic).

The quantities of material recovered from the facility since 2003 are detailed in Table 2.6.2a below.

Table 2.6.2a Recycled Material

Year	Cardboard (Tonnes)	Paper (Tonnes)	Timber (Tonnes)	C& D (Tonnes)	Metal (Tonnes)	Plastic (Tonnes)	Glass (Tonnes)
2003	2,890	1,490	397	38	106	172	24
2004	2,876	1,478	589	638	172	796	117
2005	3,966	2,296	882	1,527	906	422	173

As can be seen the quantities of materials recycled through the facility have almost doubled from 2003(5,117tonnes) to 2005(10,172tonnes) illustrating the success of the facility since it originally opened when less than 4,000 tonnes in total passed through it.

Clean uncontaminated loose cardboard is segregated from any waste loads that are deposited on the Waste Transfer and Recycling Building Floor. The cardboard is loaded onto a conveyor that feeds a Baling Machine or loaded into a bulk ejector trailer for transfer to an alternative baling operation within the Onyx group. Any cardboard that arrives baled on-site is either further baled into larger bales or loaded onto a transfer trailer. Any Baled cardboard is subsequently stored on a hard standing area prior to removal to a recycling company.

Timber is removed from the tipped waste loads by hand or using the Grab Machine and placed in the wood storage area of the Recyclable Storage Compound. Clean timber loads are tipped directly in to the storage bay. Once a sufficient volume of timber is available this is either shredded on-site and/or bulk loaded into a transfer trailer and brought to timber recycling facilities detailed in Table 2.6.2b below.

Metal is removed from the tipped waste loads by hand or using the Grab Machine and placed in the metal storage area of the Recyclable Storage Compound. Clean metal loads are tipped directly in to the storage bay. Once a sufficient volume of timber is available this is bulk loaded into a trailer and brought to metal recycling facilities detailed in Table 2.6.2b below.

Clean uncontaminated plastic is segregated from any waste loads that are deposited on the Waste Transfer and Recycling Building Floor (Figure 2.6.2.b). The plastic is loaded onto a conveyor that feeds a Baling Machine or loaded into a bulk ejector trailer for transfer to an

alternative baling operation within the Onyx group. Any plastic that arrives baled on-site is either further baled into larger bales or loaded onto a transfer trailer. Any Baled plastic is subsequently stored on a hard standing area prior to removal to a recycling company.
Clean Plastic Moldings are shredded on site in the recycling compound to improve transfer & transport efficiencies and make the material more favourable to the recycling market.

Figure 2.6.2.a Waste Transfer and Recycling Building Floor

Glass is source segregated and when it arrives at the Onyx facility is stored in the Recyclable Storage Compound. Once a sufficient volume of glass is available this is bulk loaded into a trailer and brought to glass recycling facilities detailed in Table 2.6.2b below.

Currently Onyx at Waterford provides a segregated collection system for the collection of Construction and Demolition waste to many of its clients in the construction industry. Once the material arrives on site it is deposited in the C&D storage bay in the Recyclable Storage Compound and undergoes further manual cleaning. Once free from contamination, the construction and demolition waste is taken to a permitted landfill/quarry where it is used as backfill. Where mixed loads are brought to the facility, the construction and demolition waste is manually removed as much as possible from the other waste streams. However, Onyx currently does not collect sufficient quantities of construction and demolition waste to justify an automated separation system such as a screen or trommel.

The weighbridge operator records the weight and destination of the recyclable material.

Table 2.6.2b. Waste and Recyclables Destinations		
MATERIAL	**DESTINATION**	**CARRIER**
Waste	Onyx Ireland Ltd., Ballymount Cross, Tallaght Dublin License No. 39-2	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05
	South Dublin County Council, Ballymount Baling Station, Ballymount Road, Walkinstown, Dublin 12 License No. 3-3	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05
	Dunmore Landfill, Kilkenny Co. Council, Dunmore, Co. Kilkenny License No. 30-2	Onyx Ireland Ltd. Permit No. WCP/KK/029/02
	Danohill Landfill, Tipperary SR Co. Council Garryshane, Danohill, County Tipperary License No. 74-1	Onyx Ireland Ltd. Permit No. WCP/KK/029/02
	Powerstown Landfill, Carlow County Council Powerstown, Co. Carlow License No. 25-1	Onyx Ireland Ltd. Permit No. WCP/KK/029/02 P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05
	KTK Landfill Limited, Brownstown & Carnalway Kilcullen, Co Kildare License No. 81-2	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05
	Wexford Co. Council Killurin Landfill Site Wexford, License No. 16-1	Sewmar/Wexford Plant Hire Permit No.WCP/KK/106/02
Cardboard	Onyx Ireland Ltd., Ballymount Cross, Tallaght Dublin License No. 39-2	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05
	Cardboard Connection 25 Kentwell Place Burwell Cambs, UK CB5 DBT EPA Reg. No. TNE/375327/CB	Surefreight Unit 4, Shepherds Drive, Carnbane Ind Est. Newry, Co. Down WCP/KK/175/04 Johnston Haulage Permit No. WCP/KK/073/02
	ONYX Ireland Ltd., Dock Road, Limerick License No. 82-2	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05

	Smurfit Recycling Ireland Ballymount Road Walkinstown Dublin12 Permit No. WPR/021/2	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Johnston Haulage Permit No. WCP/KK/175/02 Macroom Haulage Ltd. WCP/KK/300/05
	South East Recycling Ltd. South East Recycling Centre, Carrigbawn, Pembrokestown, Wexford. License No. 111-1	Sewmar/Wex. Plant Hire Permit No. WCP/KK/053/02
Paper	Smurfit Recycling Ireland Ballymount Road Walkinstown Dublin 12 Permit No. WPR/021/2	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05
	ONYX Ireland Ltd., Dock Road, Limerick License No. 82-2	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05
Plastic	Dilloan Recycling 33 Manydown Close Red Barns Road Dundalk Permit No. WP 36/02	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05
	Recyclenet Ireland Ltd. Cappanargid Rathdangan Co. Kildare Permit No. 49/2001	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05
	Clearpoint Recycling Ltd., Mill River Business Park Carrick on Suir, Co. Tipperary Permit No. WM/WP/ 18/03	Onyx Ireland Ltd. Permit No. WCP/KK/029/02
	Thorndale Recycling Ltd. 77 Clooney Road, Campsie Derry, BT47 3PA License No. WDL 14	Surefreight Ltd Permit No. WCP/KK/175/04
Timber	Pat O Donnell, Ballyboe, Ballypatrick Co. Tipperary, Permit No. WM/WP/06/03 ONYX Ireland Ltd., Dock Road, Limerick License No. 82-1	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05
	Waterford City Compost Site Green Road Waterford City (Reg No. 1660)	Onyx Ireland Ltd. Permit No. WCP/KK/029/02
	Weyerhauser Europe Ltd., Redmondstown, Clonmel, Co.Tipperary IPC Reg. No. 593	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05

Metal	Cork Metal Company Ltd., Dublin Hill, Cork Permit No. 08/01	Cork Metal Company Ltd Permit No. WCP/KK/018/02
	Midland Scrap Metal Co. Ltd., Harbour Street Mountmellick, Co. Laois Permit No. WMP005	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05
Glass	Sam Shire Services (recycling) Ltd., Mayfield Road Lismore, Co. Waterford Permit No. WP06/01	Onyx Ireland Ltd. Permit No. WCP/KK/029/02
	Clearpoint Recycling Ltd., Mill River Business Park Carrick on Suir, Co. Tipperary Permit No. WM/WP/ 18/03 SFL Krysteline Ltd., Industrial Estate, Callan Co. Kilkenny. Permit No. WMP11/2003	Onyx Ireland Ltd. Permit No. WCP/KK/029/02 Onyx Ireland Ltd. Permit No. WCP/KK/029/02
Rubble	Patrick Walsh, Kiltorcan, Ballyhale Co. Kilkenny Permit No. WMP 23/2002	Paul Holden Plant Sales/ Haulage License 8693.00 Onyx Ireland Ltd. Permit No. WCP/KK/029/02
	George Porter, Dunkitt House, Kilmacow Co. Kilkenny Permit No. WMP09/2003	Paul Holden Plant Sales/ Haulage License 8693.00 Onyx Ireland Ltd. Permit No. WCP/KK/029/02
	Paul Holden, Dunkitt, Co. Kilkenny Permit No. WMP 17/2002	Paul Holden Plant Sales Haulage License 8693.00
Compostable Materials	Waterford City Compost Site Green Road Waterford City (Reg No. 1660)	Onyx Ireland Ltd. Permit No. WCP/KK/029/02
Non-Hazardous White Goods	Hammond Lane Metal Company Ltd. Ringsend, Dublin 4. Permit No. WPT 68	P & A Plant Hire Ltd. Permit No.WCP/KK/183/04 Macroom Haulage Ltd. WCP/KK/300/05

2.6.3 Hazardous or Non-Acceptable Waste

Current and Future

All on-site operatives are familiar with the wastes acceptable at the facility and follow the following procedure when suspect waste is identified.

In the event of hazardous waste or non-acceptable waste been deposited on site the following procedures are followed. It is removed immediately to the waste quarantine area within the

Waste Transfer and Recycling building (Here the hazardous waste is segregated from the Non-acceptable waste). The producer of the waste is identified and informed by the Environmental Officer. The incident is photographed, logged and recorded. The waste is then removed off-site by a hazardous waste contractor who must also provide a C1 form, if applicable, or by the producer of the waste. The ultimate destination of the waste is recorded.

2.7 Site Infrastructure

Current

The site infrastructure is described in detail below. Drawing D.1.a (Revision 1) in Appendix II illustrates the locations of the relevant infrastructures. Future infrastructural changes will be notified to the Agency prior to their commencement.

2.*7.1* *Site security arrangements*

The facility is enclosed entirely by security fencing approximately 2.4m in height. The perimeter fencing also incorporates two large entrance gates for access for cars at the eastern side of the facility on the western side for waste collection delivery vehicles. Both gates are kept open during operation hours of the facility. The gates are locked every evening by means of a padlock.

The site also incorporates a Close Circuit TV system. The system incorporates eight cameras, five mounted externally to view the car park facility, the front of the building and the rear of the building. The remaining three cameras are situated in the Waste Transfer Building (3 No.). All of the above mentioned cameras can be viewed from the Area Managers office.

The site also has a security alarm system in place. This is switched on by means of an access code each evening at the end of operations. Access to the system is available only to staff members. In the event of the security alarm being activated outside of operational hours a signal will be registered with ADT Fire and Security in Dublin. ADT will immediately contact a member of staff from the Waterford depot to inform them of the situation.

Finally, the site has a security guard present outside of office hours (5.30pm to 8.00am Monday to Saturday and from 1.30pm Saturday to 8.00am on Monday).

2.7.2 Site Access roads

There are two accesses to the site. The main site access is from the Green Road which runs along the western boundary of the site. (Figure 2.7.2.a) All vehicles delivering and collecting waste through this access point over the weighbridge. The second is by means of the Lacken road leading from Waterford City. This road is a subsidiary of the main Waterford-Cork road (N25) and leads directly to the entrance of the Six Cross Roads Business Park and also to the new ring road. Access to the site (Figure 2.7.2.b) is from the main road within the Business Park. This access is only used by non-waste delivery/collection vehicles.

Figure 2.7.2.a. Green Road Site Entrance

Figure 2.7.2.b Lacken Road Site Entrance

2.7.3 Hard-Standing Areas

The surface of the entire site consists of either an asphalt or concrete surface and covers an area of c.10,000m^2(Drawing D.1.e (rev.1, Appendix II). The main area of the site is covered by asphalt. The surface water catchment area is contained within this area via a network of drains. These surface water drains converge before exiting the site via a grit traps and interceptors. Within the area covered by asphalt there are two areas, which consist of a concrete surface. The first is an area, or apron located at the front of the Waste Transfer Building. The floor of this apron slopes towards foul sewer drains running across the front of the buildings. These drains converge with the main foul sewer drain. The second area is a concrete apron at the truck wash facility. This area consists of two drains containing metal grills for catching grit from lorries. Again both drains converge with the main foul sewer drain. All foul sewer drains exit the site via a grit trap and interceptor.

2.7.4 Weighbridge and Plant Equipment

There is a weighbridge in operation on site which is situated opposite the weighbridge office. The weighbridge which is a 15 metre electronically controlled Digi Weighbridge, is controlled by Payload Weighbridge Transaction Management System Software. All waste entering and leaving the site is weighed and the origin or destination of the material is recorded on the weigh docket. Other information recorded on the weighbridge dockets includes the date, time, conveyor of material, waste inspector, waste description and EWC codes. The maximum weight capacity of the weighbridge is 60 tonnes.

On-site equipment includes;

- A 2.5tonne forklift with grab attachment
- A Teleporter (New Holland LM 1340)
- Grab Machine (JCB JS 200L)
- Lindemann baler (likely to be replaced in 2006)
- Compressor

All back up-equipment is stored off-site and is guaranteed same day delivery in the event of breakdown of the site equipment by Onyx's subcontractor. In addition, a mobile shredder is brought on site and shreds timber circa once per month adjacent to the recycling storage compound.

2.7.5 Vehicle Cleaning

There is a truck-wash facility on site. The equipment used to wash the trucks is a portable steam cleaner which is housed within the truck wash area shed. It is a diesel powered cleaner with water supplied from the mains water supply. Trucks to be washed are parked on the concrete wash area, which is composed of two grit traps. These traps contain metal grills to prevent larger contaminants entering the foul sewer system. Contaminated water enters the foul sewer through these traps and exits the site via a grit trap and interceptor. Bins are also washed in this area.

2.7.6 Fuel storage areas

There are two bunds constructed on site for the purpose of fuel storage located at the rear of the garage and the Waste Transfer Building respectively (Drawing D.1.a, Rev.1, Appendix II). One bund contains a 1950 litre diesel oil tank and a 1500 litre tank containing water used for supplying the odour control system. Hydraulic oil, Engine oil and waste oil from the garage are stored in the other bund. These are contained in 1950L metal tanks. The bund capacities are 10.8m^3 and 12.6m^3 respectively. These are more than sufficient to contain either 25% of the total volume of liquids stored therein or 110% of the capacity of the largest tank. Finally, the designs of the bunds are such that they prevent the ingress of water into the bund by means of roof sections.

2.7.7 Waste Quarantine Area

The waste quarantine area is located within the Waste Transfer Building. It is situated inside the entrance at the front of the building between the roller doors. The quarantine area consists of a bunded work floor made from tough polyethylene work floor units linked together. There is an access ramp attached to aid in the movement of large drums to and from the bunded work floor. In the event of minor quantities of hazardous waste or non-acceptable waste been deposited on the floor of the Building it is removed immediately to the waste quarantine area. In the event of large volumes being deposited it is immediately placed back in the container from which it came and stored in the waste quarantine area pending inspection and removal from site.

2.7.8 Waste Inspection areas

Waste inspection takes place within the Waste Transfer Building or at the Recycling Compound. Waste that arrives on the premises for recycling is tipped in an area of the floor in the most appropriate location within the building. The site operatives inspect the waste

for non-acceptable waste types. Waste that is deemed non-acceptable is segregated and transferred to the waste quarantine area.

2.7.9 Traffic control

Traffic entering the facility is restricted to a 15kph speed limit. Traffic delivering/ collecting waste from the facility do so by using the entrance at the Green Road. All waste collection vehicles entering and leaving the Onyx facility pass over the weighbridge (Drawing D.1.c, Rev.1, Appendix II). They deposit there loads onsite by reversing through the two most Southerly doors of the Waste Transfer Building and then tipping the waste there. The waste transfer vehicles reverse into the northern most door of the building and here they are loaded. All vehicles leave the Waste Transfer building through the doors they enter. For recyclables such as glass, timber, metal these are tipped in the designated areas in the recycling compound.

There are currently 17 trucks in operation at the Waterford depot. In addition 5 transfer trailers are utilized to carry the waste to off-site disposal/recovery facilities. Parking facilities are provided for these trucks at the perimeter fence opposite the Waste Transfer building. In addition, there are parking facilities provided for truck drivers and office staff. These facilities are located adjacent to the administration block.

2.7.10 Plant Sheds, Garages and Equipment Compound

Current

The Waste Transfer Building covers a footprint of 1,060m^2 and is used for the disposal, transferring and recycling operations (Drawing D.1.a, Rev.1, Appendix II). There are three electrically operated roller shutter doors located on the eastern side of the building (Figure 2.7.10.a) through which all vehicle movements occur. At the southern end of the building is located a baler for baling of cardboard, paper and plastic and a shredder for shredding paper. Along the western boundary of the site is located the recycling compound. This is a three sided building with a roof covering an area of 370m^2.

Figure 2.7.10.a Access Doors to Materials Handling & Recycling Building

Future

The waste transfer building will be extended in the near future to accommodate additional recycling and waste transfer operations. The footprint of the building will be designed to accommodate an increase in tonnages on-site from 55,000 to 80,000tonnes per annum.

2.7.11. Facility accommodation

Current and Future

The administration offices are located to the southern side of the complex. The administration block contains the weighbridge office, the Operations Managers' office and the sales department offices on the ground floor. The Area Manager's office is located on the first floor at the front of the building. The administration offices also contain staff facilities such as toilets and a small kitchen area. There is a canteen located above the garage on the first floor for truck drivers. Facilities for truck drivers include a small kitchen, toilets and showers on this floor.

2.7.12 Fire Control System

Current and Future

A fire alarm system was installed during the construction of the facility to the satisfaction of the Chief Fire Officer for Waterford. The areas covered are separated into specific zones namely; The Offices (Upstairs/Canteen, Downstairs/Backdoors), and the Waste Transfer Building. The main control panel is located in the weighbridge office. In the event of a fire being detected a red light will pulse relative to the specific zone and the alarm will sound.

In addition, fire points are located throughout the complex where fire control equipment can be found.

1.	Ground floor administration office	2kg CO2 + 4Lts Foam Spray Fire extinguishers
2.	First floor administration office	2kg CO2 + 4Lts Foam Spray Fire extinguishers
3.	Waste Transfer building	5kg CO2(x3) + 9kg (x3) Dry Powder Fire extinguishers.
4.	First floor canteen	2Kg CO2 Fire extinguisher, Fire Blanket

Two fire hydrants are located in the yard, one outside the waste transfer building and the second outside the administration offices. Fire reels and connection equipment to the hydrants are stored within the garage. Water for the hydrants is supplied through the Waterford City Council mains. Finally, the fire alarm has been connected to the security company's system so that an out of hour's fire can be detected and responded to.

2.7.13 Hours of Operation and Waste Acceptance

Current and Future

The facility currently operates six days per week. Operations shall only take place between 7.00am and 9.00pm Monday to Friday and between 7.00am and 6.00pm on Saturdays and Bank Holidays. It is likely that these hours of operation will remain and cover all future activities at the site. Waste acceptance occurs between 7.00am and 8.30pm Monday to Friday and between 7.00am to 5.30pm on Saturdays and Bank Holidays. There are no operations or waste acceptance on Sundays.

2.7.14 Construction & Demolition Waste Infrastructure

All C&D waste that arrives on site is deposited in the C&D storage bay in the Recyclable Storage Compound (Drawing D.1.a, Rev.1, Appendix II) where it undergoes manual cleaning if required. Once free from contamination, the rubble waste is stored until sufficient volumes are present to allow a full load be transferred to a permitted landfill/quarry where it is used as backfill. All timber and metal recovered from the loads delivered to site are stored in the appropriate storage bays. Onyx currently does not collect sufficient quantities of construction and demolition waste to justify an automated separation system such as a screen or trommel.

2.8 Services (Drawing B.2.d, Appendix II)

2.8.1 Electrical Supply

Electrical power is supplied to the administration block and waste transfer building by the E.S.B. Electrical supply is required for the day to day operation of the administration area including computers, fax machine, lighting and heating etc. Electrical power is supplied to the also for the operation of diesel oil and lubricant oil pumps, odour control system pumps and for equipment generally used for maintenance of trucks. Electrical supply is also required for the operation of the Baler in the materials recycling and handling building. The Electrical consumption for 2005 was 107,617kWh.

2.8.2 Water Supply

The site is serviced from the water mains supplied by Waterford City Council. Water is used on site for the washing of trucks, the use of the odour abatement system and the canteen and toilets. A water metre was installed on-site at the end of April 2001. Its location is marked on Drawing D.1.f, Rev1, Appendix II. The water consumption figures for the year 2004 and estimated for 2005 are detailed in Table 2.8.2 below.

Table 2.8.2 Water Consumption -

Period	Water m^3
2004	276.1
2005	272.2

2.8.3 Surface Water Drainage

Current and Future

Surface water run-off from the facility is collected in the surface water drainage network and discharged to a stream adjacent to the site. The surface water collected from the site passes(with the exception of roof run-off) through grit traps for removal of small particulate matter before passing through Class I surface water interceptors to remove additional solids, and oils and greases prior to discharge. Emergency shut-off valves have been installed at the outlet of the facility between the sampling monitoring points and the final manholes to prevent any unexpected emissions occurring.

2.8.4 Lighting

Current and Future

Adequate lighting is provided on-site for nighttime operations. Spot lights are situated throughout the site, at the entrances to the Waste Transfer and Recycling Building and the Recycling Compound, in the Truck parking area and within the Site buildings.

2.9 Site Management

Current

An organisational chart illustrating those personnel with key responsibilities for the operation of the facility in Waterford is shown below. Should it be required additional key personnel will be employed to cope with additional workloads.

Managing Director (M.Toner)

Direct management of all company activities in Ireland including all future developments. 15 years in the waste management industry having previously owned his own waste management company and prior to that worked for Leigh Environmental in the UK.

Southern Regional Manager (HG Barthelemy)

Overall responsibility for Onyx's activities in the Southern Region of Ireland. He joined Onyx Ireland in 2003 from a sister company of Onyx's in the UK. Has worked in the Waste Industry for over 15 years and has successfully attended the FAS Waste Management Training Course.

Area Manager (M.Keating)

Direct management of all day to day activities of the Waste Transfer/Recycling Station. 34 years experience in the waste management industry and has successfully attended the FAS Waste Management Training Course.

Operations Supervisor (T.Walsh)

Responsible for the day to day operations at the facility. He has worked with Onyx since 2003 and has successfully attended the FAS Waste Management Training Course. Previous to this he worked for the Tannery in Portlaw.

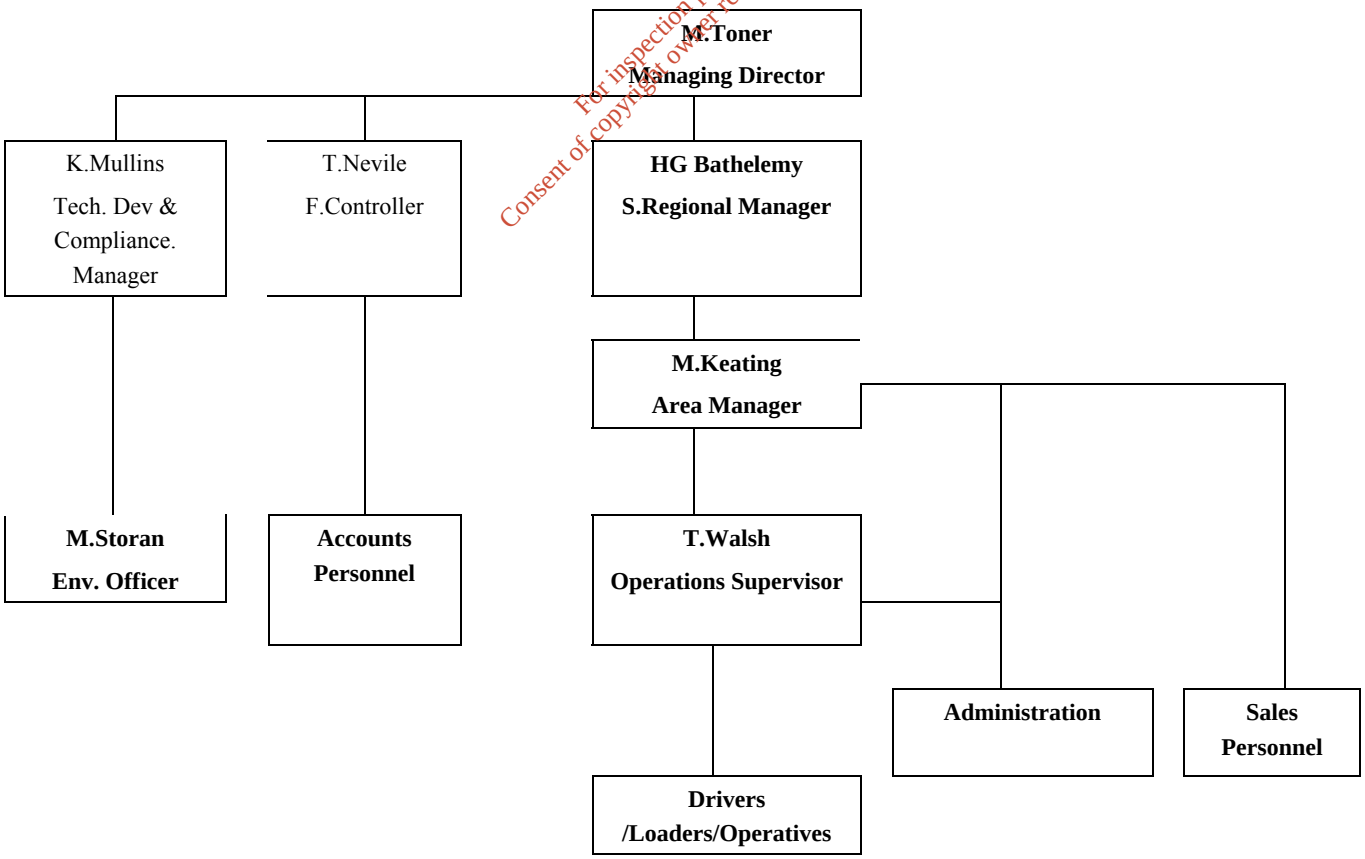
Environmental Officer (M.Storan – BSc)

To ensure that all activities carried out by the Waterford Operations (within its own facilities and at clients' facilities) are conducted in a manner that is conducive to good environmental practice. Also responsible for ensuring that the Waterford facility complies with the all relevant licenses and permits. 9 years experience in the environmental area. Has successfully completed the FAS Waste Management Training Course.

Sales Representative (W. Doyle)

Responsible for all sales within the Waterford and South East Region.

Onyx Ireland Ltd.
Waterford Operations Organigram



3.0 HUMAN BEINGS

3.1 Human Beings in the Existing Environment

Human beings are one of the most important elements of the environment. One of the principal concerns in the execution of a development is that the local population experiences no diminution in the quality of life as a result of the development on either a temporary or permanent basis. All the effects of a development on the environment impinge upon human beings. Air quality, water quality, noise and landscape impact directly while flora, fauna and road traffic impact more indirectly.

3.1.1 Noise

Noise is described as unwanted sound and, because of its subjective nature; the level of annoyance is difficult to measure. There are standards that define levels of acceptability for various commercial and residential developments. With regard to acceptable ambient noise levels, the noise level outside noise sensitive areas should be kept below 55 dB (A) at daytime and 45 dB (A) at night-time.

Current

Qualified personnel from Onyx Ireland ltd. carried out a noise survey of the facility in October 2005 to establish the noise levels in the vicinity of the facility and to determine whether any tonal component existed. Both day and nighttime surveys were carried out. During the noise monitoring programs normal site activities were carried out. A summary of the report may be found in Table 3.1.1.a below, the full report may be found in Appendix III, in addition to the noise monitoring locations (Drawing F.2.a).

Table 3.1.1a. Summary of Results of Noise Surveys Carried out at the Onyx facility

Location	L_{Aeq}		L_{A10}		L_{A90}	
	Day	Night	Day	Night	Day	Night
N1- Northern Boundary	64	46	150	49	54	45
N2 – Southern Boundary	64	47	62	49	58	44
N3 – Western Boundary	55	46	68	51	48	43
NS1 – North West of Site	63	53	150	55	61	49
NS2 – North East of Site	66	52	69	58	55	46

The results of the survey indicate that the nighttime noise levels at the boundary of the site marginally exceed the EPA limits of 45dBA. The levels at the noise sensitive locations are

also exceeded. However, these elevated levels may be attributed to off-site activities (as no activities were being carried out at the site during the monitoring period (which is typical)) such as passing traffic (NS1 – the new Ring Road around Waterford is situated between the Onyx facility and this location; NS2- the main link road around Ballybeg Housing Estate is adjacent to this monitoring location). There were no audible noise sources from the Onyx Facility at the monitoring points. The $\mathbf{L_{A90}}$ figures are more representative of the background levels and can be seen to lower than the 45dBA levels at the boundary of the site. The dominant noise source at N1 originated from equipment on the adjacent compositing site, such as blowers and also traffic movements at the nearby DHL facility.

The daytime limit of 55dBA was exceeded at two boundary locations (N1 and N2) and also at the noise sensitive locations. The boundary location exceedances were caused by on-site and off-site vehicle movements which in some instances passed within 2- 3 metres of the sampling location. Noise levels at N1 during the daytime survey were generally influenced by on-site activities within the Onyx facility although a front-end loading shovel was operational at the composting plant during monitoring, which would have contributed to noise levels. The dominant noise source at N2 was attributable to waste delivery/collection trucks arriving at the site and stopping on the weighbridge. Additional noise sources included construction traffic working adjacent to the facility, constructing new warehouses. As with the nighttime noise survey the elevated levels at the noise sensitive locations can be attributed to passing traffic on nearby roads. The Octave Band data measured on-site for the three locations show that the noise levels measured in the area are generally dominated by low frequency noise, which is to be expected for traffic noise and heavy goods vehicles. At position N1 a tonal component was measured at 4.0kHz. This was caused by a vehicle reversing with a warning siren passing close to the monitoring location. Finally, it can be concluded that given the large distance to the nearest noise sensitive locations and the fact that there are other activities between the Onyx facility and the noise sensitive locations (Ring Road, passing traffic, composting facility etc) the noise levels arising from the current level of operation at the site do not give rise to nuisance at these locations. This is confirmed by the fact that no noise complaints have been received at the facility since its commencement.

Future

In the absence of site specific data the Onyx facility in Ballymount Cross has been used as a reference for potential noise levels that may exist as a result of the increase in the level of operations at the facility, specifically in relation to tonnage throughputs of 50,000 and 90,000 tpa. This facility is located in an industrial area and operates 24hrs per day. Tables 3.1.1.b (50,000tpa), 3.1.1.c (90,000tpa) and 3.1.1d (c. 100,000tpa) demonstrate the results of three noise surveys carried out at the facility.

Table 3.1.1.b. Summary of Results of Noise Surveys Carried out at the Onyx facility, Ballymount Cross, Tallaght in April and December 1998.				
Location	**L_{Aeq}**		**L_{A90}**	
	April	**December**	**April**	**December**
B1- Northwest of site	63	62	57	58
B2 - Southeast of site	71	69	61	59
B3 - At carpark near Entrance	66	66	61	60
S1 - On kerbside outside private house	73	73	64	65

It was established that there were three noise sources within the facility in addition to the on-site truck movements. These were a Volvo BM Bulldozer, Cardboard Baler and Komatsu Grab Machine. It was concluded that the noise emanating from these pieces of plant were not clearly audible at the nearest noise sensitive location (located 50metres from the entrance to the facility). The ambient noise levels at the nearest residence, immediately south of the facility, were higher than any of the ambient noise levels recorded at the boundary. The heavy traffic on the Ballymount Road was the main contributor to the ambient noise level at this residence. Operations at the waste handling facility were not perceptible or audible at this location. Furthermore, it was established that no tonal components were audible during monitoring.

Table 3.1.1c. Summary of Results of 24 hour Noise Survey Carried out at the Onyx facility, Ballymount Cross, on the 14th - 15th September 1999.				
Location	**L_{Aeq} Range**		**L_{A90} Range**	
	Day	**Night**	**Day**	**Night**
B1- Northwest of site	53 - 68	47 - 58	50 - 62	39 - 48
B2 - Southeast of site	68 - 77	49 - 73	53 - 68	45 - 54
B3 - At carpark near Entrance	60 - 66	54 - 65	51 - 60	44 - 59
S1 - On kerbside outside private house	73 - 77	61 - 69	56 - 63	42 - 52

The results again demonstrated that the level of activity at the site is not a significant contributor to noise at the nearest noise sensitive location. This was also the conclusion reached for the nighttime activities. Furthermore, it was established that the nighttime activity at nearby a warehousing premise, adjacent to this location, was the primary contributor to noise build up.

Table 3.1.1d. Summary of Results of 24 hour Noise Survey Carried out at the Onyx facility, Ballymount Cross, on the 30th and 31st May 2005				
Location	**L_{Aeq}**		**L_{A90} Range**	
	Day	**Night**	**Day**	**Night**
B1- Northwest of site	60.8	45.9	54.4	44.2
B2 - Southeast of site	68.5	55.3	59.8	44.2
B3 - At carpark near Entrance	62.3	56.2	56.0	49.0
NS1 - On kerbside outside private house	73.7	63.9	62.6	49.0

As with the previous reports it was concluded that the traffic passing by on the Ballymount Road adjacent to the facility is the main source of noise in the vicinity of the Onyx facility and the nearest noise sensitive location.

3.1.2 Traffic

Current

The Onyx site is mainly accessed via the Green Road which passes the rear of the Six-Cross Roads Business Park. This road, which formerly was used as a feeder road to the business park and by other waste operators in the area, is now a cul-de-sac since the construction of the Ring Road, and is only used for accessing the Onyx facility and the adjacent composting facility by private and commercial vehicles. Traffic also enters the site via the main the distributor road in the Six-Cross Roads Business Park. The Lacken road that passes the front entrance to the Business Park used to be the main route for traffic in the area leading to and from Waterford City – this function has been replaced by the new Ring Road with the lacken Road now acting as a feeder road to the business park from the Ring Road. The entrance to the business park is less than 150metres to the Ring Road.

A random traffic survey was carried out on the 20th December 2005 to establish the traffic volumes on both access roads to the site and to assess the impact of larger operations on the these roads. The survey was carried out between the hours of 7.00am and 9.00pm which reflect the licensed hours of operation of the facility. The results of the survey are detailed in Tables 3.1.2a and 3.1.2b overleaf.

Table 3.1.2a Traffic Counts on Lacken Road (20th December 2005)			
Time	**Private Vehicles on Lacken Road**	**Commercial Vehicles On Lacken Road**	**Total Vehicles on Lacken Road**
07.00 - 08.00	126	28	154(4)
08.00 – 09.00	198	93	291(3)
09.00 – 10.00	174	84	258(4)
10.00 – 11.00	149	117	266(10)
11.00 – 12.00	127	93	220(4)
12.00 – 13.00	179	96	275(9)
13.00 – 14.00	213	93	306(6)
14.00 – 15.00	192	99	291(5)
15.00 – 16.00	195	107	302(4)
16.00 – 17.00	259	110	369(3)
17.00 – 18.00	168	71	239(0)
18.00 – 19.00	85	19	104(0)
19.00 – 20.00	56	7	63(0)
20.00 – 21.00	58	3	61(0)
Total	2,179(23)	1020(29)	3199 (52)

Table 3.1.2b Traffic Counts on Green Road (20th December 2005)			
Time	**Private Vehicles on Green Road**	**Commercial Vehicles On Green Road**	**Total Vehicles on Lacken Road**
07.00 - 08.00	3	5	8(8)
08.00 – 09.00	2	6	8(8)
09.00 – 10.00	8	11	19(19)
10.00 – 11.00	3	13	16(16)
11.00 – 12.00	0	16	16(15)
12.00 – 13.00	4	15	19(16)
13.00 – 14.00	7	6	13(9)
14.00 – 15.00	5	22	27(20)
15.00 – 16.00	7	20	27(20)
16.00 – 17.00	6	9	15(12)
17.00 – 18.00	5	7	12(10)
18.00 – 19.00	1	0	1(1)
19.00 – 20.00	0	0	0
20.00 – 21.00	0	0	0
Total	51(32)	130(121)	181(153)

The figures in brackets are the number of vehicles entering and leaving the Onyx facility.

The results of the investigation illustrate that the number of Onyx vehicles (Cars and Trucks) using the Lacken Road and subsequent entrance to the business park relative to the overall usage is negligible (1.6%).

The majority of the traffic on the Green Road is from the Onyx site. However, given that it was originally a distributor road from the city conveying HGV's and private cars the volume of traffic on the road is now not significant.

Future

With the proposed increase in activity at the site there will be an associated increase in traffic volume. Based on current versus projected tonnages it is estimated that with 80,000 tonnes passing through the facility the traffic volume will increase by c.2.5 times the current level. Even if traffic volumes stayed still on the Lacken road the increase would still not significantly impact on this road (c.4%). However, as the ring road is finally completed traffic volumes will increase further on the Lacken Road. Hence, it is argued that an increase in tonnages at the facility will not impact significantly on the Lacken Road.

As for the Green road, given that this road (as mentioned earlier) was formerly a distributor road in the area for other waste companies and the business park it is considered there is more than adequate capacity on the road to cope with the increase in tonnages at the Onyx facility and the associated traffic increase. Furthermore the road is sufficiently wide to allow two HGV's pass each other.

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 separate section.

a) Odour

Odour is the most visible 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.

Prior to discussing odours related to the Onyx facility site, it is also 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 its 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"* (Section 7) and a subsequent amendment to the act altered the definition of a *pollutant* to include *"a substance which gives rise to an odour".* Therefore the implication is that the Best Practical means must be employed to control odours.

Any odour discharged into the atmosphere is carried by the wind and diluted by the turbulence that is always present in the atmosphere. This dispersal process is dependant 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 wind speeds the more likely the odours are to be dispersed to such a degree that off-site odours 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 crosswind will be maintained to some extent due to fluctuations in wind directions and this cam result in high odour concentrations being detected at surprisingly large distances from the source.

At the Onyx facility the waste streams are a mixture of commercial and residual household waste. The residual household waste is of a dry nature with little or no putrescible waste present. This is due to the fact that both Waterford City and County have three bin collection systems where the dry recyclable waste and organic waste is source segregated

and is not brought to the Onyx facility. 80-85% of the commercial 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 odours. Until a waste load can be deposited on the waste transfer building floor 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 building when loads containing such wastes are deposited. The site operatives, however, inspect each load upon arrival and ensures that any odorous waste that arrives is bulk loaded immediately, to be removed off-site, thus minimising the odour potential. Onyx have installed an odour neutralising system (Drawing F.1.a Appendix III) to further reduce the impact any odours generated in the building may have on the surrounding environment. This system can be operated automatically or manually in the event that it is considered that extra odour control is needed. The quick turnaround and the odour control system have led to only two complaints being received in relation to odour from the facility in the past two years. Both of these were as a result of clients leaving their bins, containing putrescible waste, longer before requesting collection. These collection regimes were altered to minimize odours from the bins.

b) Dust

All dust emitted from the facility can be described as fugitive. The potential source of dust at the site is the Waste Transfer Building, the Recycling Compound and the hardstanding area in drier conditions. Dust generated in the Waste Transfer Building and the Recycling Compound is as a result of the nature of the waste deposited in the building. The dust arising from the hardstanding area is as a result of the traffic movements on the site. To date there have been no complaints received relating to dust emissions from the site.

Four dust monitoring studies have been carried out, at the site, over the period September 2004 to September 2005 using Bergerhoff dust gauges. The results of the investigation are summarised in Table 3.1.3 below. A full copy of the reports may be found in Appendix III. The locations of the dust sampling points are illustrated in Drawing F.2.a, Appendix III).

Table 3.1.3. Results of Dust Monitoring Study

Sample Location	Dust Concentration ($mg/m^2/day$)			
	Sept 2004 $mg/m^2/day$	**Apr 2005 $mg/m^2/day$**	**Jun 2005 $mg/m^2/day$**	**Sept 2005 $mg/m^2/day$**
D1 (North Eastern Boundary of the site)	**354.0**	**361.2**	128.1	316.2
D2 (Southern Boundary of the site)	233.0	273.8	311.4	284.0
D3 (Western Boundary of the site)	-	-	-	237.4

Note: Monitoring Pont D3 was not available due to construction work for extension to original site.

The results were compared with the deposition limit issued in the Waste License of 350mg/m^2/day. In summary it is evident that slightly elevated dust deposition levels were recorded in the vicinity of the facility, more specifically in the region of sampling location D1. The source of these elevated levels may be attributed to a combination of off-site as well as on-site activities. Adjacent to the monitoring point is the Waterford City Council Composting facility which carries out screening operations in close proximity to the monitoring point. Initially when using the recycling compound the rubble storage area was adjacent to the monitoring location. This was subsequently moved to a more central location on-site with the same compound. Off-site construction activities have occurred adjacent to the boundary of the facility during the monitoring periods. Much of this activity related to the movement of earth and the construction of earth banks.

3.1.4 Vermin

The nature of the material that is transferred through the facility, currently and in the future, in particular the putrescible waste is such that vermin in the form of rodents and insects are likely to be drawn to the site.

3.1.5 Litter

The implementation of good housekeeping procedures and the transferring of waste indoors keeps the presence of litter on site to a minimum. The greatest potential source for litter is that being dragged from the loading area of the waste transfer building. Here the waste is taken from the floor of the building and deposited in open top ejector trailers. Due to the nature of the transferring operation some waste may fall to the floor of the transfer building. The Site Operatives are responsible for ensuring that any waste that is subsequently dragged by the trucks onto the yard or is windblown onto the yard is removed as soon as possible. No waste that can be windblown is deposited outside the transfer building thus preventing this source of litter.

Litter windblown from the site is kept to a minimum by the presence of a surrounding fence.

The company has not received any litter complaints from the facilities in the immediate vicinity of the site. Litter deposited on the Green Road (this road is regularly used by fly tippers) is not attributable to the Onyx operations as all Onyx vehicles are covered when entering and leaving the site.

3.2 Potential Impacts of the Materials Handling and Recycling Facility on Human Beings

3.2.1 Noise

Current

The results of the survey carried out determined that the daytime and nighttime activities on-site are not likely to give rise to complaints at the nearest noise sensitive locations, given the noise levels at the site and the distance to these locations (> 300 metres).

Future

In order to assess the impact of increasing the operations at the development the results of the monitoring events conducted at the Onyx facility in Ballymount Cross, Dublin were considered and the possible future infrastructural changes that will take place in the Carrignard area. The results of the daytime surveys carried out determined that the activities at the Ballymount-site are not audible from the nearest noise sensitive location. Furthermore, it was established that the passing traffic on the Ballymount Road was the primary contribution to any noise disturbance in the area during nighttime. Similar noise levels will be experienced at the Waterford facility due to the increased operations. In addition, the background level in the general Carrignard area will increase as the construction of the ring road around Waterford is completed which will pass close the Western Boundary of the facility. Ultimately it will be the traffic passing along the ring road that will be the main contributor to the noise levels at the nearest noise sensitive location and as with the Ballymount depot the activities on-site will not be audible at the nearest noise sensitive locations.

The nighttime survey at Ballymount established that the level of activity on site (90,000 and 100,000tpa) was unlikely to create a nuisance in the area given the traffic levels and the nighttime activity of a nearby industrial premise. Finally, it was concluded that none of the activities carried on at the facility would create tonal components likely to be audible at the nearest noise sensitive location. The Onyx facility in Waterford will not be as busy at nighttime as the Ballymount facility. Hence, given this factor, the proposed increase in traffic volume in the area as a result of the ring road, and, the set-back distance to the nearest noise sensitive location, it is concluded that the noise levels that would be caused by the increase in the Onyx operations will not cause noise nuisance in the area at nighttime.

3.2.2 Traffic

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

With respect to traffic congestion, the results of the survey carried out and shown in Table 3.1.2a illustrate that the current level of activity entering and leaving the site is negligible when compared with the overall traffic levels on the Lacken Road. On the Green Road (Table 3.1.2b) the majority of the traffic is associated with the Onyx activities. However, with the proposed increase in activity at the facility there will be a corresponding increase in the number of vehicles entering and leaving the site. It is, nevertheless, considered that, although an increase in the volume of trucks entering and leaving the Onyx facility will occur, the volume of "Onyx traffic" will still not be significant on the Lacken Road. The Green Road now only services the Onyx operations and the adjacent composting facility and has more than adequate capacity and width to cope the projected increase in traffic volumes of 2.5times the current levels. .

3.2.3 Air

a) Odour

The majority of the waste that is transferred through the facility is non-putrescible and does not generate odours. However, when putrescible waste is brought through the facility short term odour incidences are likely to occur, that may be detected at adjacent facilities. The likelihood of these incidences occurring are reduced significantly by the installation of the odour neutralising system and the removal of such waste off-site as soon as possible.

b) Dust

The results of the monitoring programme carried out indicated that while elevated levels of dust deposition (exceeded License level) were recorded in the immediate vicinity of the site, these were attributed to a combination of on-site and off-site activities carried out adjacent to the site. Furthermore, it was considered that the environmental impact of fugitive emissions from the facility on air quality was not significant. Future activities at the facility are unlikely to generate significantly larger quantities of dust however it is considered that the relocation of the rubble compound, the dust suppression systems installed coupled with the regular cleaning of the site will ensure that the operations at the facility do not impact significantly on the surrounding environment.

3.2.4 Vermin

The nature of the material that is transferred through the facility, currently and in the future, in particular the putrescible waste is such that vermin in the form of rodents and insects are likely to be drawn to the site. Unabated, this has a negative impact on the environment.

3.2.5 Litter

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 operations. However, the mitigation measures taken and described later in Section 3.3.5 negate any negative impact that is likely to occur.

3.3 Mitigation Measures

3.3.1 Noise

Onyx has taken the following measures to reduce the impact of noise from the site on the surrounding area.

- All trucks and plant equipment are regularly serviced.
- No baling of cardboard or transferring of waste takes place at night nor is expected to take place in the future.

It is considered that no further mitigation measures are required.

3.3.2 Traffic

The following mitigation measures have been implemented by Onyx to reduce the impacts of the operations on traffic and vice versa.

- Continual servicing of vehicles.
- Covering of all vehicles entering and leaving the site.
- Maximisation of the use of the Ring Road when developed.
- All vehicles delivering and collecting waste from site do so using the Green Road entrance.

No other mitigation measures are intended.

3.3.3 Air

a) Odour

To mitigate against the presence of odours on-site Onyx has installed an odour neutralising system. Briefly, this composes of a pump, timing/ mixer unit, tank, piping and sprinkler heads. This system was not purchased off the shelf but designed by Onyx in conjunction with the supplier. The system may be operated manually or automatically. Under current practices the system is predominantly used during the summer months. Drawing F.1.a in Appendix III shows the spray nozzle locations and the area of cover of the system. In addition Onyx has implemented operational procedures to further reduce the odour emissions from the site. These are listed below:

- All waste loads are examined on the waste transfer building floor to assess the nature of the load and determine if putrescible waste is present.
- Once detected putrescible waste is loaded into the transfer trailers as soon as possible so it can be removed off-site.
- The frequency of collection of putrescible loads will be increased to minimize the odours emitted from these loads when tipped on the floor of the transfer station.
- If a load arrives on-site generating significant odours it is removed immediately from the facility. In addition, the odour neutralising system is switched on manually to counteract these odours.
- If customers continue to send such loads to the facility they are advised that the waste will longer be transferred through the Transfer Station and will be brought directly to landfill.
- Should the current odour neutralising system prove ineffective it will be modified so that it operates on a continuous basis.
- All non-recyclable waste will be stored in covered transfer containers overnight before going directly to landfill the following morning.
- Plastic curtains will be installed at the doors of the waste transfer building to further reduce the dispersion of any odours from the facility.

b) Dust

To minimise the levels of dust emanating from the facility Onyx have taken the following measures:

- The site is swept regularly using a road sweeper with wetting capabilities.
- The deodorising unit installed in the waste transfer is also used for dust suppression when required
- A dust deposition monitoring study is carried out on a thrice yearly basis for a one-month period to establish levels. Remediation measures will be considered should levels prove to continuously exceed license emission limits.
- Plastic curtains will be installed at the doors of the waste transfer building to further reduce the dispersion of any odours from the facility.
-

3.3.4 Vermin

In addition to the fast turnaround of putrescible waste, improved housekeeping practices and the conduction of weekly pest patrols Onyx have taken further mitigation measures to control the vermin on-site. To this end Onyx has a Pest Control Company employed for the provision of an Integrated Pest Management Service at the Waterford facility.

The system includes the following elements:

Monitoring Schedules: Early detection of pest arrival, pest movement and appraisal of action success.
Pest Prevention Strategies: Developed in parallel and cross-referenced with monitoring schedules.

Rodent Monitoring and Control

26 No. external control stations and 3 internal stations (Drawing D.1.g., Rev.1, Appendix III) are used as primary control/monitor against rodent incursions. These stations are tamper resistant. Each station is mapped, numbered and contains block-bait formation rodenticide for monitoring and control. All stations are checked at each Service Inspection. Each Active Station is marked on the Service Report Checklist.

Flying Insect Monitoring and Control

Control of flying insects is achieved by application of insecticide known as Ficam W (MSDS sheet attached, Appendix III). This is applied every four weeks during the period of May – September. Additional applications will be made if required. The E.F.K. units are used as control and monitoring stations for insects. When the contents of the E.F.K. Trays

indicate that the tolerance level of insect activity has been reached, corrective action is taken.

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.

3.3.5 Litter

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

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 waste transfer building on a daily basis. In addition, any waste placed on or in the facility, other than in the transfer building, is removed as soon as discovered and not later than 10.00am the next working day.

Any material or debris that may be deposited on the access road to the facility by vehicles entering or leaving the facility is removed as soon as discovered.

No waste is placed outside the waste transfer building other than baled cardboard and plastic. Timber, rubble, metal and Glass are stored in storage bays in the recycling compound pending removal off-site. In addition any of the transfer trailers, which are used to store waste overnight prior to dispatch the next working day, are covered.

4.0 HYDROGEOLOGY

4.1 Geology and Hydrogeology in the Existing Environment

For the purposes of the Environmental Impact Statement (EIS), it is important to establish an understanding of the geological and hydro geological setting of the Materials Handling and Recycling Station. In order to assess the site's overall hydro geological setting, RPS Environmental Services (2001) conducted a desk-based study (Appendix IV) of publicly available information to assess the regional geology, hydrogeology, groundwater vulnerability and aquifer type of the area. The following sources of information were reviewed:

(i) Geological Survey of Ireland (GSI) Bedrock \Geology Map Sheet 22 (Scale (1:100,000), East Cork-Waterford. Bedrock \Geology Map Sheet 23 (Scale (1:100,000), South-Waterford (Drawings I.5.a, Appendix IV).

(ii) Geological Survey of Ireland (GSI) Groundwater Protection in Co. Waterford. Map 6(E) Groundwater vulnerability. Map 5(E) County Waterford Aquifers.

(iii) Geological Survey of Ireland – Groundwater Protection Schemes.

(iv) Karst Working Group – The Karst of Ireland-Limestone Landscapes, Caves and Groundwater Drainage Systems.

The desk based study also included consultation with the Geological Survey of Ireland (GSI) and Waterford County Council.

4.1.1 Regional Bedrock Geology

The site is approximately 6 metres above sea-level and is located on the southern side of Waterford City and the River Suir. Bedrock geology is described on 1:100,000 map from series Sheet 22, East Cork-Waterford, and Series Sheet 23, South Waterford Geological Survey of Ireland 1995. The site is associated with Ordovician rocks of the Lower Palaeozoic Period. The entire bedrock geology of the site consists of the Ross Member of the Campile Formation. The Ross member of the Campile Formation contains grey, green and black shale with minor tuffs. The shale unit of the Ross Member contains grey, green and black shale with minor tuffs. The area is locally faulted with igneous Dolerite rock to the southeast.

The Lower Palaeozoic rocks have undergone faulting and low-grade metamorphism. Strong folding has resulted in the development of joint systems, which has increased the permeability of the units.

4.1.2 Overburden Geology

Based on previous investigations in the vicinity of the Carrignard area conducted by MC O'Sullivan Consulting Engineers, Quarterary deposits are seen to generally consist of till. The boulder clay can be described as volcanic dominated, or sandstone dominated, depending on the underlying rock formation. In the Onyx facility the material overlying the Ross Member of the Campile Formation is generally sandy or silty gravelly clay, with silt and peat deposits in places.

Limited information is available on the nature and the thickness of the quaternary subsoil deposits beneath the site, however, Geological Survey of Ireland (GSI) archive record indicate that the depth of the quaternary sub soils is approximately 5 metres in the Carrignard area.

4.1.3 Hydrogeology

The hydro geological resource of the area is governed by the degree and extent of fracturing and weathering in the bedrock geology while the vulnerability of this resource to contamination is directly related to the depth and the nature of the overlying Quaternary soils.

Vulnerability is a term used to represent the intrinsic geological and hydro geological characteristics that determine the ease with which groundwater may be contaminated by human activities.

Using the basic groundwater resource protection model (aquifer classification) proposed by the GSI, the bedrock underlying Carrignard is classified as a Regionally Important fissured aquifer (Rf). Based on the limited subsoil information available for the site, groundwater vulnerability would be considered high to extreme. Site specific borehole drilling information would enable a more accurate assessment of the vulnerability.

4.2 Potential Impacts of Operations at the Facility on Hydrogeology

The bedrock beneath the site has been classified as a regionally important fissured aquifer. Despite this and the high vulnerability rating the operations at the facility are unlikely to have any impact on the hydro geological regime of the area, as activities at the site are undertaken internally within the transfer building or on hardstanding areas externally (for inert waste). As a result no leachates are generated on-site. Furthermore, the whole of the

site is either concreted or covered with asphalt. None of the skips/ bins stored on site contains wastewater, thus preventing leachate being generated from these. In addition, groundwater contamination is discouraged by a number of factors including:

- No septic tank exists on-site as the facility is serviced by a foul sewer.
- Underground storage tanks are not present.
- All oils, fuels etc are contained within bunds. The retention capacities of the bunded areas are in compliance with the standard bunding specifications (BS8007-1987). All barrels and drums containing oil and other solutions are stored on mobile bunds. Spill kits are also provided on-site.
- The surface water runoff from the site is contained in the on-site drainage system and released to the stream adjacent to the site via a grit trap and interceptor.
- All truck and skip washings occur on the hardstanding areas.
- A CCTV survey subsurface drainage structure is carried out every three years.

4.3 Mitigation Measures to Minimise the Impact on Hydrogeology

Based on the results of the baseline assessment it is concluded that the facility has been designed and is operated in such a manner that the potential emissions to soil, groundwater and surface water environments arising from accidental or emergency situations during normal operations and/or abnormal operations (material spillage or fire event situations) are minimal. The construction and operation of the facility according to the BAT principle, therefore, ensures that inputs to, and subsequent contamination of soil and groundwater environments do not occur during normal and/or emergency conditions (material spillage or fire event situations). Furthermore, these mitigation measures combine to minimise the risk to the underlying groundwater resource.

5.0 SURFACE WATER

5.1 Surface Water in the Existing Environment

The surface water run-off from the site discharges into a dyke, running in an approximate North-South direction parallel to the Green Road, on the western side of the facility. All surface water drainage from the facility is collected via a network of surface drains throughout the site (See Drawing B3, in Appendix V). There are four surface water discharges from the site:

a) Surface water discharge (SW1) from all asphalt areas surrounding the waste transfer building and offices. This accounts for c. 2/3 of the surface area.
b) Surface water discharge (SW3) from all asphalt areas in the new extension area and weighbridge. This accounts for the remaining c. 1/3 of the surface area.
c) Surface water from the roof areas (SW2 & SW4) of the waste transfer building and the recycling compound.

The run-off from the roofs of the buildings discharges directly to the dyke without any treatment. The run-off from the asphalt areas pass through a grit traps and Class I Full Retention Interceptors prior to discharging to the dyke. In addition, shut off valves are located in this discharge lines to minimise the possibility of unexpected emissions occurring.

The dyke discharges into the heavily polluted St.Johns River ("*…the lower reaches of the St.John's river continue to exhibit seriously depleted quality and widely varying oxygen saturation resulting from organic waste inputs. This problem has persisted for several decades,…"(EPA Report on "Water Quality in Ireland 1998-2000"))* and ultimately into the River Suir.

The Surface water emissions from the site are restricted to that of surface water run off from hardstanding areas after a rainfall event. The total area of the site that currently discharges to surface water is 9,450m^2. This includes 7,920m^2 of asphalted area and 1,530 m^2 of roof area for the waste transfer building, recycling compound and offices. The remainder of the site is either diverted to foul sewer or is covered with shrubberies. There exists no risk to the groundwater. The annual average rainfall is 1,335mm (Tycor, Waterford 1990 - 2005) thus implying that the annual surface water run-off from the site is 12,615m^3 (hard standing and roof area). The 50 year 30 minute maximum rainfall figure is 23.3mm. Under these conditions the volume of storm-water run-off from the site would be 122litres per second.

All transfer activities of putrescible waste on-site is carried out within the confines of the transfer building. No compaction or baling of putrescible waste occurs, hence there is no generation of leachate. Furthermore, due to the dry nature of the waste handled within the building, the presence of drains is considered unnecessary.

Since the granting of the original Waste License 177-1 several surface water sampling events have taken place. Samples were collected from emission points SW1 (yard run-off) and SW2 (Roof run-off), the results of which are detailed in Table 5.1.1 and Table 5.1.2 below. In addition, samples from SW3 and SW4 were collected in December 2005 for the purpose of the license review application. These results are detailed in Table 5.1.3 below.

Surface water samples were collected from emission point SW1 in 2004 and 2005 for analyses, the results of which are detailed in Table 5.1.1 below. This sampling point captures the emissions from the main yard area excluding the roof run-off from the buildings and the concrete area at the front of the waste transfer building and offices. (Full reports of the sampling event can be found in Appendix V).

Table 5.1.1. Results of Surface Water Monitoring at SW1

Parameter	Concentration						ELV's as per Waste License 177-1
	3/03/04	22/06/04	21/12/04	24/03/05	07/06/05	21/09/05	
pH(pH units)	7.7	8.5	7.1	7.0	7.2	7.6	-
Temperature (C^o)	10.9	16.8	8.3	11.1	16.6	12.3	-
BOD (mg/l)	9	12	6	7	5	<4	25
COD (mg/l)	<10	<10	<10	<10	<10	<10	5
OFG (mg/l)	<1	<10	-	<10	<10	<10	-
Suspended Solids (mg/l)	22	<5	23	**36**	<5	17	35
Conductivity (µS/cm)	194	278	146	N/A	N/A	N/A	-
Visual inspection	Clear	Clear	Clear	Clear	Clear	Clear	-

The results for SW1 indicate that the levels of contaminants present in the final discharge are not significant and indeed with the exception of one sampling event (24/03/05) complied with the ELV's as laid down in the Waste License 177-1.

Table 5.1.2. Results of Surface Water Monitoring at SW2							
Parameter	**Concentration**						**ELV's as per Waste License 177-1**
	3/03/04	**22/06/04**	**21/12/04**	**24/03/05**	**07/06/05**	**21/09/05**	
pH(pH units)	6.1	6.7	6.4	7.3	6.9	7.5	-
Temperature (C^o)	10.4	16.2	8.0	11.4	16	12.6	-
BOD (mg/l)	<2	2	2	2	23	<2	25
COD (mg/l)	<10	<10	<10	<10	<10	<10	5
OFG (mg/l)	<1	<10	-	<10	<10	<10	-
Suspended Solids (mg/l)	<10	<5	7	8	5	<5	35
Conductivity (µS/cm)	40	82	83	N/A	N/A	N/A	-
Visual inspection	Clear	Clear	Clear	Clear	Clear	Clear	-

The emissions from SW2 comply with the emission limit values set out in the Waste License 177-1.

Samples of SW3 and SW4 were collected in January 2004 and analysed for the parameters detailed in the Draft Waste License 177-2. The results of the two sampling events are detailed in Table 5.1.3 below.

Table 5.1.3. Results of Surface Water Monitoring at SW3 and SW4				
Parameter	**SW3**		**SW4**	
	20/01/06	**23/01/06**	**20/01/06**	**23/01/06**
NH_3-N(mg/l)	0.05	1.4	0.49	0.51
Conductivity (µS)	228	406	304	270

The results of the emissions from SW3 and SW4 indicate very low levels of contaminants.

Emissions to the foul sewer arise from the truck wash area, the concrete apron (in the event of rain) located at the front of the waste transfer building, and the toilets and canteen facilities on-site (Drawing B2.d in Appendix V). The truck wash has its own grit trap to remove the bulk of any solid material washed into the drains. The run-off from this subsequently drains into another grit trap a Class I oil/water interceptor prior to final discharge to foul sewer. The run-off from the concrete apron also passes through the same

grit trap and interceptor prior to discharge. Following the sampling point in the foul sewer line there is a shut-off valve which can be closed to prevent unexpected emissions occurring. It is estimated that a ***maximum*** discharge rate of 32.2m^3 per hour may occur with current foul sewer arrangements. This is based on the following calculations:

- An average of 20 persons per day at the premises and an accepted figure for wastewater production of 150 litres\day\population equivalent. = 0.125 m^3 per hour.
- The 50 year 30 minute maximum rainfall figure of 23.3mm and a concrete area (including truck wash) of 670m^2 = 31.2 m^3 per hour.
- 2 –3 trucks per day washed for 15 min periods = 0.9 m^3 per hour.

Note: No discharge occurs from the odour abatement system, as this is adsorbed by the waste.

The diameter of the foul sewer piping is 150mm. Using figures provided in "Hydraulics Research, 1983" it has been calculated that the design flow rate for this pipe is 14.8 litres/second or 53.3 m^3/hour.

- The annual discharge to foul sewer is estimated at 880m^3 for 2004 and 775m^3 for 2005. This is based on the actual water consumption(see section 2.8.2) coupled with the calculated volumetric flow from the hard standing area based on actual rainfall figures (from Tycor in Waterford) and the surface area of the hardstanding area whose run-off is discharging to foul sewer.
- Since the granting of the original Waste License 177-1 several foul sewer sampling events have taken place. Samples were collected from the emission point FW1, the results of which are detailed in Table 5.1.4 below with completed reports in Appendix V.

The results of the analysis for the parameters for FW1 since the 1st quarter of 2004 are generally within the ELV's of the waste license 177-1. The results indicate that the BOD, COD and OFG parameters measured for FW1 are outside the ELV's for the waste license 177-1 for the second quarter of 2004. The foul water drain had previously been desludged on the 26th May 2004 and was due again at the end of June 2004. Two days following collection of the samples the foul water drainage system was desludged. A record of this cleaning of the drain is kept on file for your attention.

Table 5.1.4. Results of Foul Sewer Monitoring at FW1							
Parameter	**Concentration**						
	FW1 03/03/04	**FW1 22/06/04**	**FW1 21/12/04**	**FW1 24/03/05**	**FW1 07/06/05**	**FW1 21/09/05**	**ELV's as per Waste Licence 177-1**
pH(pH units)	7.3	6.6	8	6.9	6.1	7.4	6 – 9
Temperature (C^o)	11.5	16.2	8.8	10.2	15.9	11.9	18
BOD (mg/l)	108	**580**	42	111	**430**	7	400
COD (mg/l)	67	**1232**	93	233	635	68	1,100
OFG (mg/l)	<1	**22**	<10	<10	<10	<10	10
Suspended Solids (mg/l)	18	73	19	64	46	84	300
Conductivity (µS/cm)	217	1214	279	394	610	234	1,500
Surfactants (mg/l)	ND	ND	0.01	0.19	<0.01	0.09	0.2

5.2 Potential Impacts of Operations at the Waste Transfer Station on Surface Water.

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. In particular this includes the run-off from the concrete apron at the front of the transfer building. On this apron dust that may have dispersed from the transfer building can settle and subsequently be washed into the drainage system. However, the implementation of a site drainage cleaning programme (inclusive of interceptors) has ensured that the levels of contaminant present are within guideline limits for the most part. It should be noted that no biodegradable waste transfer activity occurs outdoors thereby reducing the likelihood of surface water contamination from this source.

Emissions to foul sewer, other than domestic effluent, are caused by the truck wash and skip washing facility. All truck wash effluent is passed via a grit trap and an interceptor prior to discharge to foul sewer.

Waterford has a population of over 40,000. All domestic and industrial and commercial wastewater ends up in the River Suir and the St. John River. Some domestic sewage receives septic tank treatment and discharged to groundwater through soakaways in rural areas of the city. Sewage from urban estates which cannot be gravity-fed to the city sewers

goes to settling tanks or holding tanks which are then commercially emptied at intervals or as necessary. Some industrial wastewater receives treatment at its own particular plant because of its nature it would otherwise endanger or damage river or marine life.

The major part of all domestic, industrial /commercial wastewaters is gravity-fed or flows to Waterpark. Waterford Corporation has operated a pumping station which is activated during high tide. Otherwise all waste water discharges through a major outfall at Waterpark and through various lesser discharge points along the quay, etc, at low tides. The pumping station at Waterpark is operated against the tides which would have caused flooding in the low lying areas of the city had such pumping not been available.

Sewers in the areas can be divided into three main categories; Foul sewers , taking waste from domestic commercial and industrial premises; Surface water taking waste from roads, foot paths, roofs and all paved areas in general which normally doesn't need treatment. Combined sewers taking both of the above.

The latest water quality report is for the year 1998-2000. In this report it stated; *"The Lower Suir Estuary was not classified as eutrophic during the recent analysis of the trophic status of Irish estuaries and bays (EPA 2001a): this classification is consistent with the water quality data collected in the 1998 – 2000 period. More generally, water quality in this reach was mostly good, though the lower reaches of the St.John's river continue to exhibit seriously depleted quality and widely varying oxygen saturation resulting from organic waste inputs. This problem has persisted for several decades,…"(EPA Report on "Water Quality in Ireland 1998-2000")*

5.3 Mitigation Measures to Minimise the Impact on the Surface Water

To minimise the impacts of the emissions to both surface water and foul sewer Onyx Ireland have implemented the following measures:

- The entire drainage network on-site, both surface water and foul sewer, is cleaned out regularly. The three interceptors and grit traps are also desludged.
- The hardstanding area of the site is swept regularly using a road sweeper with wetting capabilities.
- No biodegradable waste is deposited outside the transfer building.
- Spill kits have been put in place to minimise the effect of spillages that may arise as a result of on-site activities.
- All fuel storage tanks and barrels are suitably bunded.
- Weekly inspections of the interceptors take place and these are desludged if deemed necessary.

- Monitoring of both the surface water and foul sewer emissions take place as required under license from the EPA.

6.0 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 a Waste Transfer and Recycling facility 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. This section describes the effect of climatological factors on surface water generation and air pollution dispersion.

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

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

Meteorological Data

a) *Wind*

The nearest climatological and synoptic meteorological stations are located at Tycor Waterford, Kilkenny (40 Km to the north) and Rosslare to the East. These stations give a good approximation of the conditions that prevail in the area. The wind rose for the Kilkenny and Rosslare stations are shown in Appendix VI. Although Kilkenny is slightly closer to Waterford it is considered that the wind speeds and directions would be similar to the Rosslare station given Waterford's relatively close proximity to the coast. The incidence of low wind conditions indicates that about 25% of hourly observations are likely to be less than 3.1m/s with calm conditions occurring about 0.5%of the year. Given that Waterford is slightly more inland it is likely that the wind speeds will be slightly lower in Waterford. Based on wind speed and direction information from the Rosslare meteorological station, the dominant wind direction in the Waterford region is South Westerly.

b) *Precipitation*

Annual rates of precipitation in the area have an average of approximately 1,335mm with the months of October to January receiving the greatest monthly rates. The nearest

cliamatological station with long-term daily rainfall rates is at Tycor Waterford covering the period 1990 - 2005 (Met Eireann). The results indicate long term monthly mean precipitation rates ranging from 85.8 – 166.7 mm. During the winter 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.

Table 6.1.1 Monthly precipitation Rates at Tycor Waterford Climatology Station (mm)

Period	J	F	M	A	M	J	J	A	S	O	N	D	Ann
1990 - 2005	146	106	93	107	86	86	88	99	108	167	134	118	1,335

c) *Air Temperature*

The pattern of long term mean daily temperatures at Rosslare meteorological station is shown in Table 6.1.2. Given the location of the station to Waterford similar conditions would be experienced at the facility.

Table 6.1.2 Monthly Mean Temperatures at Rosslare Synoptic Meteorological Station (C)

Period	J	F	M	A	M	J	J	A	S	O	N	D	Ann
1990 - 2005	7.1	6.9	7.9	8.8	11.2	13.5	15.3	15.7	14.2	11.7	9.2	7.4	9.8

6.2 Potential Impacts of the Transfer Station 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. All biodegradable waste is transferred within the Waste Transfer and Recycling building and has a very short turnaround time. This, coupled with the nature of the waste ensures there is no potential for the waste to generate any gaseous emissions on-site. In addition, leachate will not be generated on-site due to the enclosure of the waste transfer operation. Finally, due to the relatively low wind speeds 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.

6.3 Mitigation Measures

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

7.0 CULTURAL HERITAGE

7.1 Cultural Heritage and the Existing Environment

A desk base archaeological assessment of the site and surrounding area (1 to 3.5km) was undertaken, by RPS Environmental Services (2001), to identify the archaeological constraints, if any, associated with the Materials Handling and Recycling Facility. A full copy of their report may be found in Appendix (IV).

A review of the Archaeological Inventory of County Waterford (Michael Moore 1999), and, the Sites and Monuments Record of Co.Waterford indicated that there are no sites of archaeological interest within the vicinity of the site.

Two enclosure sites are located approximately 2km and 3km from the Onyx site, namely in the town land of Carrignard and Lismore. A single ring fort was identified in the town land of Ballygarran approximately 3.5km from the site and a star-shaped fort in the town land of Duagh (3km from the site). Earthworks have also been identified in the study region. Other archaeological features noted within the study area are early church sites, a Portal Tomb in the town land of Ballindud, standing stones in the town land of Kill St.Laurence and a Fulachta Fiadh in the town land of Kilbarry. However none of these are of sufficient distance from the facility to be influenced by its operations.

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 of the Facility on Cultural Heritage.

There were no archaeological sites found within the area of the Onyx site or in the areas of the land adjacent to the site. The nearest archaeological site identified was Fulachta Fiadh approximately 1km from the site. Therefore the Onyx site will have no impact on known archaeological sites in the area examined in the desk top study (up to a distance of 3.5km from the site).

7.3 Mitigation Measures

Mitigation Measures are not deemed necessary, as there are no archaeological remains within the vicinity of the site. However, it is the policy of the National Monuments and Historic Properties Services (NMHPS), Duchas, The Heritage Service, to avoid known

archaeological sites if possible. If excavations or future related developments within the existing site come near or interfere with newly identified archaeological sites full discussion with the NMPHS will take place well in advance of any proposed development. Furthermore, it is required by Section 12(3) of the National Monuments (Amendment) Act 1994 that any interference/ work to a known archaeological site should be notified in writing to the Minister two months in advance of the commencement of the work.

8.0 ECOLOGY

8.1 Introduction

An ecological assessment of the facility and the surrounding environs on the 8th of December 2005 by RPS Ltd with a view to identifying the nature conservation/ ecological constraints associated with the site. A copy of their report may be found in Appendix VII. The investigation included a review and update of the survey carried out in January 2001 by RPS Environmental Services Ltd (Appendix IV).

Initially, a desktop study was carried-out in order to identify any legally protected species or habitats that may be present within or close to the proposed development site, and to locate any designated nature conservation sites, such as proposed Natural Heritage Areas (pNHAs) candidate Special Areas of Conservation (cSACs), or Special Protection Areas for birds (SPAs), in the vicinity of the proposed development.

A field survey of the site was carried out to examine the habitats, flora and fauna at the site; to evaluate their ecological importance; and to assess the potential impacts of the proposed development on them. The habitat survey of the site (Phase 1 Habitat Survey) followed the methodology of JNCC (1992). This survey also updated information previous reported by RPS in March 2001. Habitats within and adjacent to the development site were examined and were classified according to *A Guide to Habitats in Ireland* (Fossitt, 2000), published by the Heritage Council. The potential for the habitats present at the site to hold rare or protected plant species was assessed.

A mammal survey of the site was carried out, which concentrated on protected species such as badger, otter and red squirrel. The site was searched for tracks and signs of mammals according to methodology described in *Animal Tracks and Signs* (Bang and Dahlstrom, 2001); and *The Mammal Detective* (Strachan, 1995).

The study area is located within a wider landscape, which was once agricultural farmland but has now altered to one dominated by industrial development. An area of agricultural land remains to the north west of the facility; however this has been modified to such an extent that it no longer retains any significant natural character, and is of very low ecological value. The Waste Transfer Facility is located within the Six Cross Roads Business Park hence much of the surrounding land it is dominated by business units. The facility is serviced by two roads, one located to the south within the industrial estate and another to the west.

8.2 Existing Environment

8.2.1 Designated Sites

The site of the Waste Transfer Facility does not overlap any designated sites for nature conservation. There is one proposed Natural Heritage Area (pNHA) and one candidate Special Area of Conservation (cSAC) within 5km of the proposed development.(Kilbarry Bog(pNHA) – 1.4km east of site, and, Lower River Suir(cSAC) – 3.5km north of site) There are no designated Special Protection Areas for birds (SPAs) within 5km of the proposed development. The nearest SPA is Tramore Backstrand (site code 4027), 7.2 km to the south.

8.2.2 Habitats

The distribution of habitats within, and adjacent to, the proposed development site are described below. The codes (such as GA1) that are given after each habitat type are those given in *A Guide to Habitats in Ireland* (Fossitt, 2000). A habitat map showing the distribution of habitats of the Waste Transfer Facility can be seen in Figure 1

Buildings and artificial surfaces (ED3)
The Waste Transfer Facility and the majority of the surrounding area fall under this category. Business units are currently being constructed to the south of the facility. Another area occupied by buildings and artificial surfaces exists to the east of the facility that is currently occupied by 'DHL', and similarly to north, occupied by the 'Kilbarry Composting Plant'. The OSI (Ordinance Survey Ireland) has not updated its mapping to show the layout of these facilities (which have been newly constructed) therefore there locations have been approximated (see Figure 1 of 2005 Report).

Areas of this habitat type within the study area are not considered to be of any significant ecological value.

Improved agricultural grassland (GA1)
Areas of improved agricultural grassland, which are typically species-poor, are present to the northwest of study area. A small area of improved grassland (GA1) exists to the northeast corner of the Kilbarry Composting Plant. This supports species indicative of improved grassland as described by Fossitt (2000) such as, clovers, rye-grasses and meadow-grasses.

Areas of this habitat type within the study area are not considered to be of any significant ecological value.

Hedgerows (WL1)

A discontinuous hedgerow is located along the western boundary of the site. This is dominated by Hawthorn, with some Bramble.

Comparison with previous survey carried out by RPS (2001)

A number of alterations have occurred to the land surrounding the Waste Transfer Facility since the previous survey in 2001. Firstly the area of the facility has been increased to accommodate a new open sided storage building and a weighbridge. These additions extend over an area that was previously classified as recolonising bare ground (ED3) forming a new boundary with the Green Road. The drainage ditch (FW4) which was recorded in the previously survey along the western boundary of the facility has been redirected and the water is presently being piped underground.

Areas of improved grassland (GA1) reported in the previous survey (2001) have now been developed into buildings and artificial surfaces (ED3). This includes the northern boundary that is currently adjacent the Kilbarry Composting Plant, and the southern boundary along which business units are currently being constructed.

8.2.3 Flora

Common plant species recorded during the field survey on the 8th of December 2005, are detailed in the RPS Report in Appendix IV. During the survey, the habitats were also assessed as to their potential suitability for rare plants. The site lies within Ordnance Survey National Grid 10km square S50. A plant species list for this 10km square was generated from the CD-Rom version of the *New Atlas of British and Irish Flora* (Preston *et. al.*, 2002) and compared to the lists of species protected under the Flora (Protection) Order of 1999; and those included in the Irish Red Book (Curtis and McGough, 1988). Table 3.2 shows these species with details of the records presented in Preston *et. al*. (2002).

Table 3.2 Rare or Protected Plant Species recorded from 10km squares S50 and S51, as indicated in Preston *et. al*. (2002).

Species	Status within 10km square S50	Protected / Rare Status
Cowslip	Pre-1970	Northern Ireland protection, Red Data Book 'Not Threatened'
Pale Dog-violet	1987-99	Flora (Protection) Order; Red Data Book 'Vulnerable'
Sea Knotgrass	1987-99	Red Data Book 'Not Threatened'
Sharp-leaved Fluellen	Pre-1970	Red Data Book 'Vulnerable'
Green-winged Orchid	Pre-1970	Red Data Book 'Vulnerable'

Cowslip is included within the "*Grassland Habitat Group*" in the Irish Red Data Book (Curtis and McGough, 1988). It was recorded by Preston *et. al*. (2002) pre-1970 from 10km square S50. This species is listed in the Red Data Book as 'Not Threatened' in the Republic of Ireland, but it rare, and is protected in Northern Ireland. Webb *et. al*., (1996) describe its distribution as being distribution as being *rare in the North-east and South-west,* frequent in the *centre*, occurring in *pastures.* Whilst suitable habitat may exist for this plant within the study area it was not recorded during the course of the field survey.

There is no suitable habitat present for Pale Dog-violet, Sea Knotgrass, Sharp-leaved Fluellen or Green-winged Orchid in the study area.

Comparison with previous survey carried out by RPS (2001)
No rare or protected plant species were recorded at the Waste Transfer Facility during the survey in March 2001 (RPS Environmental Sciences, 2001) or during the recent survey (2005), and none are considered likely to occur.

8.2.4 Fauna

Birds

All species of birds recorded in the survey can be considered to be common species of lowland Ireland. No suitable breeding habitat exists for any Bird Species of High Conservation Concern Recorded in OS 10km Square S50 by Gibbons *et. al*. (1993) within or in the vicinity of the proposed development. The habitats present within the site are not of any importance to any bird species of high conservation concern.

Mammals

No badger setts or evidence of badger activity were found during the field survey, and no setts are known in the immediate vicinity of the proposed development. No suitable habitat is present for otter, Irish hare, pine marten, brown long-eared bat or red squirrel at the site. The hedgerow could support pygmy shrew and hedgehog and it is possible that Irish stoat may also use this area on occasion. Common or soprano pipistralle bats may use the site for feeding, as a commuting route, or possible even for roosting, but the site is unlikely to be of importance to these or any other protected mammal species. Other unprotected mammal species that may use the site include brown rat, and red fox however no evidence of these was found during the site visit.

8.3 Potential Impacts of the Facility on Designated sites, Habitats, Flora and Fauna.

No impacts on any designated site are anticipated as a result of the operation of the Waste Transfer Facility.

No nationally important or rare habitat types were recorded within or adjacent to the Waste Transfer Facility. Hence, the habitats at the site are not likely to be of greater than Local Value, and impacts of the operation of the facility on these habitats is likely to result in No Change to the ecological value of the site.

No rare or protected plant species were recorded during the field survey. The habitats at the site do not appear suitable for any rare or protected species of flora. Hence, the flora at the site is not likely to be of greater than Local Value, and impacts of the proposed development on flora is likely to result in No Change to the ecological value of the site.

No bird species of high conservation concern are known to occur, or are suspected of occurring, at or adjacent to the proposed development site. The site is likely to hold a bird fauna typical of lowland agricultural and urban situations in southern Ireland. Hence, the bird populations of the site are of no more than Local Value and the impact of the proposed development on bird populations is assessed as being No Change.

Desktop research shows that several protected mammal species may occur in the vicinity of the Waste Transfer Facility, including pygmy shrew, hedgehog and pipistrelle bat species, none of these species are however known from the site, and there is no reason to suppose the site is of any particular importance to any of these species. Hence, the mammal population of the site is probably of only Local Value. The proposals for the site will not result in loss of buildings or hedgerows, and there is no reason to suppose that any value that the site may have for mammals will decrease. Hence there are not considered to be any potential negative impacts on protected mammals, and the impact of the proposed development on mammals is therefore assessed as No Change.

There is no reason to suppose that any other faunal communities within the Waste Transfer Facility are of more than Local Value, and the impact of the proposed development on them is assessed as being No Change.

8.4 Mitigation Measures

Proposed changes to the operation of the Waste Transfer Facility at Six Cross Roads Business Park will have no significant impact on the ecology of the site or areas adjacent the site. No impacts on designated sites are anticipated as a result of the operation of the facility.

All of the habitats, flora and fauna within the facility have been evaluated as being of Local Value and the operation of the facility has been assessed as resulting in No Change to the ecological value of the site. Therefore there is no necessity for ONYX to put mitigation or

remedial measures in place. A similar assessment was made following the 2001 survey by RPS (RPS Environmental Sciences, 2001).

9.0 LANDSCAPE

Any change in the area has a corresponding impact on the character of that particular area. However the extent of the impact depends on cultural associations, uniqueness and degree of change in the landscape and the nature of surrounding land uses.

9.1 Landscape in the Existing Environment

The Onyx Ireland Ltd., facility is situated within the Six Cross Roads Business Park, Carrignard, approximately 2 km south west of Waterford City. This area was until 2000 very much a rural environment. The site is situated in the north-western area of the industrial estate and is surrounded in the industrial estate by various commercial and industrial buildings, within the business park. To the North of the facility is located the Waterford City Composting Facility, which is fully operational. Adjacent operational industrial units occupy the areas to the east of the Onyx site. The area to the west of the Onyx site comprises of currently undeveloped land that is zoned for industrial use. The eastern and northern boundaries of the site are shared with adjoining operational industrial units, within the industrial estate and the southern site boundary is shared with the adjacent construction site.

Land use in the area surrounding the industrial estate is predominantly agricultural. The Lacken road that passes the front entrance to the Business Park (Figures 9.1.a & 9.1.b) is the main route for traffic in the area entering the Business Park.

Figure 9.1.a View of Lacken Road

Figure 9.1.b View of Lacken Road

This route is accessible from the Waterford - Cork road, the N25 via the Ring Road which was opened in 2005. The Green Road (Figure 9.1.c) along which the waste delivery and collection vehicles access and leave the site borders the western boundary of the site. This road is a Cul-de-Sac and used at present solely for the purpose of the Onyx facility and the adjacent compost facility owned by Waterford City Council.

Figure 9.1.c Green Road

It is predominantly surrounded by fields used for both tillage and grazing purposes. The nearest residential property is located 200m to the north-east of the main entrance of the business park. The Ballybeg housing estate is located approximately 500m to the north of the Transfer station. The Lacken Road is the main road for the Business Park in the area and is also used by other private waste contractors in the area.

There is no designated scenic route within the immediate vicinity of the site, nor are there any built features / structures of landscape significance (e.g. castles, estates and gardens) in the vicinity of the site. Outside of the industrial estate there remain the typical features expected in a rural environment (i.e. streams, ditches and trees).

The facility itself can be observed from the Ballybeg industrial estate (Fig. 9.1.d) to the north and from some residences of the Hillside area (Fig. 9.1.e) to the west of the site. Both of these areas are on elevated positions relative to the facility and are hence overlooking the facility. In addition, the site can be readily viewed from the Lacken Road. Given the location of the facility in an area zoned for industrial use it can be considered that its visual intrusion is minor and is no worse than that caused by other facilities and industrial complexes in the area.

Figure 9.1.d Onyx Site from Ballybeg

Figure 9.b Onyx Site from Hillside

9.2 Potential Impact of the Facility on Landscape.

Given the fact that the transfer facility is located within an industrial estate in an industrial zoned area, it is considered that within this context that it is unlikely to be contributing to any negative effects on the landscape.

The views of the facility are those from the Green Road, Ballybeg housing estate (some 500m distant on the northern boundary) and the Waterford Ring Road (Figure 9.2.a), Hillside (some 300 metres from the western boundary (Figures 9.1.d, 9.1.e). The site can be viewed from the Lacken Road, however, with the development of the industrial estate this view is virtually obsolete. The northern end of the site is visible from the Ballybeg housing estate, however, as can be seen from Figure 9.1.d the facility is in a view that encompasses many other sites on the business park and is partially blocked by the composting facility. Furthermore, other than truck movements none of the activities at the facility can be seen. With this in mind the views from the Ballybeg housing estate are not extensive and are not considered to be negative. Similar observations can be made about the view from the Hillside area.

Figure 9.2.c Onyx Site from Ring Road

In conclusion it is considered that the views of the site do not and will not in the future impair the character of the landscape any more than the surrounding facilities.

9.3 Mitigation Measures

Mitigation measures are not considered necessary.

10.0 LANDUSE

10.1 Land use in the Existing Environment

The site of the Onyx Facility is situated at Carrignard, Six Cross Roads Business Park, Waterford, an area zoned for industrial development. Hence the primary land use in the immediate vicinity of the site is industrial. Outside this area the land use is predominantly agricultural with land to the north and west of the facility used for grazing purposes. There are some houses nearby the facility (farmyards) and the Ballybeg housing estate at a distance of approximately 500m. The Waterford Ring Road is only 50metres to the west of the site and cuts off the facility from the nearby houses.

Industries/activities in the area include a local authority landfill, composting facility, other waste management operations, hardware suppliers, a garden centre and numerous smaller commercial activities in the industrial estate. There are no hospitals, hotels, or other such sensitive amenities in the immediate vicinity of the site.

10.2 Potential Impact of the Transfer Station on Land use

The Onyx Facility is one of many industrial and commercial premises within the industrial estate and indeed is one of the earlier users of the estate with plans for future developments for industrial premises directly adjacent to the facility. Moreover, it has had no affect on the overall development of the commercial or industrial sectors in the vicinity of the site.

In conclusion it is considered that the facility has had no discernible impact, either directly or indirectly, on patterns of employment, land use or economic activity in the area.

10.3 Mitigation Measures

No mitigation measures are proposed.

11.0 MATERIAL ASSETS

11.1 Material Assets in the Existing Environment

The site covers an area of approximately 2.5 acres with the waste transfer and recycling building, offices and recycling compound covering areas of 1,060m^2, 97.5m^2 and 370m^2 respectively. The remainder is used for skip storage, truck movement and parking, and, for car parking. There is approximately 8,500m^2 of hardstanding area at the facility. The site has only been used as a Waste Management Facility since January 2001.

The facility is located in an area zoned for industrial and commercial use in Waterford and is surrounded by industrial and commercial developments including other waste management enterprises. It is located on the outskirts of Waterford City and accepts and manages non-hazardous waste from industries and local authorities from all over the city and county. The facility currently operates six days per week. Operations only take place between 7.00am and 9.00pm Monday to Friday and 7.00am and 6.00pm on Saturdays.

The site is easily accessed from the adjacent Green Road and the Lacken Road, the main access road for the business park, which is in turn accessed via the main Waterford-Cork Road, the N25.

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

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

11.2 Potential Impact of the Transfer Station 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.

There are approximately 150 truck movements per day associated with on-site activities at the transfer station. When this is put in context with the general traffic in the locality it is evident that the operations do not have a significant negative effect on the on the material assets of the locality. Future truck movements are likely to increase to approximately 350 per day. With the development of the industrial estate and the ring road adjacent to the site it is unlikely that this will be a significant volume of traffic relative to potential traffic

levels in the area. It is therefore considered that the future operations will not significantly impact on the area relative to its overall development.

11.3 Mitigation Measures

As the operation of the facility is considered not to have significant negative impacts now or in the future upon the material assets of the area, associated mitigation measures are deemed unnecessary.

12.0 INTERACTIONS

In addition to the statutory requirements to describe the likely significant impacts of the proposed operations on particular aspects of the facility, the EIA regulations 1989 - 1999 also require the interaction of these effects to be considered.

The most common interactions are between Traffic, Noise, Air Quality and Human Beings. These are discussed in detail in the Human Beings section of the report.

Water used by human beings is covered in the Surface Water section and the relative importance of the underlying aquifer is discussed in the Hydrogeology section. Other impacts on Human Beings such as visual impact (Landscape) and Material Assets are discussed in each of the relevant sections.

The relationship between the soils/ geology and water are discussed in the Hydrogeology section.

The effects of climate in the form of rainfall on surface water and foul sewer emissions are discussed in the Surface Water Impacts Section.

It is unlikely that there will be any significant adverse environmental impacts due to interactions.

APPENDIX I

Please find overleaf the following items:

(1) Waste Licence 177-2
(2) Copy of Site Notice
(3) Copy of Newspaper Notice
(4) Letter to Planning Authority

Headquarters
P.O. Box 3000
Johnstown Castle Estate
County Wexford
Ireland

WASTE LICENCE

Waste Licence Register Number:	177-2
Licensee:	Onyx Ireland Limited
Location of Facility:	Carrignard, Six Cross Roads Business Park, Waterford City

INTRODUCTION

This introduction is not part of the licence and does not purport to be a legal interpretation of the licence.

This licence is for the operation of a non-hazardous waste transfer station located at Carrignard, Six Cross Roads Business Park, Waterford City. The waste intake is limited to 31,250 tonnes per annum of non-hazardous waste. The waste types to be accepted at the facility include commercial, industrial, household and a small quantity of construction and demolition waste. The licence does not allow for the acceptance of hazardous or liquid waste.

The licence restricts waste processing to inside the waste transfer station. The recyclable wastes are picked out and the cardboard, plastics, wood and metal are stock piled for transfer to appropriate recyclable facilities. Non-recyclable waste is bulk loaded and transferred to an off-site licensed disposal facility.

The licensee must manage and operate the facility to ensure that the activities do not cause environmental pollution. The licensee is required to carry out regular environmental monitoring and submit all monitoring results, and a wide range of reports on the operation and management of the facility to the Agency.

The licence sets out in detail the conditions under which Onyx Ireland Limited will operate and manage this facility.

Table of Contents

Glossary of Terms

All terms in this licence should be interpreted in accordance with the definitions in the Waste Management Acts 1996 to 2005, (the Acts), unless otherwise defined in this section.

Aerosol	A suspension of solid or liquid particles in a gaseous medium.
Adequate lighting	20 lux measured at ground level.
AER	Annual Environmental Report.
Agreement	Agreement in writing.
Annually	At approximately twelve monthly intervals.
Attachment	Any reference to Attachments in this licence refers to attachments submitted as part of this licence application.
Application	The application by the licensee for this licence.
Appropriate facility	A waste management facility, duly authorised under relevant law and technically suitable.
BAT	Best Available Techniques.
Bi-annually	All or part of a period of six consecutive months.
Biennially	Once every two years.
Biodegradable waste	Any waste that is capable of undergoing anaerobic or aerobic decomposition, such as food, garden waste, sewage sludge, paper and paperboard.
BOD	5 day Biochemical Oxygen Demand.
CEN	Comité Européen De Normalisation – European Committee for Standardisation.
COD	Chemical Oxygen Demand.
Commercial Waste	As defined in Section 5(1) of the Waste Management Acts 1996 to 2005.
Construction and Demolition Waste	Wastes that arise from construction, renovation and demolition activities: Chapter 17 of the EWC or as otherwise may be agreed.
Containment boom	A boom which can contain spillages and prevent them from entering drains or watercourses or from further contaminating watercourses.
Daily	During all days of plant operation, and in the case of emissions, when emissions are taking place; with at least one measurement on any one day.
Day	Any 24 hour period.
Daytime	0800 hrs to 2200 hrs.
dB(A)	Decibels (A weighted).

DO	Dissolved Oxygen.
Documentation	Any report, record, result, data, drawing, proposal, interpretation or other document in written or electronic form which is required by this licence.
Drawing	Any reference to a drawing or drawing number means a drawing or drawing number contained in the application, unless otherwise specified in this licence.
EMP	Environmental Management Programme.
Emission Limits	Those limits, including concentration limits and deposition rates established in *Schedule B: Emission Limits* of this licence.
Environmental Damage	Has the meaning given it in Directive 2004/35/EC.
EPA	Environmental Protection Agency.
European Waste Catalogue (EWC)	A harmonised, non-exhaustive list of wastes drawn up by the European Commission and published as Commission Decision 2000/532/EC and any subsequent amendment published in the Official Journal of the European Community.
Facility	Any site or premises used for the purposes of the recovery or disposal of waste.
Fortnightly	A minimum of 24 times per year, at approximately two week intervals.
GC/MS	Gas Chromatography/Mass Spectroscopy.
Green waste	Waste wood (excluding timber), plant matter such as grass cuttings, and other vegetation.
Heavy Metals	This term is to be interpreted as set out in "Parameters of Water Quality, Interpretation and Standards" published by the Agency in 2001. ISBN 1-84095-015-3.
Hours of Operation	The hours during which the facility is authorised to be operational.
Hours of Waste Acceptance	The hours during which the facility is authorised to accept waste.
ICP	Inductively Coupled Plasma Spectroscopy.
Incident	The following shall constitute an incident for the purposes of this licence: a) an emergency; b) any emission which does not comply with the requirements of this licence; c) any exceedence of the daily duty capacity of the waste handling equipment; d) any trigger level specified in this licence which is attained or exceeded; and, e) any indication that environmental pollution has, or may have, taken place.

Inert waste	Waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater.
IPPC	Integrated Pollution Prevention & Control.
K	Kelvin.
kPa	Kilo Pascals.
Leq	Equivalent continuous sound level.
Licence	A Waste Licence issued in accordance with the Waste Management Acts 1996 to 2005.
Licensee	Onyx Ireland Limited.
Liquid Waste	Any waste in liquid form and containing less than 2% dry matter.
List I	As listed in the EC Directives 76/464/EEC and 80/68/EEC and amendments.
List II	As listed in the EC Directives 76/464/EEC and 80/68/EEC and amendments.
Local Authority	Waterford City Council.
Maintain	Keep in a fit state, including such regular inspection, servicing, calibration and repair as may be necessary to adequately perform its function.
Mass Flow Limit	An Emission Limit Value which is expressed as the maximum mass of a substance which can be emitted per unit time.
Mass Flow Threshold	A mass flow rate, above which, a concentration limit applies.
MBAS	Methylene Blue Active Substances.
Monthly	A minimum of 12 times per year, at approximately monthly intervals.
Municipal waste	As defined in Section 5(1) of the Waste Management Acts 1996 to 2005.
Night-time	2200 hrs to 0800 hrs.
Noise Sensitive Location (NSL)	Any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.
Oil Separator	Device installed according to the draft European Standard prEN 858 (Installations for the separation of light liquids, e.g. oil and petrol).
PER	Pollution Emission Register.
Quarterly	All or part of a period of three consecutive months beginning on the first day of January, April, July or October.

Recyclable Materials	Those waste types, such as cardboard, batteries, gas cylinders, etc, which may be recycled.
Regional Fisheries Board	Southern Regional Fisheries Board.
Sanitary Authority	Waterford City Council.
Sanitary Effluent	Waste water from facility toilet, washroom and canteen facilities.
Sample(s)	Unless the context of this licence indicates to the contrary, samples shall include measurements by electronic instruments.
SOP	Standard Operating Procedure.
Specified emissions	Those emissions listed in *Schedule B: Emission Limits* of this licence.
Standard Method	A National, European or internationally recognised procedure (eg, I.S. EN, ISO, CEN, BS or equivalent), as an in-house documented procedure based on the above references, a procedure as detailed in the current edition of "Standard Methods for the Examination of Water and Wastewater", (prepared and published jointly by A.P.H.A., A.W.W.A & W.E.F), American Public Health Association, 1015 Fifteenth Street, N.W., Washington DC 20005, USA; or, an alternative method as may be agreed by the Agency.
Storm Water	Rain water run-off from roof and non-process areas.
Temporary storage	In relation to waste is a period of less than six months as defined in the Waste Management Acts 1996 to 2005.
The Agency	Environmental Protection Agency.
TOC	Total Organic Carbon.
Trade Effluent	Trade Effluent has the meaning given in the water pollution Acts 1977 and 1990.
Trigger Level	A parameter value, the achievement or exceedance of which requires certain actions to be taken by the licensee.
WEEE	As defined in S.I. No. 340 of 2005.
Weekly	During all weeks of plant operation, and in the case of emissions, when emissions are taking place; with at least one measurement in any one week.
WWTP	Waste Water Treatment Plant.

Decision & Reasons for the Decisions

Reasons for the Decision

The Agency is satisfied, on the basis of the information available, that subject to compliance with the conditions of this licence, any emissions from the activity will comply with and will not contravene any of the requirements of Section 40(4) of the Waste Management Acts 1996 to 2005.

In reaching this decision the Environmental Protection Agency has considered the application and supporting documentation received from the applicant, and the report of its inspector. No objection having been received to the Proposed Decision, the licence is granted in accordance with the terms of the Proposed Decision and the reasons therefore.

Part I Schedule of Activities Licensed

In pursuance of the powers conferred on it by the Waste Management Acts 1996 to 2005, the Environmental Protection Agency (the Agency), under Section 46(8)(a) of the said Act hereby grants this Waste Licence to Onyx Ireland Limited to carry on the waste activity/activities listed below at Carrignard, Six Cross Roads Business Park, Waterford City subject to conditions, with the reasons therefor and the associated schedules attached thereto set out in the licence.

Licensed Waste Disposal Activities, in accordance with the Third Schedule of the Waste Management Acts 1996 to 2005

Class 11.	Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule.
Class 12.	Repackaging prior to submission to any activity referred to in a preceding paragraph of this 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.

Licensed Waste Recovery Activities, in accordance with the Fourth Schedule of the Waste Management Acts 1996 to 2005

Class 2.	Recycling or reclamation of organic substances which are not used as solvents (including composting and other biological processes).
Class 3.	Recycling or reclamation of metals and metal compounds.
Class 4.	Recycling or reclamation of other inorganic materials.
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.

Part II Schedule of Activities Refused

None of the proposed activities as set out in the licence application have been refused.

Part III Conditions

Condition 1. Scope

1.1 Waste activities at this facility shall be restricted to those listed and described in Part I Activities Licensed and shall be as set out in the licence application or as modified under Condition 1.5 of this licence and subject to the conditions of this licence.

1.2 Activities at this facility shall be limited as set out in *Schedule A: Limitations*, of this licence.

1.3 The facility shall be controlled, operated, and maintained and emissions shall take place as set out in this licence. All programmes required to be carried out under the terms of this licence, become part of this licence.

1.4 For the purposes of this licence, the facility authorised by this licence, is the area of land outlined in red on Figure B1.a (Revision 1) of the application. Any reference in this licence to "facility" shall mean the area thus outlined in red. The licensed activities shall be the carried on only within the area outlined.

1.5 No alteration to, or reconstruction in respect of, the activity or any part thereof which would, or is likely to, result in

(a) a material change or increase in:

- The nature or quantity of any emission,
- The abatement/treatment or recovery systems,
- The range of processes to be carried out,
- The fuels, raw materials, intermediates, products or wastes generated, or

(b) any changes in:

- Site management infrastructure or control with adverse environmental significance,

shall be carried out or commenced without prior notice to, and without the agreement of, the Agency.

1.6 This licence is for the purposes of waste licensing under the Waste Management Acts 1996 to 2005 only and nothing in this licence shall be construed as negating the licensee's statutory obligations or requirements under any other enactments or regulations.

1.7 This licence is being granted in substitution for the waste licence granted to the licensee on 14th November 2003 and bearing Waste Licence Register No: 177-1. The previous waste licence (Register No: 177-1) is superseded by this licence.

1.8 Waste Acceptance Hours and Hours of Operation

1.8.1 With the exception of emergencies or as may be agreed by the Agency, waste shall be accepted at the facility only between the hours of 0700 to 2030 Monday to Friday inclusive (excluding Bank Holidays) and 0700 to 1730 on Saturdays and bank holidays.

1.8.2 The facility shall be operated only during the hours of 0700 to 2100 Monday to Friday inclusive (excluding Bank Holidays) and 0700 to 1800 on Saturdays and bank holidays unless otherwise agreed by the Agency.

Reason: *To clarify the scope of this licence.*

Condition 2. Management of the Facility

2.1 Facility Management

2.1.1 The licensee shall employ a suitably qualified and experienced facility manager who shall be designated as the person in charge. The facility manager or a nominated, suitably qualified and experienced, deputy shall be present on the facility at all times during its operation or as otherwise required by the Agency.

2.1.2 The licensee shall ensure that personnel performing specifically assigned tasks shall be qualified on the basis of appropriate education, training and experience, as required and shall be aware of the requirements of this licence. In addition, the facility manager and his/her deputy shall successfully complete FAS waste management training programme or equivalent agreed with the Agency.

2.2 Environmental Management System (EMS)

2.2.1 The licensee shall maintain an Environmental Management System (EMS). The EMS shall be updated on an annual basis.

2.2.2 The EMS shall include as a minimum the following elements:

2.2.2.1 Management and Reporting Structure.

2.2.2.2 Schedule of Environmental Objectives and Targets.

The licensee shall prepare a Schedule of Environmental Objectives and Targets. The Schedule shall as a minimum provide for a review of all operations and processes, including an evaluation of practicable options, for energy and resource efficiency, the use of cleaner technology, cleaner production, and the prevention, reduction and minimisation of waste, and shall include waste reduction targets. The Schedule shall include time frames for the achievement of set targets and shall address a five year period as a minimum. The Schedule shall be reviewed annually and amendments thereto notified to the Agency for agreement as part of the Annual Environmental Report (AER).

2.2.2.3 Environmental Management Programme (EMP)

An EMP shall be maintained by the licensee. It shall include:

(a) designation of responsibility for targets;

(b) the means by which they may be achieved;

(c) the time within which they may be achieved.

The EMP shall be reviewed annually and amendments thereto notified to the Agency for agreement as part of the Annual Environmental Report (AER) (Condition 2.2.2.2).

A report on the programme, including the success in meeting agreed targets, shall be prepared and submitted to the Agency as part of the AER. Such reports shall be retained on-site for a period of not less than seven years and shall be available for inspection by authorised persons of the Agency.

2.2.2.4 Documentation

(i) The licensee shall maintain an environmental management documentation system which shall be to the satisfaction of the Agency.

(ii) The licensee shall issue a copy of this licence to all relevant personnel whose duties relate to any condition of this licence.

2.2.2.5 Corrective Action

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

2.2.2.6 Awareness and Training

The licensee shall maintain procedures for identifying training needs, and for providing appropriate training, for all personnel whose work can have a significant effect upon the environment. Appropriate records of training shall be maintained.

2.2.2.7 Communications Programme

The licensee shall maintain a Communications Programme to ensure that members of the public can obtain information at the facility, at all reasonable times, concerning the environmental performance of the facility.

Reason: *To make provision for management of the activity on a planned basis having regard to the desirability of ongoing assessment, recording and reporting of matters affecting the environment.*

Condition 3. Infrastructure and Operation

3.1 The licensee shall establish all infrastructure referred to in this licence or as required by the conditions of this licence.

3.2 Facility Notice Board

3.2.1 The licensee shall provide and maintain an Facility Notice Board on the facility so that it is legible to persons outside the main entrance to the facility. The minimum dimensions of the board shall be 1200 mm by 750 mm.

3.2.2 The board shall clearly show:-

a) the name and telephone number of the facility;

b) the normal hours of opening;

c) the name of the licence holder;

d) an emergency out of hours contact telephone number;

e) the licence reference number; and

f) where environmental information relating to the facility can be obtained.

3.3 Facility Security

3.3.1 Security fencing, gates and closed circuit television shall be maintained around the facility boundary. Within three months of date of grant of licence, suitable fencing shall be erected at the boundary with the adjacent compost facility such as to prevent the movement of vehicles between the sites.

3.3.2 Gates shall be locked shut when the facility is unsupervised.

3.3.3 The licensee shall remedy any defect in the gates and/or fencing as follows:-

(i) a temporary repair shall be made by the end of the working day; and

(ii) a repair to the standard of the original gates and/or fencing shall be undertaken within three working days.

3.4 Facility Roads and Site Surfaces

3.4.1 Effective site roads shall be maintained to ensure the safe movement of vehicles within the facility.

3.4.2 Traffic awaiting access to the facility shall not queue along the public road.

3.4.3 The licensee shall maintain an impermeable hardstanding surface at the facility entrance area, at the car parking area, and where vehicle movement takes place. The floor of the waste handling and storage areas shall be concreted and constructed to British Standard 8110.

3.5 Facility Office

3.5.1 The licensee shall provide and maintain an office at the facility. The office shall be constructed and maintained in a manner suitable for the processing and storing of documentation.

3.5.2 The licensee shall provide and maintain a working telephone and a method for electronic transfer of information at the facility.

3.6 Waste Inspection and Quarantine Areas

3.6.1 A Waste Inspection Area and a separate Waste Quarantine Area shall be provided and maintained at the facility.

3.6.2 These areas shall be constructed and maintained in a manner suitable, and be of a size appropriate, for the inspection of waste and subsequent quarantine if required. The waste inspection area and the waste quarantine area shall be clearly identified and segregated from each other.

3.6.3 Drainage from these areas shall be directed to FW1 as shown in Figure B2C, Rev 1a.

3.7 Weighbridge and Wheel Cleaning

3.7.1 The licensee shall provide and maintain a weighbridge and a wheel cleaner at the facility.

3.7.2 The wheel cleaner shall be used by all vehicles leaving the facility as required to ensure that no process water or waste is carried off-site. All water from the wheel cleaning area shall be directed to the wastewater interceptor.

3.8 Waste handling, ventilation and processing plant

3.8.1 Items of plant deemed critical to the efficient and adequate processing of waste at the facility (including *inter alia* waste loading vehicles and ejector trailers) shall be provided on the following basis:-

a) 100% duty capacity;

b) 20% standby capacity available on a routine basis; and

c) Provision of contingency arrangements and/or back up and spares in the case of breakdown of critical equipment.

3.8.2 The licensee shall maintain a register detailing the duty and standby capacity in tonnes per day, of all waste handling and processing equipment to be used at the facility. These capacities shall be based on the licensed waste intake, as per Schedule A.2 of this licence.

3.8.3 The quantity of waste to be accepted at the facility on a daily basis shall not exceed the duty capacity of the equipment at the facility. Any exceedance of this intake shall be treated as an incident.

3.9 Construction and Demolition Waste Recovery Area

3.9.1 The construction and demolition waste recovery area shall be within the materials handling and recycling building.

3.9.2 Only Construction and Demolition waste shall be accepted at this Area. Wastes which are capable of being recovered shall be separated and shall be stored temporarily in this area prior to being subjected to other recovery activities at the facility or transport off the facility.

3.10 The licensee shall install on all emission points such sampling points or equipment, including any data-logging or other electronic communication equipment, as may be required by the Agency. All such equipment shall be consistent with the safe operation of all sampling and monitoring systems.

3.11 Sampling equipment shall be operated and maintained such that sufficient sample is collected to meet both internal monitoring requirements and those of the Agency. A separate composite sample or homogeneous sub-sample (of sufficient volume as advised) should be refrigerated immediately after collection and retained as required for EPA use.

3.12 The licensee shall clearly label and provide safe and permanent access to all on-site sampling and monitoring points and to off-site points as required by the Agency.

3.13 Tank and Drum Storage Areas

3.13.1 All tank and drum storage areas shall be rendered impervious to the materials stored therein.

3.13.2 All tank and drum storage areas shall, as a minimum, be bunded, either locally or remotely, to a volume not less than the greater of the following:-

(i) 110% of the capacity of the largest tank or drum within the bunded area; or

(ii) 25% of the total volume of substance which could be stored within the bunded area

3.13.3 All drainage from bunded areas shall be diverted for collection and safe disposal.

3.13.4 All inlets, outlets, vent pipes, valves and gauges must be within the bunded area.

3.13.5 The integrity and water tightness of all the bunding structures and their resistance to penetration by water or other materials stored therein shall be tested and demonstrated by the licensee at least once every three years. This testing shall be carried out in accordance with any guidance published by the Agency. The licensee shall maintain a written record of all integrity tests and any maintenance or remedial work arising from these tests.

3.14 The licensee shall have in storage an adequate supply of containment booms and/or suitable absorbent material to contain and absorb any spillage at the facility. Once used the absorbent material shall be disposed of at an appropriate facility.

3.15 Silt Traps and Oil Separators

The licensee shall install and maintain silt traps and oil separator at the facility to ensure that all storm water discharges from the facility pass through a silt trap and oil separator prior to discharge. The separator shall be a Class I full retention separator and the silt traps and separator shall be in accordance with I.S. EN 585-2:2003 (separator systems for light liquids).

3.16 All pump sumps, or other treatment plant chambers from which spillage of environmentally significant materials might occur in such quantities as are likely to breach local or remote containment or separator, shall be fitted with high liquid level alarms (or oil detectors as appropriate) within six months of the date of grant of this licence.

3.17 The provision of a catchment system to collect any leaks from flanges and valves of all over ground pipes used to transport material other than water shall be examined. This shall be incorporated into a schedule of objectives and targets set out in Condition 2.2 of this licence for the reduction in fugitive emissions.

3.18 The licensee shall, within three months of the date of grant of this licence, install in a prominent location on the site a wind sock, or other wind direction indicator, which shall be visible from the public roadway outside the site.

3.19 The licensee shall provide and use adequate lighting during the operation of the facility in hours of darkness.

REASON: To provide for appropriate operation of the facility to ensure protection of the environment.

Condition 4. Interpretation

4.1 Emission limit values for emissions to sewer in this licence shall be interpreted in the following way:-

4.1.1 Discrete Sampling

For parameters other than pH and temperature, no grab sample value shall exceed 1.2 times the emission limit value.

4.2 Where the ability to measure a parameter is affected by mixing before emission, then, with agreement from the Agency, the parameter may be assessed before mixing takes place.

4.3 Noise from the facility shall not give rise to sound pressure levels (Leq,30 mins) measured at the boundary of the activity which exceed the limit value.

Reason: *To clarify the interpretation of emission limit values fixed under the licence.*

Condition 5. Emissions

5.1 No specified emission from the facility shall exceed the emission limit values set out in *Schedule B: Emission Limits* of this licence. There shall be no other emissions of environmental significance.

5.2 The licensee shall ensure that the activities shall be carried out in a manner such that emissions including odours do not result in significant impairment of, and/or significant interference with amenities or the environment beyond the facility boundary.

5.3 No substance shall be discharged in a manner, or at a concentration which, following initial dilution, causes tainting of fish or shellfish.

5.4 The licensee shall ensure that vermin, birds, flies, mud, dust, litter and odours do not give rise to nuisance at the facility or in the immediate area of the facility. Any method used by the licensee to control any such nuisance shall not cause environmental pollution.

5.5 Unless otherwise agreed in advance by the Agency and the Sanitary Authority, the following shall apply for the discharge of wastewater, which shall be via the wastewater, discharge line indicated on Figure B.2.c Site Service Plan. There shall be no other discharge or emission to sewer of environmental significance.

5.6 No substance shall be present in emissions to sewer in such concentrations as would constitute a danger to sewer maintenance personnel working in the sewerage system, or as would be damaging to the fabric of the sewer, or as would interfere with the biological functioning of a downstream wastewater treatment works.

5.7 The licensee shall ensure that the discharge shall not contain dissolved methane, petroleum spirits or organic solvents (including chlorinated organic solvents), at concentrations which would give rise to flammable or explosive vapours in the sewer.

5.8 Non-trade effluent wastewater (e.g. firewater, accidental spillage) which is generated on-site shall not be discharged to the sewer without the prior authorisation of the Sanitary Authority.

5.9 Unless otherwise agreed by the Agency, no trade effluent, leachate and/or contaminated storm water shall be discharged to surface water drains and surface water courses.

5.10 There shall be no direct emissions to groundwater.

Reason: *To provide for the protection of the environment by way of control and limitation of emissions and to provide for the requirements of the Sanitary Authority in accordance with Section 99E of the EPA Acts 1992 and 2003.*

Condition 6. Control and Monitoring

6.1 The licensee shall carry out such sampling, analyses, measurements, examinations, maintenance and calibrations as set out below and as in accordance with *Schedule C: Control & Monitoring* of this licence:

6.1.1 Analysis shall be undertaken by competent staff in accordance with documented operating procedures.

6.1.2 Such procedures shall be assessed for their suitability for the test matrix and performance characteristics determined.

6.1.3 Such procedures shall be subject to a programme of Analytical Quality Control using control standards with evaluation of test responses.

6.1.4 Where analysis is sub-contracted it shall be to a competent laboratory.

6.2 All automatic monitors and samplers shall be functioning at all times (except during maintenance and calibration) when the activity is being carried on unless alternative sampling or monitoring has been agreed in writing by the Agency for a limited period. In the event of the malfunction of any continuous monitor, the licensee shall contact the Agency as soon as practicable, and alternative sampling and monitoring facilities shall be put in place. Agreement for the use of alternative equipment, other than in emergency situations, shall be obtained from the Agency.

6.3 Monitoring and analysis equipment shall be operated and maintained as necessary so that monitoring accurately reflects the emission or discharge.

6.4 All treatment/abatement and emission control equipment shall be calibrated and maintained, in accordance with the instructions issued by the manufacturer/supplier or installer.

6.5 The frequency, methods and scope of monitoring, sampling and analyses, as set out in this licence, may be amended with the agreement of the Agency following evaluation of test results.

6.6 Process Effluent

6.6.1 The bunds, silt traps and oil separators shall be inspected weekly, desludged as necessary and properly maintained at all times. All sludge and drainage from these operations shall be collected for safe disposal.

6.6.2 The licensee shall permit authorised persons of the Agency and the Sanitary Authority to inspect, examine and test, at all reasonable times, any works and apparatus installed, in connection with the discharge or emission, and to take samples of the discharge or emission.

6.6.3 No discharge or emission to sewer shall take place which might give rise to any reaction within the sewer or to the liberation of by-products which may be of environmental significance.

6.6.4 The licensee shall provide and maintain an inspection chamber in a suitable position in connection with each pipe through which a discharge or emission is being made. Each such inspection chamber or manhole shall be constructed and maintained by the licensee so as to permit the taking of samples of the discharge.

6.6.5 The licensee shall submit monitoring results to the Sanitary Authority on a three monthly basis.

6.7 Storm water

6.7.1 A visual examination of the storm water discharge shall be carried out daily. A log of such inspections shall be maintained.

6.7.2 The drainage system, bunds, silt traps and oil separators shall be inspected weekly, desludged as necessary and properly maintained at all times. All sludge and drainage from these operations shall be collected for safe disposal.

6.8 The licensee shall carry out a noise survey of the site operations annually. The survey programme shall be undertaken in accordance with the methodology specified in the 'Environmental Noise Survey Guidance Document' as published by the Agency.

6.9 The licensee shall, at a minimum of one week intervals, inspect the facility and its immediate surrounds for nuisances caused by litter, vermin, birds, flies, mud, dust and odours. A log of such inspections shall be maintained.

6.10 Litter Control

6.10.1 The measures and infrastructure as described in Section 3.3.5 of the EIS that accompanied the original licence application shall be applied to control litter at the facility.

6.10.2 All loose litter or other waste from the carrying on of the waste activities, arising on or in the vicinity of the facility, other than in accordance with the requirements of this licence, shall be removed, subject to the agreement of the landowners, immediately and in any event by 1000 hrs of the next working day after such waste is discovered.

6.10.3 The licensee shall ensure that all vehicles delivering waste to and removing waste and materials from the facility are appropriately covered.

6.11 Dust/Odour Control

6.11.1 All waste for disposal stored overnight at the facility shall be stored within the materials recovery building or in suitably covered and enclosed containers, and shall be removed from the facility within forty eight hours, except at Bank Holiday weekends. At Bank Holiday weekends, waste for disposal shall be removed within seventy-two hours of its arrival on site.

6.11.2 In dry weather, site roads and any other areas used by vehicles shall be sprayed with water as and when required to minimise airborne dust nuisance.

6.11.3 The licensee shall maintain adequate measures for the control of odours and dust emissions, including fugitive dust emissions, from the facility. The odour management system shall at a minimum include the following:-

(i) Dust curtains (or equivalent approved by the Agency) shall be maintained on the entry/exit points from the waste transfer building, all other doors in this building shall be kept closed where possible.

(ii) Provision of 100% duty capacity and 20% stand by capacity, back ups and spares must be provided for the air handling, ventilation and abatement plant

6.11.4 The licensee shall maintain an odour management programme to the satisfaction of the Agency. The programme shall include, as a minimum, procedures for the handling of biodegradable waste.

6.12 Operational Controls

6.12.1 The floor of the waste transfer building shall be cleaned on a weekly basis and on a daily basis where putrescible waste is handled. The floor of the storage bays for recovered wastes shall be washed down and cleaned on each occasion such bays are emptied, or as a minimum on a weekly basis.

6.12.2 Scavenging shall not be permitted at the facility.

6.12.3 The licensee shall provide and use adequate lighting during the operation of the facility in hours of darkness.

6.12.4 Fuels shall be stored only at appropriately bunded locations on the facility.

6.12.5 All tanks and drums shall be labelled to clearly indicate their contents.

6.12.6 There shall be no casual public access to the facility.

Reason: *To provide for the protection of the environment by way of treatment and monitoring of emissions.*

Condition 7. Resource Use and Energy Efficiency

7.1 The licensee shall carry out an audit of the energy efficiency of the site within one year of the date of grant of this licence. The audit shall be carried out in accordance with the guidance published by the Agency; "Guidance Note on Energy Efficiency Auditing". The energy efficiency audit shall be repeated at intervals as required by the Agency.

7.2 The audit shall identify all opportunities for energy use reduction and efficiency and the recommendations of the audit will be incorporated into the Schedule of Environmental Objectives and Targets under Condition 2 above.

7.3 The licensee shall identify opportunities for reduction in the quantity of water used on site including recycling and reuse initiatives, wherever possible. Reductions in water usage shall be incorporated into Schedule of Environmental Objectives and Targets.

7.4 The licensee shall undertake an assessment of the efficiency of use of raw materials in all processes, having particular regard to the reduction in waste generated. The assessment should take account of best international practice for this type of activity. Where improvements are identified, these shall be incorporated into the Schedule of Environmental Objectives and Targets.

Reason: *To provide for the efficient use of resources and energy in all site operations.*

Condition 8. Materials Handling

8.1 Disposal or recovery of waste shall only take place in accordance with the conditions of this licence and in accordance with the appropriate National and European legislation and protocols.

8.2 Waste sent off-site for recovery or disposal shall be transported only by an authorised waste contractor. The waste shall be transported only from the site of the activity to the site of recovery/disposal in a manner which will not adversely affect the

environment and in accordance with the appropriate National and European legislation and protocols.

8.3 The licensee shall ensure that waste prior to transfer to another person shall be classified packaged and labelled in accordance with National, European and any other standards which are in force in relation to such labelling.

8.4 Waste shall be stored in designated areas, protected as may be appropriate, against spillage and leachate run-off. The waste is to be clearly labelled and appropriately segregated.

8.5 No waste classified as green list waste in accordance with the EU Transfrontier Shipment of Waste Regulations (Council Regulation EEC No.259/1993, as amended) shall be consigned for recovery without the agreement of the Agency.

8.6 Unless approved in writing by the Agency the licensee is prohibited from mixing a hazardous waste of one category with a hazardous waste of another category or with any other non-hazardous waste.

8.7 Waste Acceptance and Characterisation Procedures

8.7.1 Waste shall only be accepted at the facility, from Local Authority waste collection or transport vehicles or holders of waste permits, unless exempted or excluded, issued under the Waste Management Acts 1996 to 2005. Copies of these waste collection permits must be maintained at the facility.

8.7.2 Waste Acceptance Procedures shall be carried out in accordance with Section 2.6 'Waste Handling' of the EIS, unless otherwise provided for in the licence.

8.7.3 Waste arriving at the facility shall be weighed, documented and directed to the Waste Transfer Building. Each load of waste arriving at the Waste Transfer Building shall be inspected upon tipping within this building. Only after such inspections shall the waste be processed for disposal or recovery.

8.7.4 Any waste deemed unsuitable for processing at the facility and/or in contravention of this licence shall be immediately separated and removed from the facility at the earliest possible time. Temporary storage of such wastes shall be in a designated Waste Quarantine Area. Waste shall be stored under appropriate conditions in the quarantine area to avoid putrefaction, odour generation, the attraction of vermin and any other nuisance or objectionable condition.

8.7.5 A record of all inspections of incoming waste loads shall be maintained.

8.7.6 Waste shall be accepted at the facility only from known customers or new customers subject to initial waste profiling and waste characterisation off-site. The written records of this off-site waste profiling and characterisation shall be retained by the licensee for all active customers and for a two year period following termination of licensee/customer agreements. There shall be no casual public access to the facility.

8.7.7 Waste shall be accepted at the facility only from holders of a Waste Collection Permit, unless exempted under the Waste Management (Collection Permit) Regulations 2001.

8.8 Off-site Disposal and Recovery

8.8.1 All waste transferred from the facility shall be transferred by an authorised or exempted carrier, and only to an appropriate facility agreed by the Agency. Any request for agreement of such a facility shall be forwarded to the Agency at least one month in advance of its proposed use and shall include the following;

(i) A copy of the waste permit or waste licence where applicable.

(ii) The proposed waste types and quantities.

(iii) Details of any limitations on waste types and quantities acceptable at the facility.

Reason: To provide for the appropriate handling of materials and the protection of the environment.

Condition 9. Accident Prevention and Emergency Response

9.1 The licensee shall, within six months of date of grant of this licence, ensure that a documented Accident Prevention Policy is in place which will address the hazards on-site, particularly in relation to the prevention of accidents with a possible impact on the environment. This procedure shall be reviewed annually and updated as necessary.

9.2 The licensee shall, within six months of date of grant of this licence, ensure that a documented Emergency Response Procedure is in place, which shall address any emergency situation which may originate on-site. This Procedure shall include provision for minimising the effects of any emergency on the environment. This procedure shall be reviewed annually and updated as necessary.

9.3 In the event of an incident the licensee shall immediately:-

(i) isolate the source of any such emission;

(ii) carry out an immediate investigation to identify the nature, source and cause of the incident and any emission arising therefrom;

(iii) evaluate the environmental pollution, if any, caused by the incident;

(iv) identify and execute measures to minimise the emissions/malfunction and the effects thereof, and

(v) identify the date, time and place of the incident.

The licensee shall provide a proposal to the Agency for its agreement within one month of the incident occurring or as otherwise agreed with the Agency to:-

- identify and put in place measures to avoid reoccurrence of the incident; and
- identify and put in place any other appropriate remedial action.

9.4. Emergencies

No waste shall be burnt within the boundaries of the facility. A fire at the facility shall be treated as an emergency and immediate action shall be taken to extinguish it and notify the appropriate authorities.

Reason: To provide for the protection of the environment.

Condition 10. Decommissioning.

10.1 Following termination, or planned cessation for a period greater than six months, of use or involvement of all or part of the site in the licensed activity, the licensee shall,

to the satisfaction of the Agency, decommission, render safe or remove for disposal/recovery, any soil, subsoils, buildings, plant or equipment, or any waste, materials or substances or other matter contained therein or thereon, that may result in environmental pollution. The licensee shall carry out such tests, investigation or submit certification, as requested by the Agency, to confirm that there is no risk to the environment.

Reason: *To make provision for the proper closure of the activity ensuring protection of the environment.*

Condition 11. Notifications, Records and Reports

11.1 The licensee shall notify the Agency by both telephone and either facsimile or electronic mail, if available, to the Agency's Headquarters in Wexford, or to such other Agency office as may be specified by the Agency, as soon as practicable after the occurrence of any of the following:

(i) Any release of environmental significance to atmosphere from any potential emission point including bypasses.

(ii) Any emission which does not comply with the requirements of this licence.

(iii) Any malfunction or breakdown of key control equipment or monitoring equipment set out in *Schedule C: Control & Monitoring*, of this license which is likely to lead to loss of control of the abatement system.

(iv) Any incident with the potential for environmental contamination of surface water or groundwater, or posing an environmental threat to air or land, or requiring an emergency response by the Local Authority.

The licensee shall include as part of the notification, date and time of the incident, summary details of the occurrence, and where available, the steps taken to minimise any emissions.

11.2 In the event of any incident which relates to discharges to sewer, having taken place, the licensee shall notify the Local and Sanitary Authority as soon as practicable, after such an incident.

11.3 The licensee shall make a record of any incident. This record shall include details of the nature, extent, and impact of, and circumstances giving rise to, the incident. The record shall include all corrective actions taken to; manage the incident, minimise wastes generated and the effect on the environment, and avoid recurrence. The licensee shall as soon as practicable following incident notification, submit to the Agency the incident record.

11.4 The licensee shall record all complaints of an environmental nature related to the operation of the activity. Each such record shall give details of the date and time of the complaint, the name of the complainant and give details of the nature of the complaint. A record shall also be kept of the response made in the case of each complaint.

11.5 The licensee shall record all sampling, analyses, measurements, examinations, calibrations and maintenance carried out in accordance with the requirements of this licence and all other such monitoring which relates to the environmental performance of the facility.

11.6 The licensee shall as a minimum keep the following documents at the site:-

(i) the licences relating to the facility;

(ii) the current EMS for the facility;

(iii) the previous year's AER for the facility;

(iv) records of all sampling, analyses, measurements, examinations, calibrations and maintenance carried out in accordance with the requirements of this licence and all other such monitoring which relates to the environmental performance of the facility;

(v) relevant correspondence with the Agency;

(vi) an up to date site drawings/plans showing the location of key process and environmental infrastructure, including monitoring locations and emission points

and this documentation shall be available to the Agency for inspection at all reasonable times.

11.7 The licensee shall submit reports to the Agency as required by this licence and in accordance with *Schedule E: Annual Environmental Report,* of this licence.

11.8 The licensee shall submit to the Agency, by the 31st March of each year, an AER covering the previous calendar year. This report, which shall be to the satisfaction of the Agency, shall include as a minimum the information specified in *Schedule E: Annual Environmental Report* of this licence and shall be prepared in accordance with any relevant guidelines issued by the Agency.

11.9 A full record, which shall be open to inspection by authorised persons of the Agency at all times, shall be kept by the licensee on matters relating to the waste management operations and practices at this site. This record shall be maintained on a monthly basis and shall as a minimum contain details of the following:

(i) The tonnages and EWC Code for the waste materials imported and/or sent off-site for disposal/recovery.

(ii) The names of the agent and carrier of the waste, and their waste collection permit details, if required (to include issuing authority and vehicle registration number).

(iii) Details of the ultimate disposal/recovery destination facility for the waste and its appropriateness to accept the consigned waste stream, to include its permit/licence details and issuing authority, if required.

(iv) Written confirmation of the acceptance and disposal/recovery of any hazardous waste consignments sent off-site.

(v) Details of all wastes consigned abroad for Recovery and classified as 'Green' in accordance with the EU Transfrontier Shipment of Waste Regulations (Council Regulation EEC No. 259/1993, as amended). The rationale for the classification must form part of the record.

(vi) Details of any rejected consignments.

(vii) Details of any approved waste mixing.

(viii) The results of any waste analyses required under *Schedule C: Control & Monitoring* of this licence.

(ix) The tonnages and EWC Code for the waste materials recovered/disposed on-site.

11.10 Waste Recovery Reports

The licensee shall as part of the EMP submit a report on the contribution by this facility to the achievement of the recovery targets stated in national and European Union waste policies and shall include the following:-

(i) proposals for the contribution of the facility to the achievement of targets for the reduction of biodegradable waste to landfill as specified in the Landfill Directive;

(ii) the separation of recyclable materials from the waste;

(iii) the recovery of Construction and Demolition Waste;

(iv) the recovery of metal waste and WEEE.

Reason: *To provide for the collection and reporting of adequate information on the activity.*

Condition 12. Financial Charges and Provisions

12.1 Agency Charges

12.1.1 The licensee shall pay to the Agency an annual contribution of €5,974, or such sum as the Agency from time to time determines, having regard to variations in the extent of reporting, auditing, inspection, sampling and analysis or other functions carried out by the Agency, towards the cost of monitoring the activity as the Agency considers necessary for the performance of its functions under the Waste Management Acts 1996 to 2005. The first payment shall be a pro-rata amount for the period from the date of this licence to the 31st day of December, and shall be paid to the Agency within one month from the date of the licence. In subsequent years the licensee shall pay to the Agency such revised annual contribution as the Agency shall from time to time consider necessary to enable performance by the Agency of its relevant functions under the Waste Management Acts 1996 to 2005, and all such payments shall be made within one month of the date upon which demanded by the Agency.

12.1.2 In the event that the frequency or extent of monitoring or other functions carried out by the Agency needs to be increased the licensee shall contribute such sums as determined by the Agency to defraying its costs in regard to items not covered by the said annual contribution.

12.2 Sanitary Authority Charges

12.2.1 The licensee shall pay to the Sanitary Authority €0.056 cent per cubic metre of trade effluent discharged to the foul sewer or such sum as may be determined from time to time, having regard to the variations in the cost of providing drainage and the variation in effluent reception and treatment costs. Payment to be made quarterly on demand.

12.2.2 The licensee shall pay an annual charge of €220 to the Sanitary Authority towards the cost of monitoring the trade effluent. This amount will be revised from time to time. Payment to be made on demand.

12.3 Environmental Liabilities

12.3.1 The licensee shall as part of the AER provide an annual statement as to the measures taken or adopted at the site in relation to the prevention of environmental damage, and the measures in place in relation to the underwriting of costs for remedial actions following anticipated events or accidents/incidents, as may be associated with the carrying on of the activity.

Reason: *To provide for adequate financing for monitoring and financial provisions for measures to protect the environment and to provide for the requirements of the Sanitary Authority in accordance with Section 99E of the EPA 1992 and 2003.*

SCHEDULE A: Limitations

A.1

The following waste related processes are authorised:

i. Shredding, crushing, bailing, repackaging processes
ii. C & D waste recovery (incl. crushing, screening, sorting, blending)
iii. Storage of waste
iv. Recovery of dry recyclables

No additions to these processes are permitted unless agreed in advance with the Agency.

A.2 Waste Acceptance

Table A.1 Waste Categories and Quantities

WASTE TYPE [Note 1]	MAXIMUM (TONNES PER ANNUM) [Note 2]
Household	4,700
Commercial & Industrial	25,750
Construction& Demolition	800
TOTAL	31,250

Note 1: Any proposals to accept other compatible waste streams must be agreed in advance with the Agency and the total amount of waste must be within that specified.
Note 2: The individual limitation on waste streams may be varied with the agreement of the Agency subject to the overall total limit staying the same.

SCHEDULE B: Emission Limits

B.1 Emissions to Air

There are no Emissions to Air of environmental significance.

B.2 Emissions to Water

There are no Emissions to Water of environmental significance.

B.3 Emission to Sewer

Emission Point Reference No.: FW1

Location: As per Fig. B2C, Rev. 1a

Volume to be emitted: Maximum in any one day: 763.2 m^3

Maximum rate per hour: 31.8 m^3

Parameter	Emission Limit Value
Temperature	18°C (max.)
PH	6 - 9
	mg/l
BOD	400
COD	1100
Suspended Solids	300
Oils, Fats & Greases	10
Conductivity	1500
MBAS	0.2

B.4. Noise Emissions

Daytime dB(A) L_{Aeq}(30 minutes)	Night-time dB(A) L_{Aeq}(30 minutes)
55 Note 1	45 Note 1

Note 1: There shall be no clearly audible tonal component or impulsive component in the noise emission from the activity at any noise sensitive location.

SCHEDULE C: Control &Monitoring

C.1.1 Control of Emissions to Air

There are no point source emissions to air of environmental significance.

C.1.2 Monitoring of Emissions to Air

There are no point source emissions to air of environmental significance.

C.2.1 Control of Emissions to Water

There are no emissions to water of environmental significance.

C.2.2 Monitoring of Emissions to Water

There are no emissions to water of environmental significance.

C.2.3 Monitoring of Storm Water Emission

Emission Point Reference No.: SW1 - 4

Parameter	Monitoring Frequency	Analysis Method/Technique
Conductivity	Weekly	Portable probe
Ammonia	Weekly	Portable probe
Visual Inspection	Daily	Grab sample and examine for colour and odour

C.3.1 Control of Emissions to Sewer

This is addressed in Conditions 5 and 6.

C.3.2 Monitoring of Emissions to Sewer

Emission Point Reference No.: FW1

Parameter	Monitoring Frequency	Analysis Method/Technique
Flow	Continuous	On-line flow meter with recorder
Temperature	Continuous	On-line temperature probe with recorder
PH	Continuous	pH electrode/meter and recorder
Chemical Oxygen Demand	Quarterly	Standard Method
Biochemical Oxygen Demand	Quarterly	Standard Method
Suspended Solids	Quarterly	Gravimetric
Oils, fats & greases	Quarterly	Standard Method
Conductivity	Quarterly	Standard Method
MBAS	Quarterly	Standard Method

C.4 Noise Monitoring

Location	Measurement	Frequency
N1 (258326E, 109519N)	LA_{EQ} (30 minutes)	Annually
N2 (258362E, 109435N)	LA_{EQ} (30 minutes)	Annually
N3 (258312E, 109511N)	LA_{EQ} (30 minutes)	Annually

C.5 Ambient Monitoring

Dust deposition Monitoring

Locations: D1 - 3, as indicated in Figure C.1.a (Revision 1) of the review application.

Parameter	Monitoring Frequency	Analysis Method/Technique
Dust deposition	Three times a year [Note 2]	Standard Method [Note 1]

Note 1: Standard method VDI2119 (Measurement of Dustfall, Determination of Dustfall using Bergerhoff Instrument (Standard Method) German Engineering Institute). A modification (not included in the standard) which 2 methoxy ethanol may be employed to eliminate interference due to algae growth in the gauge.

Note 2: Twice during the period May to September.

SCHEDULE D: Reporting

Completed reports shall be submitted to:

The Environmental Protection Agency
Office of Environmental Enforcement
Environmental Protection Agency
P. O. Box 3000
Johnstown Castle Estate
Co. Wexford **or** Any other address as may be specified by the Agency

Reports are required to be forwarded as required in the licence and as may be set out below:

Report	Reporting Frequency Note1	Report Submission Date
Annual Environment Report (AER)	Annually	By 31st March of each year.
Record of incidents	As they occur	Within five days of the incident.

Note 1: Unless altered at the request of the Agency.

SCHEDULE E: Annual Environmental Report

Annual Environmental Report Content[Note 1]
Waste activities carried out at the facility.
Emissions from the facility.
Quantity and Composition of waste recovered, received and disposed of during the reporting period and each previous year (relevant EWC codes to be used).
Resource consumption summary.
Complaints summary.
Schedule of Environmental Objectives and Targets.
Environmental management programme – report for previous year.
Environmental management programme – proposal for current year.
Noise monitoring report summary.
Ambient monitoring summary.
Bund tank and container integrity assessment.
Tank and pipeline testing and inspection report.
Reported incidents summary.
Energy efficiency audit report summary.
Development / Infrastructural works summary (completed in previous year or prepared for current year).
Management and staffing structure of the facility, and a programme for public information.
Statement of measures in relation to prevention of environmental damage and remedial actions (Environmental Liabilities).
Full title and a written summary of any procedures developed by the licensee in the year which relates to the facility operation.
Waste Recovery Report.
Review of Nuisance Controls.
Any other items specified by the Agency.

Note 1: Content may be revised subject to the agreement of the Agency.

Sealed by the seal of the Agency on this the 10th day of February, 2006

PRESENT when the seal of the Agency
was affixed hereto:

Padraic Larkin, **Director/Authorised Person**

SITE NOTICE

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A REVIEW OF A WASTE LICENCE

Onyx Ireland Ltd, Carrignard, Six Cross Roads Business Park, Waterford is applying to the Environmental Protection Agency, in accordance with the Waste Management Regulations, 1997 (SI No.13 of 1997) in respect of its Waste Transfer Station at the aforementioned address. The National Grid Reference for the activity is 2583E, 1095N.

The classes of activity in accordance with the Third and Fourth Schedules of the Waste Management Act, 1996 and as amended are:

Principal Activity:

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

Other Activites

1. Third Schedule

Class 11. Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this 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.

2. Fourth Schedule

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

Class 3: Recycling or reclamation of metals and metal compounds.

Class 4. Recycling or reclamation of other inorganic materials.

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.

The review is made for the disposal of waste (other than hazardous waste) at a facility (other than a landfill facility) where the annual intake is likely to exceed 25,000 tonnes but be less than 100,000 tonnes. A copy of the review of the waste licence application, the Environmental Impact Statement and any such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the application will, as soon as practicable after receipt by the Agency be available for inspection at the headquarters of the Agency, Johnstown Castle Estate, PO Box 3000, Co. Wexford.

Yukos lawyer warns of Putin's reach

Mikhail Khodorkovsky's counsel says image of Russia 'phoney'

Arthur Beesley, Senior Business Correspondent

Robert Amsterdam is an international lawyer who was expelled last year from Russia over his work for the jailed oil tycoon Mikhail Khodorkovsky.

His client is serving eight years in a Siberian prison camp for fraud and tax evasion at the energy company he once owned, Yukos.

The temperature frequently drops as low as minus 40 degrees in the camp near Russia's border with China, but Mr Amsterdam presents a case that is even more chilling. This US-Canadian lawyer says his client's plight is the direct result of grand-scale theft and rampant disregard for the rule of law by the government of Vladimir Putin.

Mr Putin and his government dispute that analysis, but Mr Amsterdam presents the case for the defence in uncompromising terms. Adamant that right is on his side, he is in Dublin this week to highlight the affair.

He points out too that the Putin government's seizure of energy assets could have worrying implications for the supply of gas to Ireland, which is a net importer of gas.

The case has its genesis in the controversial privatisation of Russian state assets in the mid-1990s during the troubled presidency of Putin's predecessor, Boris Yeltsin. Khodorkovsky was just one of the "oligarchs" to emerge with a vast fortune from that process.

He bought a majority stake in the oil holding company Yukos for $309 million (€259 million), ruthlessly took full control of the group and built it into an entity that was valued, at its peak, at $35 billion. By any standards, Khodorkovsky's $15 billion personal fortune was immense. He was the richest man in Russia, a place where severe poverty is the norm for tens of millions.

Some say that it was Khodorkovsky's sponsorship of liberal political causes that provoked the ire of Putin, who had promised Russia's richest businessmen that they could keep their empires if they kept out of politics.

Mr Amsterdam says a move by Yukos into the gas sector was more important because it clashed with the interests of Gazprom, the gas giant controlled by the Russian state.

"It's very simple. Putin is Gazprom. Gazprom viewed Khodorkovsky as a threat because Khodorkovsky was getting into gas. That's one critical reason and there are many, many others. Essentially Khodorkovsky was a dynamic transparent entrepreneur in a country where corruption is exploding."

According to Mr Amsterdam, that was the cue for a tax case againt Yukos and Khodorkovsky, which resulted in his imprisonment and the seizure of the company by the Russian state. Citing a critical report by the Council of Europe human rights watchdog, he claims the trial was a sham and a farce.

"The destruction of Yukos was a tax-engineered state theft. What's truly amazing about it is that the Russians don't even try to justify it. This is what is the most shocking. They have been granted so much impunity and licence from the West that they can go out and steal an asset like this," he says.

So what does all this mean for Ireland? After addressing students yesterday in UCD, Mr Amsterdam said he took issue with recent remarks by former EU commissioner Peter Sutherland, the chairman of BP and Goldman Sachs, who spoke favourably last month of "workable" business conditions in Russia and the prospects for growth there.

"I won't speak ill of Mr Sutherland. He's a tremendously accomplished fellow. But take a look at what he said about Russia . . . I've read the Irish press. The pictures and the conferences about Russia present frankly a phoney picture of what's going on inside Russia."

More than that, Mr Amsterdam says Russia's decision to switch off gas supplies to Ukraine at the end of last year demonstrated that it was prepared to manipulate energy markets for its own ends.

He said this was an issue which concerned Ireland, since it was a gas-importing country.

"I haven't seen many statements going on in terms of Ireland where they've taken a strong position on the sorry state of the rule of law in Russia."

Mr Amsterdam says Khodorkovsky has no prospect of freedom before 2009 and says his client's sole objective for the moment is survival.

He will not say who is funding his Irish visit. He is meeting some politicians, but he won't say who. "People fear for their lives after meeting me."

Robert Amsterdam, lawyer for jailed oil tycoon Mikhail Khodorkovsky, speaking at the School of Politics in UCD, yesterday: "The destruction of Yukos was a tax-engineered state theft." Photograph: Cyril Byrne

Belgium sues Ryanair over €2.28m in state aid

Belgium has brought High Court proceedings against Ryanair for the recovery of more than €2.28 million provided by the Belgian authorities to the private airline for services to and from Charleroi Airport.

The Belgian move follows a decision by the European Commission in February 2004 that many of the financial arrangements agreed between Ryanair and the Walloon region of Belgium constitute state aid incompatible with the common market.

Ryanair yesterday asked the High Court to put a stay on the proceedings by Belgium pending the determination of Ryanair's appeal against the European Commission decision, which is currently before the Court of First Instance of European Communities. Belgium is opposing the stay.

The €2.28 million state aid relates to the launching costs of new routes, hotel and other accomodation, and subsistence for Ryanair staff and associated companies during the development of the base at Charleroi and aid for the recruitment and training of pilots and aircraft staff.

Counsel for Ryanair told the High Court yesterday that, if the proceedings by Belgium are stayed now, the cost to the public purse will be limited.

This was not a case where Ryanair has run away, he said. The airline had an interest in testing the European Commission decision. Money had been paid into an account by Ryanair and, if the airline does not succeed in Europe, the money goes to Belgium.

In an affidavit, the head of regulatory affairs at Ryanair, Jim Callaghan, said that, in the late 1990s, Charleroi Airport had an average of 57 passengers daily. Ryanair decided to set up a base there even though it was a wholly unknown airport and a very risky venture.

Since Ryanair's arrival at Charleroi in 1997, Mr Callaghan said passenger numbers had grown to about two million per annum.

Following an anonymous complaint, the European Commission's director general for transport and energy investigated the incentives offered to Ryanair and "purported to conclude that they constituted a package of both lawful and unlawful State aid", he said.

The European Commission decision has very serious ramifications for Ryanair, Mr Callaghan said. It seriously hampered the ability of state-owned regional airports to compete with monopolistic major airports which were typically extremely expensive to operate from.

On December 22nd, 2004, Ryanair had, under protest and without prejudice to its appeal, lodged €4 million into an escrow account with the government of the Walloon region in respect of the first tranche of the payments that the European Commission has required to be made to Belgium. This was because, he claimed, the Walloon region failed to comply with its own legislation in terms of granting discounts.

The European Commission had rejected back-up documentation provided by Ryanair and demanded that the Walloon region bring these proceedings.

In an affidavit, the director general of legal affairs of the Belgian federal public service Jan Devadder said the appeal process may take some considerable years and a judgment was unlikely to be reached before early 2007.

TEMPORARY ROAD CLOSURE

Dublin City Council

Comhairle Cathrach Bhaile Átha Cliath

ST. PATRICK'S FESTIVAL 2006

Notice is hereby given that Dublin City Council is considering closing the following streets on the dates and times as stated below: -

Festival Parade - 17th March

6am to 12.30pm - Western Way

7am to 12:30pm - Dominick Street Upper, Mountjoy Street, St. Mary's Place North

7am to 1pm - Granby Row, Parnell Square North, Parnell Square East, O'Connell Street (west lane), O'Connell Bridge

7am to 2pm - Westmoreland Street, College Green, Dame Street, Lord Edward Street, Christchurch Place

7am to 2.30pm - Nicholas Street, Patrick Street

10am to 3:30pm - Clanbrassil Street Lower (Kevin Street to South Circular Road).

Céilí – Earlsfort Terrace - 17th March

7am to 6.30pm - Earlsfort Terrace (between its junctions with St Stephen's Green South and Hatch Street Upper).

Treasure Hunt – Castle Street – 18th March

9am to 5pm - Castle Street

Big Day Out – Merrion Square – 19th March

8am to 7pm - Merrion Square South, Merrion Square East, Fitzwilliam Street Lower, Merrion Street Upper (between its junctions with Fitzwilliam Lane and Merrion Square South), Mount Street Upper (to Stephen's Place).

Fun Fair - Merrion Square West - 13th March to 20th March

10pm on 13th March to 10pm on 20th March - Merrion Square West

Fun Fair – Haymarket / Smithfield – 14th March to 20th March

6am on 14th March to 6am on 20th March - Haymarket (to Burgess Lane) Smithfield West (New Church Street to Phoenix Street).

Oíche – Smithfield – 15th, 16th & 18th March

7pm to 9:45pm on 15th March, and 7pm to 9pm on 16th March & 18th March – Smithfield, Friary Avenue, New Church Street

Any person may lodge an objection, in writing, to **Dublin City Council, Roads & Traffic Department, Civic Offices, Wood Quay, Dublin 8.** The closing time and date for receipt of objections is **12:00 midday on Monday 6th March 2006.**
Written objections can be faxed to (01) 222 2813.

www.dublincity.ie

WEXFORD COUNTY COUNCIL

COMHAIRLE CHONTAE LOCH GARMAN

PUBLIC NOTICE

NOTICE OF PROPOSED MATERIAL CONTRAVENTION OF DEVELOPMENT PLAN

PLANNING & DEVELOPMENT ACT 2000

MATERIAL CONTRAVENTION OF THE COUNTY WEXFORD DEVELOPMENT PLAN 2001 (REFERENCE NO. IN REGISTER 20053079).

Notice is hereby given pursuant to Section 34 (6) of the Planning & Development Act, 2000, that Wexford County Council intends to consider deciding to grant a permission for the proposed development to **DEMOLISH EXISTING DERELICT HOUSE AND TO ERECT A D.O.E. VEHICLE TEST CENTRE, ENTRANCE, SEWAGE TREATMENT SYSTEM AND ASSOCIATED SITE ROADS AND FOOTPATHS ETC. at ARDCAVAN, ARDCAVAN.**

The development would contravene materially the zoning provisions as stated in the Wexford Town and Environs Plan 2002.

Particulars of the development may be inspected at the Offices of the Planning Department, Wexford County Council, County Hall, Wexford during office hours of 10.00am to 4.00pm Monday to Friday inclusive. The Planning Authority will duly consider any objections or representations received in writing not later than 4 weeks after Wednesday, 01 March 2006. Further details available at *www.wexford.ie.*

Signed: Ger Griffin, COUNTY SECRETARY

Date: 21st February, 2006.

GER GRIFFIN, COUNTY SECRETARY, WEXFORD COUNTY COUNCIL WWW.WEXFORD.IE

APPLICATION TO THE ENVIRONMENTAL PROTECTION AGENCY FOR A REVIEW OF A WASTE LICENCE

Onyx Ireland Ltd, Carrignard, Six Cross Roads Business Park, Waterford is applying to the Environmental Protection Agency, in accordance with the Waste Management Regulations, 1997 (SI No.13 of 1997) in respect of its Waste Transfer Station at the aforementioned address. The National Grid Reference for the activity is 2583E, 1095N. The classes of activity in accordance with the Third and Fourth Schedules of the Waste Management Act, 1996 and as amended are:

Principal Activity:

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

Other Activities

1. Third Schedule

Class 11. Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this 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.

2. Fourth Schedule

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

Class 3. Recycling or reclamation of metals and metal compounds.

Class 4. Recycling or reclamation of other inorganic materials.

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.

A copy of the review of the waste licence application, the Environmental Impact Statement and any such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the application will as soon as practicable, after receipt by the Agency be available for inspection at the headquarters of the Agency, Johnstown Castle Estate, PO Box 3000, Co. Wexford.

FAO: Mr. Michael Walsh
Waterford City Council
The Mall
Waterford City

25th February 2006

Dear Mr. Walsh,

Please be advised that Onyx Ireland Ltd., Carrignard, Six Cross Roads Business Park, Waterford City is applying to the Environmental Protection Agency, in accordance with the Waste Management Regulations, 1997 (SI No. 133 of 1997) and as amended, for a review of Waste Licence (Reg No. 177-2) in respect to its Waste Transfer Station at the aforementioned address. The National Grid Reference for the activity is 2583E, 1095N.

The classes of activity in accordance with the Third and Fourth Schedules of the Waste Management Act, 1996 and as amended are:

Principal Activity:
Third Schedule, Class 12. Repackaging prior to submission to any activity referred to in a preceding paragraph of this Schedule.

Other Activities

Third Schedule

Class 11. Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this 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.

Fourth Schedule

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

Class 3: Recycling or reclamation of metals and metal compounds.

Class 4. Recycling or reclamation of other inorganic materials.

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.

The review is made for the disposal of waste (other than hazardous waste) at a facility (other than a landfill facility) where the annual intake is likely to exceed 25,000 tonnes but be less than 100,000 tonnes.

A copy of the review of the waste licence application, the Environmental Impact Statement and any such further information relating to the application as may be furnished to the Agency in the course of the Agency's consideration of the application will, as soon as practicable after receipt by the Agency be available for inspection at the headquarters of the Agency, Johnstown Castle Estate, PO Box 3000, Co. Wexford.

Should you have any queries in relation to this matter, please do not hesitate to contact me.

Yours sincerely,

_____

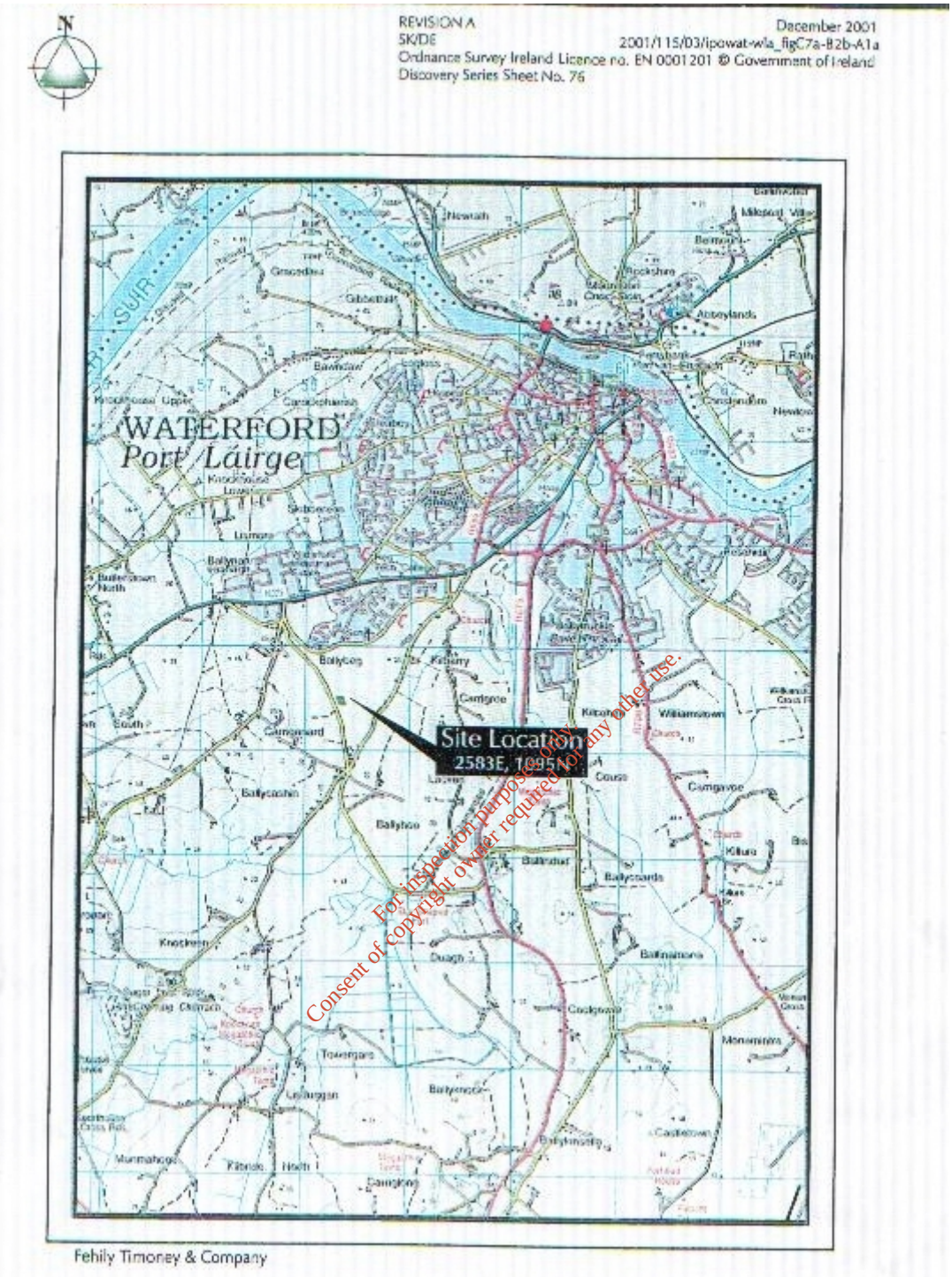
Michael Storan
Environmental Officer

ONYX Ireland Limited

APPENDIX II

Please find overleaf the following items:

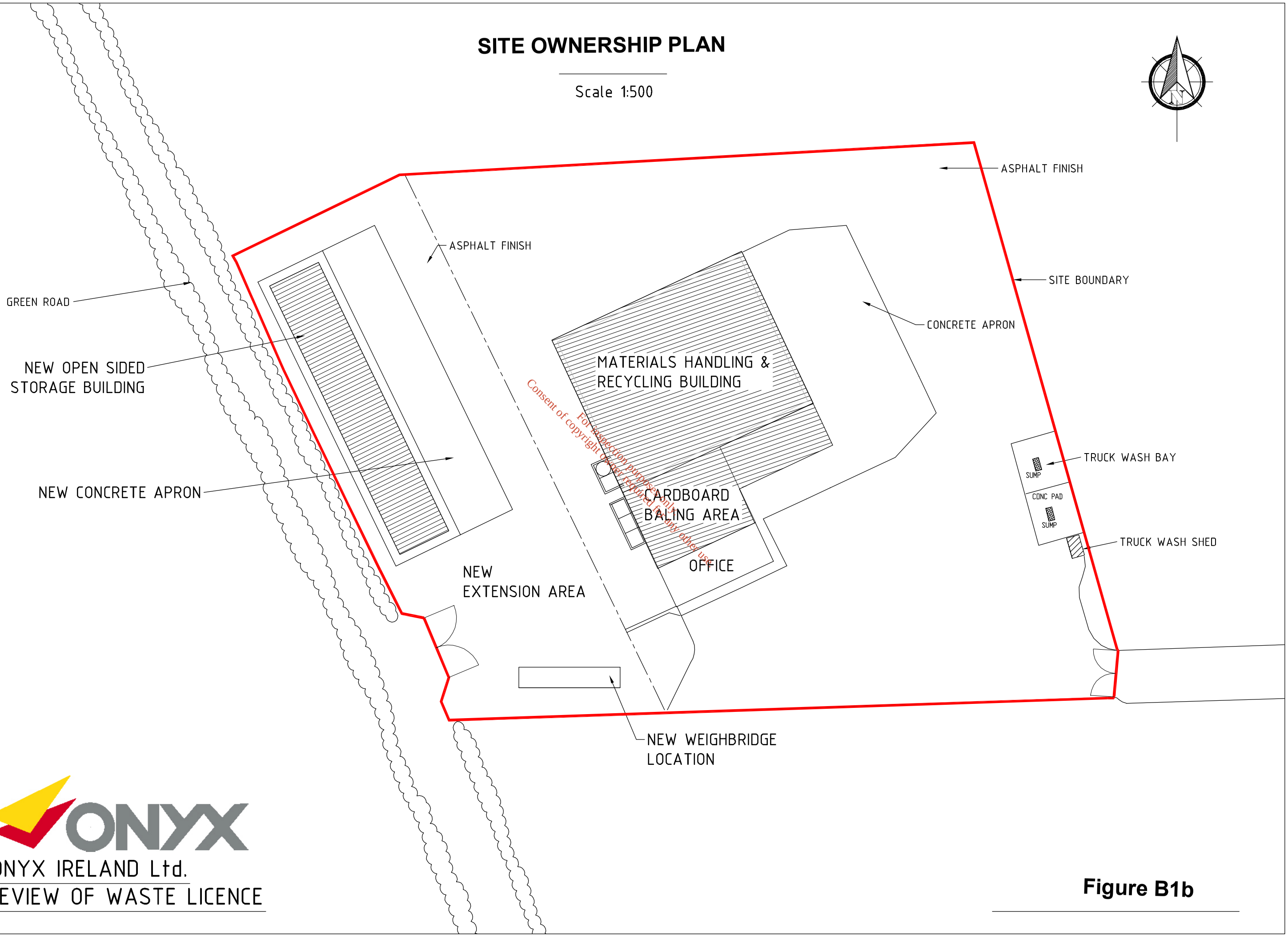
(1)	Site Location Map	Drawing A.1.a
(2)	Site Ownership Plan	Drawing B.1.b
(3)	Planning Permissions for Site to Date	
(4)	Copy of Collection Dockets	
(5)	Copy of Weighbridge Dockets	
(6)	Site Layout Plan	Drawing D.1.a. Rev1
(7)	Hardstanding Area	Drawing D.1.e Rev1
(8)	Traffic Control Plan	Drawing D.1.c Rev1
(9)	Site Services Plan	Drawing B3
(10)	Main Inflow Meter	Drawing D.1.f Rev 1



Site Location Map Figure A1-a

SITE OWNERSHIP PLAN

Scale 1:500



ONYX IRELAND Ltd.

REVIEW OF WASTE LICENCE

Figure B1b

BARDAS PHORTLAIRGE

WATERFORD CORPORATION

LOCAL GOVERNMENT
(PLANNING & DEVELOPMENT)
ACTS, 1963 TO 1999

NOTIFICATION OF DECISION TO GRANT - SUBJECT TO CONDITIONS

TO: M & M O'Shea
C/O John Santry
Belvedere,
Newtown,
Waterford.

PLANNING REGISTER NUMBER : 99/413

VALID APPLICATION RECEIVED: 22/10/1999

FURTHER INFORMATION RECEIVED DATE ::

In pursuance of the powers conferred upon them by the above-mentioned Acts, Waterford Corporation have by Order dated 24/02/2000 decided to GRANT permission for development of land, namely:-

build a workshop (156m2 approx), warehouse (850m2 approx) and offices (198m2 approx) together with associated site development works and associated services installation all on site to the N.E. of proposed ring road at Carriganard Six Cross Roads Kilbarry, Waterford.

Subject to the 7 conditions and reasons therefor set out in the attached schedule.

If there is no appeal against the said decision, a final grant notification in accordance with the decision will be issued after the expiration of the period within which an appeal may be made to An Bord Pleanala. (See footnote).

It should be noted that until a grant of permission/approval has been issued the development/retention in question is NOT AUTHORISED.

ASSISTANT TOWN CLERK

Date: 24/02/2000

N.B. READ CAREFULLY NOTES ON REVERSE SIDE

PLANNING FILE REF. 99/413

WORKSHOP/WAREHOUSE AND OFFICE AT CARRIGANARD, WATERFORD

SCHEDULE

CONDITION

1. The development shall be carried out in accordance with the plans and particulars lodged with the Planning Authority on 23rd December 1999, save as the conditions hereunder otherwise require.

REASON

1. In the interests of clarity.

CONDITION

2. A building line of 10m shall be maintained along the eastern boundary with the Outer Ring route reservation.

REASON

2. It is considered that the proposed building line is inadequate and that a 10m minimum building line is reasonable having regard to a scale and status of the proposed road.

CONDITION

3. Prior to the commencement of development details of the following shall be submitted to and be to the satisfaction of the Planning Authority :-

(A) A detailed landscaping and planting scheme for the site.

(B) Details of the proposed external finishes of both buildings

(C) Details of any proposed signs

No development shall commence until the consent of the Planning Authority on these matters has been received.

REASON

3. In the interests of protecting the visual amenities of the area.

CONDITION

4. (A) The area of land within the curtilage of the site shall be kept free from refuse/litter arising from the use of the site for industrial purposes.

(B) No open storage of raw materials, goods or waste shall take place.

REASON

4. In the interests of protecting the visual amenities of the area.

CONDITION

5. Prior to commencement of development, the developer shall pay a contribution of £4,955 to Waterford Corporation in respect of road improvements in the area, which facilitate the proposed development. The amount payable will be determined by the then current rates in the Waterford City Development Plan, subject to the provision of repayments stipulated in Section 26 (2) (h) of the Local Government (Planning & Development) Act 1963.

REASON

5. Road improvements in the area carried out by Waterford Corporation will facilitate the proposed development

CONDITION

6. Prior to commencement of development the developer shall pay a contribution to Waterford Corporation in respect of recent and proposed improvements to the public mains water supply system which will facilitate the proposed development. The present value of the contribution is £4,247. The amount payable will be determined by the then current rates in the Waterford City Development Plan, subject to the provision of repayments stipulated in Section 26 (2) (h) of the Local Government (Planning & Development) Act, 1963.

REASON

6. Recent and proposed improvements to the public mains water supply system will facilitate the proposed development.

CONDITION

7. Prior to commencement of development the developer shall pay a contribution to Waterford Corporation in respect of recent and proposed improvements to the public main drainage system which will facilitate the proposed development. The present value of the contribution is £4,247. The amount payable will be determined by the then current rates in the Waterford City Development Plan, subject to the provision of repayments stipulated in Section 26(2)(h) of the Local Government (Planning & Development) Act, 1963.

REASON

7. Recent and proposed improvements to the public mains drainage system will facilitate the proposed development.

AHAIRLE CATHRACH PHORTLAIRGE Local Government (PLANNING & DEVELOPMENT) ACTS 2000-2002

WATERFORD CITY COUNCIL

NOTIFICATION OF A GRANT OF A PERMISSION / OUTLINE / APPROVAL

TO: Deltona Ltd,
M Ahearne & Assoc Ltd.
Project Managers/Engineers
No. 4 Dr. Croke Place
Clonmel
Co. Tipperary

PLANNING REGISTER NUMBER: 03/723

APPLICATION RECEIPT DATE: 30/12/2003

In pursuance of the powers conferred upon them by the above-mentioned Acts, Waterford City Council have by Order dated 04/06/2004 granted PERMISSION to the above named, for the development of land, namely:-

extension to the existing waste transfer facility operated by Ipodec Ireland Ltd. The development will comprise of:(A) The increase in the site area (B) The construction of a new vehicular entrance from the Green Road. (C) The relocation of the existing weighbridge. (D) The construction of an open sided transfer and storing facility. (E) Site development works necessary to facilitate the development. It is noted that the activities undertaken within the proposed development are subject to a Waste Licence. at Site 14, Six Cross Rds.Buss.Park, Kilbarry,

Subject to the 3 conditions set out in the Schedule attached.

Signed on behalf of Waterford City Council.

for DIRECTOR, PLANNING & ENVIRONMENT

Date : 04/06/2004

(It should be noted that where OUTLINE permission only is granted same is subject to the subsequent Approval of the Planning Authority and until such Approval has been obtained to detailed plans of the development proposed, the development is NOT AUTHORISED)

LOCAL GOVERNMENT (PLANNING & DEVELOPMENT) ACTS 2000-2002

File Ref. No: 03/723

RE: Permission to extend the existing waste transfer facility operated by IPODEC Ireland Ltd. The development will comprise of A) The increase in the site area B) The construction of a new vehicular entrance from the Green Road. C) The relocation of the ex sting weighbridge. D) Construction of an open sided transfer and storing facility. E) Site development works necessary to facilitate the development. It is noted that the activities undertaken within the proposed development are subject to Waste Licence at Site 14, Six Cross Roads Business Park, Waterford.

Decision: Pursuant to the Planning & Development Acts it is recommended for the reason set out in the First Schedule hereto, to grant permission for the said development in accordance with the said plans and particulars, subject to the conditions specified in the Second Schedule hereto.

First Schedule

Having regard to the existing use of the premises to the plans submitted and to the scale of the proposed development it is considered that subject to compliance with the conditions outlined in the Second Schedule, the proposed development would be in accordance with the proper planning and sustainable development of the area.

Second Schedule

Condition

1. The proposed development shall be carried out in accordance with the plans and details received on 30/12/03 and with the revised site layout plan and details received on 12/03/04 unless otherwise altered by way of condition below

Reason

1. In the interests of clarity and the proper planning and sustainable development of the area.

Condition

2. Before any development commences on site the following details shall be submitted and agreed in writing with the Planning Authority:

(a) a detailed landscaping plan, prepared by a qualified landscape architect, to include for the screening of the entire western and northern site boundaries and part of the southern boundary.
(b) Proposals for treatment of entrance.
(c) External finishes to transfer a storing facility.

Reason

2. In the interests of visual amenity and the proper planning and sustainable development of the area.

Condition

3. Proposed boundary wall shall be capped and plastered.

Reason

3. In the interests of visual amenity and the proper planning and sustainable development of the area.

Onyx Ireland Ltd
Carrignard, Six Cross Road,
Waterford, Ireland
Tel. : (051) 333944
Fax : (051) 333945

286501

DISPOSAL DOCKET

DATE: _____

VEHICLE REGISTRATION:

BIN SIZE:

WEIGHT:

WEIGHT DOCKET NO:

DISPOSAL SITE:

BONUS:

Terms and Conditions available on request

Onyx Ireland Ltd
Carrignard, Six Cross Road,
Waterford, Ireland
Tel. : (051) 333944
Fax : (051) 333945

Permit No. WR/02/00

286501

SERVICE DOCKET

DATE: TIME:

DROP ☐ EXCHANGE ☐ SERVICE ☐ REMOVAL ☐ PICK-UP ☐

CLIENT & LOCATION:

VEHICLE REGISTRATION: _____

TYPE

REL/FEL: Op. ☐ Cl. ☐ Mini ☐ Wheelie ☐ Bale ☐ Bags ☐

RORO: Static ☐ Portable ☐ Large ☐ Flat ☐

SKIP: Static ☐ Portable ☐ Large ☐ Flat ☐

SERVICE: PERMANENT ☐ CASUAL ☐

WASTE EWC: Paper 200101 ☐ Gen. 200301 ☐ Crb. 150101 ☐ Wood 200138 ☐ Plastic 150102 ☐ Metal 200140 ☐ Rubble 170107 ☐

COMMENTS _____

SIGNATURE OF CLIENT: _____

PRINT DRIVER: PRINT _____

Terms and Conditions available on request

IpodecWaterford ONYX

WEIGHBRIDGE DOCKET

ONYX IRELAND LIMITED
Ballymount Cross - Tallaght - Dublin 24 - Ireland.
Tel: Admin.: (01) 4136500 - Fax: Admin.: (01) 4136501/6502
Tel. Operations: (01) 4136565. Fax Operations: (01) 4136566

South Dublin County Council & IPODEC,
Solid Waste Bailing Transfer Station,
Ballymount Avenue, Ballymount, Dublin 12.
Tel: (01) 4621251 Fax: (01) 4525145

Galvone Industrial Estate - Limerick - Ireland.
Tel.: (061) 413688 Fax: (061) 413469

Carrignard - Six Cross Road - Waterford - Ireland.
Tel.: (051) 333944 Fax: (051) 333945

Forge Hill - Kinsale Road - Cork - Ireland.
Tel.: (021) 4328028 Fax: (021) 4328029

IN-047872

Charge:£ 0 EUR: 0.00

Product Description: WOOD		Product Code: 200138	Registration No.: 05KK3103 IVAN
Date: 21/02/2006	Date: 21/02/2006	Transaction No.: 047249	Customer / Supplier: LAKE REGION
Time: 15:29:48	Time: 15:42:49	Goods In/Out: IN	Account No.: 034434
First Weight: 19100 kg	Second Weight: 18060 kg	Nett Weight: 1040 kg	Address: LAKE REGION NEW ROSS
Container No./Ref.: 001	Conversion Factor: IPODEC	Nett Volume	

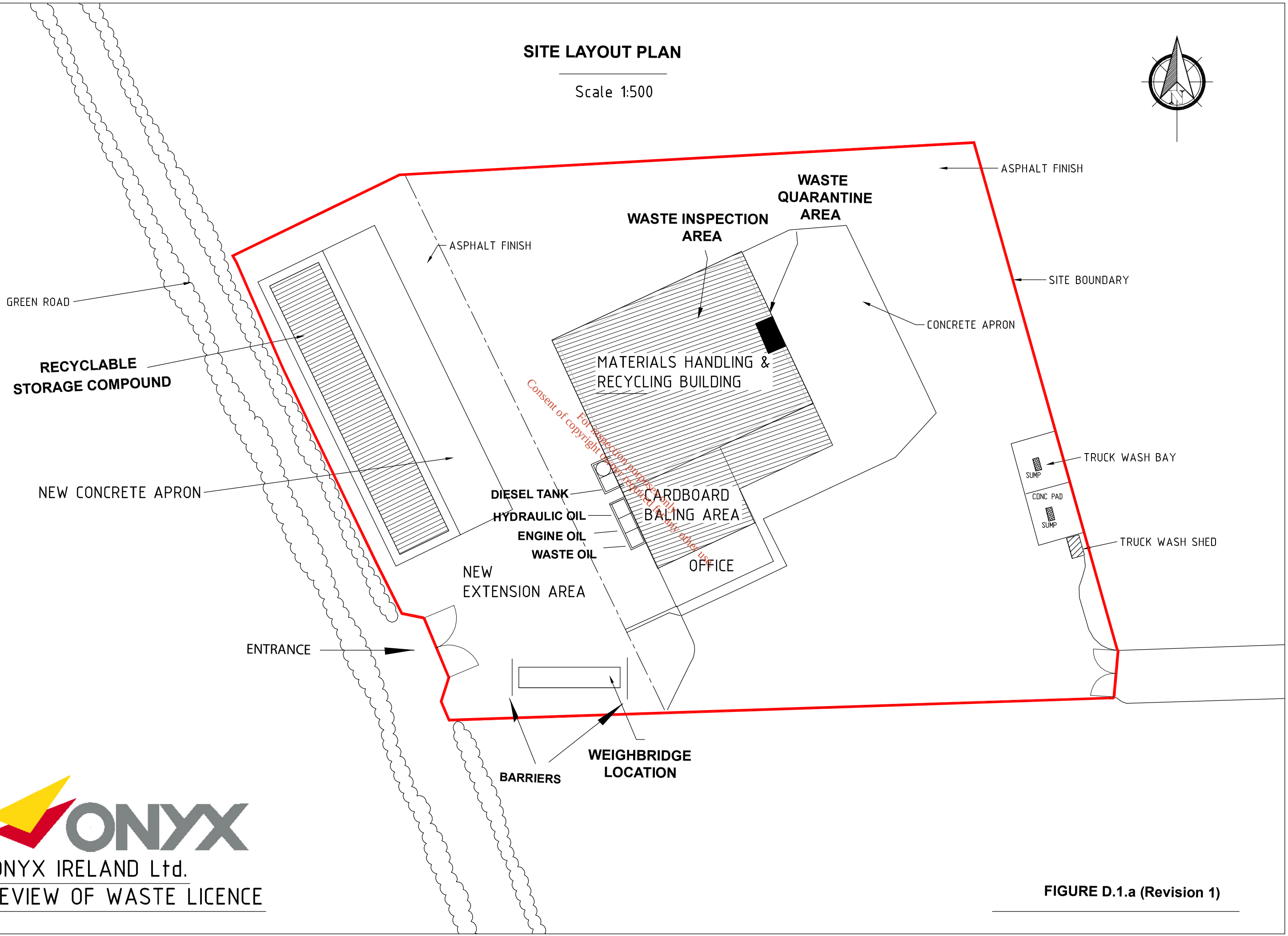
Weighbridge Signature

Driver's Signature
INSPECTOR MICHAEL MEAHER

RiteWeigh - Payload 21/02/2006 15:42:52 0089934 0089938 WATERFORD TRANSFER STATION

SITE LAYOUT PLAN

Scale 1:500



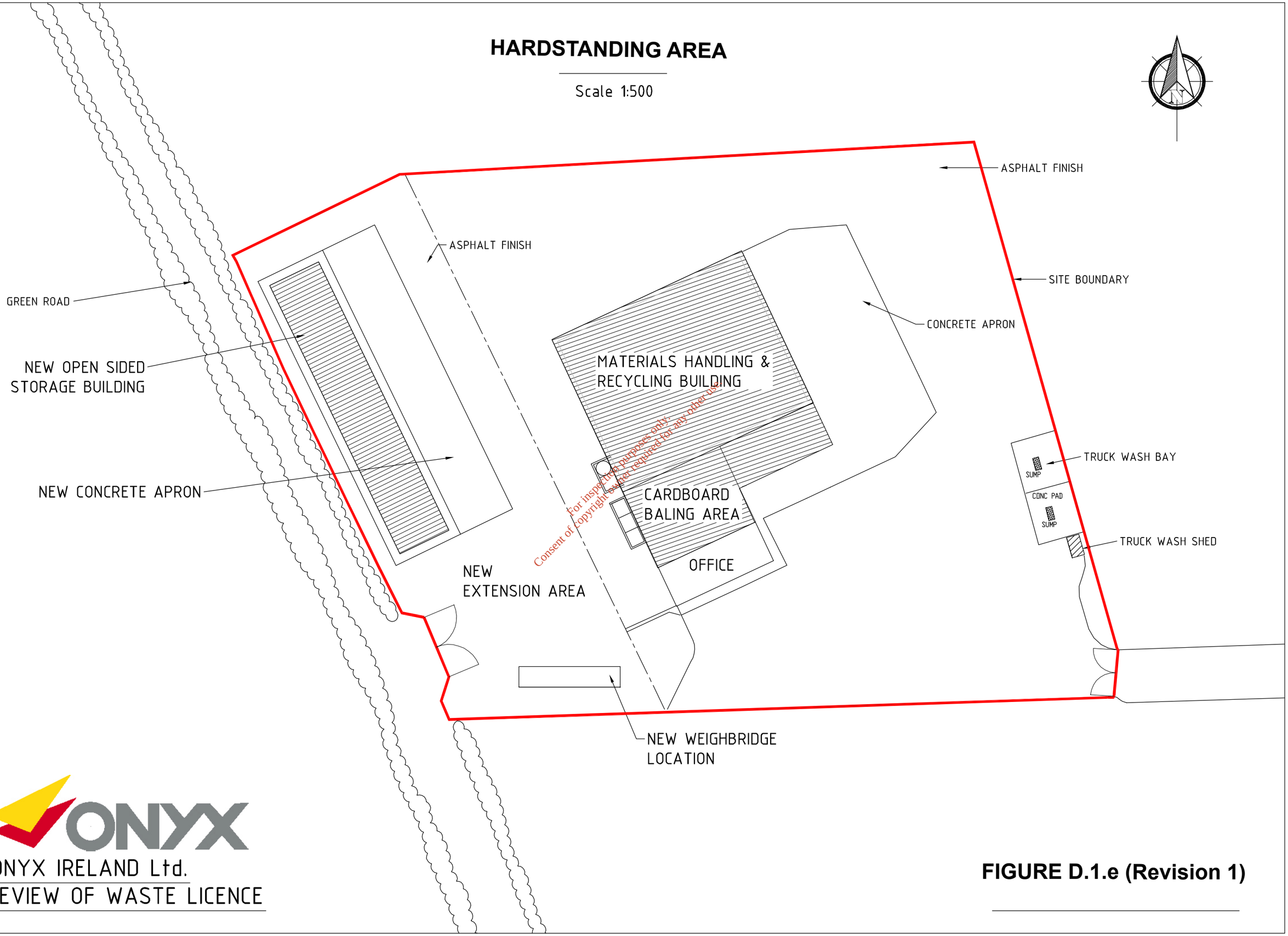
ONYX IRELAND Ltd.

REVIEW OF WASTE LICENCE

FIGURE D.1.a (Revision 1)

HARDSTANDING AREA

Scale 1:500



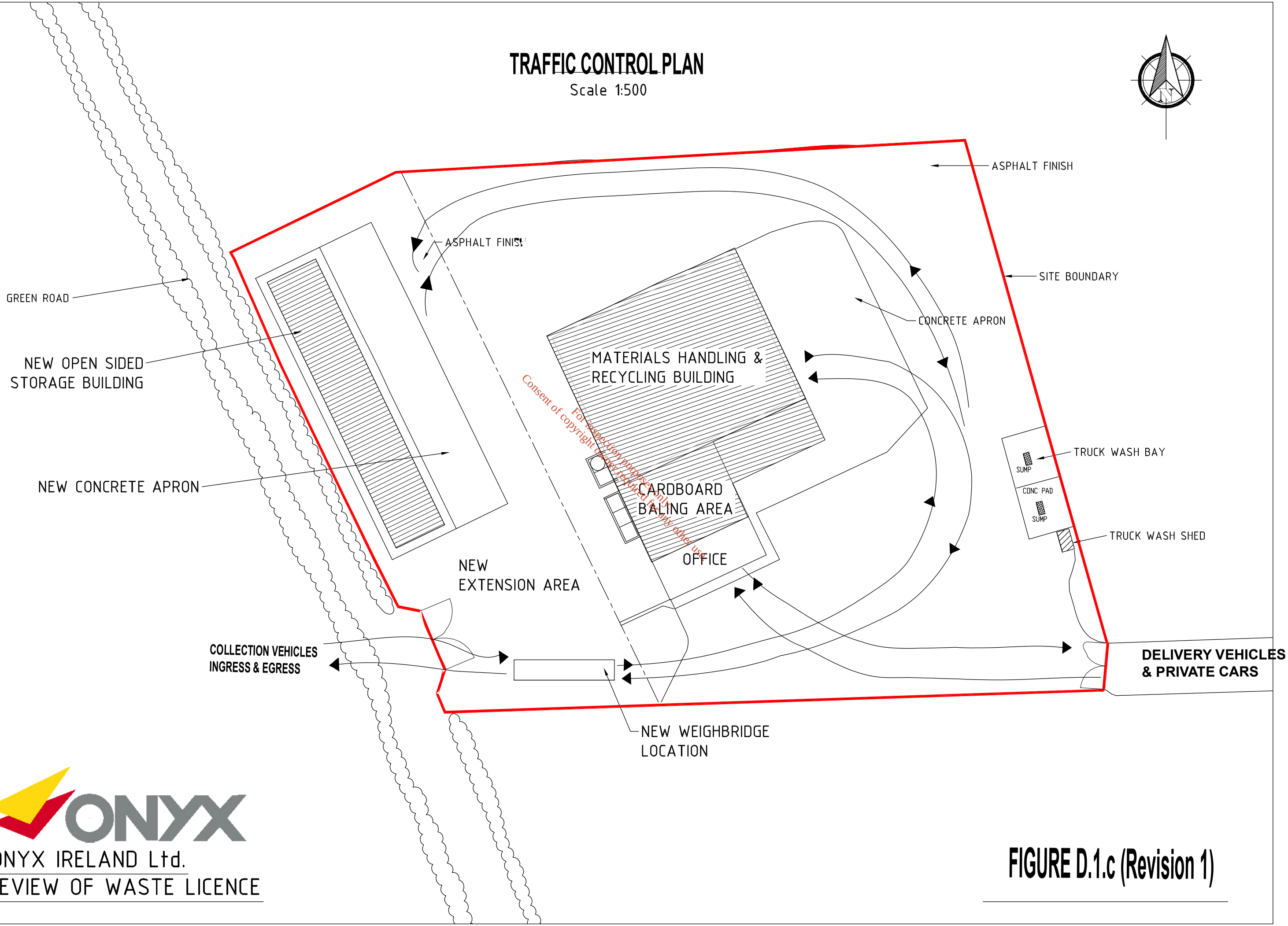
ONYX IRELAND Ltd.

REVIEW OF WASTE LICENCE

FIGURE D.1.e (Revision 1)

TRAFFIC CONTROL PLAN

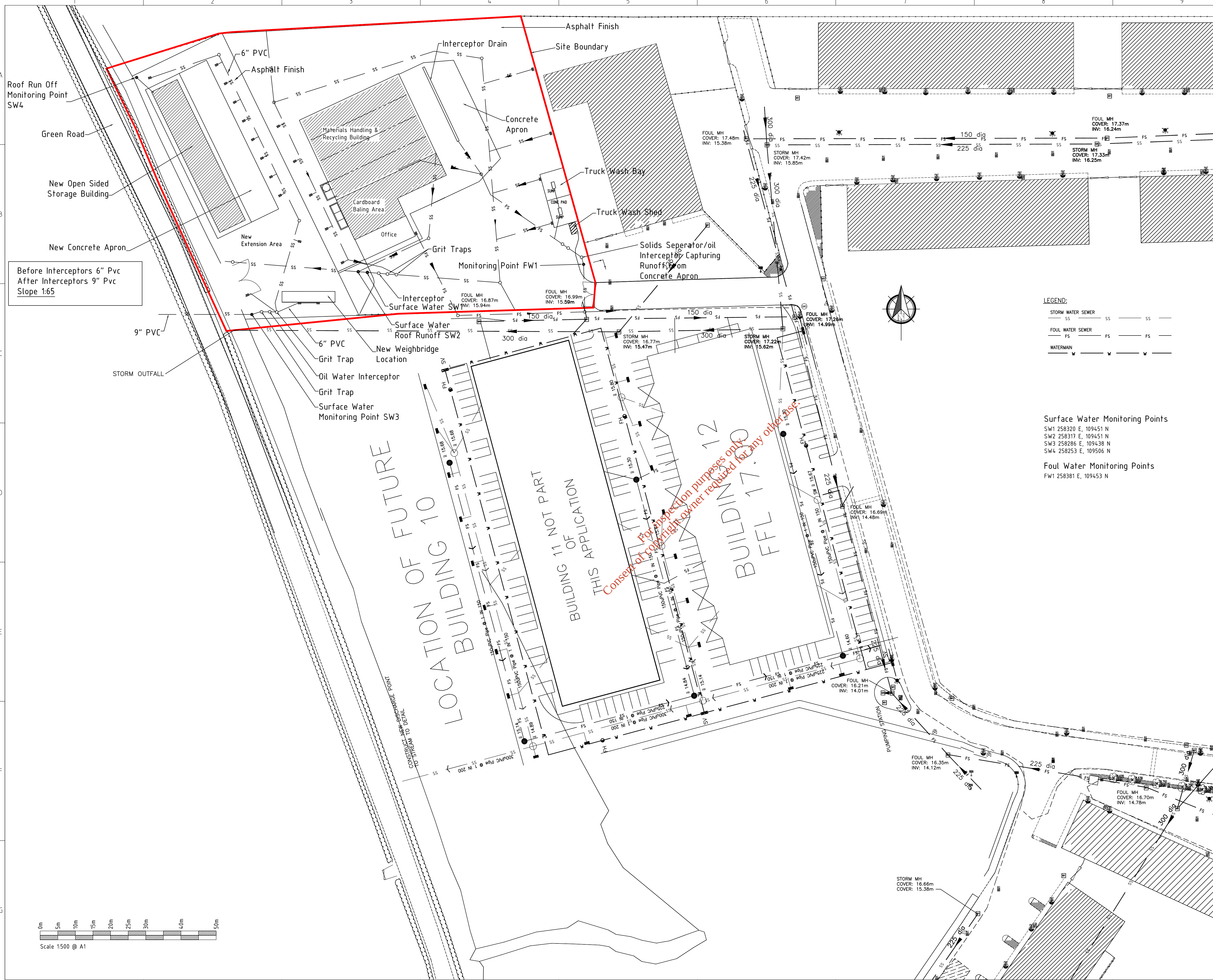
Scale 1:500



ONYX IRELAND Ltd.

REVIEW OF WASTE LICENCE

FIGURE D.1.c (Revision 1)



Asphalt Finish
Site Boundary
Interceptor Drain
6" PVC
Asphalt Finish
Roof Run Off Monitoring Point SW4
Green Road
Concrete Apron
Materials Handling & Recycling Building
Truck Wash Bay
New Open Sided Storage Building
Cardboard Baling Area
Truck Wash Shed
Office
New Extension Area
New Concrete Apron
Grit Traps
Solids Seperator/oil Interceptor Capturing Runoff From Concrete Apron
Monitoring Point FW1
Before Interceptors 6" Pvc
After Interceptors 9" Pvc
Slope 1:65
Interceptor
Surface Water SW1
9" PVC
Surface Water Roof Runoff SW2
6" PVC
Grit Trap
New Weighbridge Location
STORM OUTFALL
Oil Water Interceptor
Grit Trap
Surface Water Monitoring Point SW3
LOCATION OF FUTURE BUILDING 10
BUILDING 11 NOT PART OF THIS APPLICATION
BUILDING 12 FFL 17.00
CONSTRUCT NEW DISCHARGE POINT TO STREAM TO DETAIL
PUMPING STATION
LEGEND:
STORM WATER SEWER
FOUL WATER SEWER
WATERMAIN
Surface Water Monitoring Points
SW1 258320 E, 109451 N
SW2 258317 E, 109451 N
SW3 258286 E, 109438 N
SW4 258253 E, 109506 N
Foul Water Monitoring Points
FW1 258381 E, 109453 N
Scale 1:500 @ A1

Rev.	Drawn	Chkd	Appvd	Date	Description
A	PS	PL		02.03.2006	ISSUE FOR WASTE LICENSE REVIEW

Name of Client
ONYX Ireland Ltd.

Name of Job
ONYX, WATERFORD DEPOT
WASTE LICENSE REVIEW

Title of Drawing
SITE SERVICES PLAN

Scales Used
1:500 @ A1, 1:1000 @ A3

Dwg. No.
2006-115-02-Fig. B.3

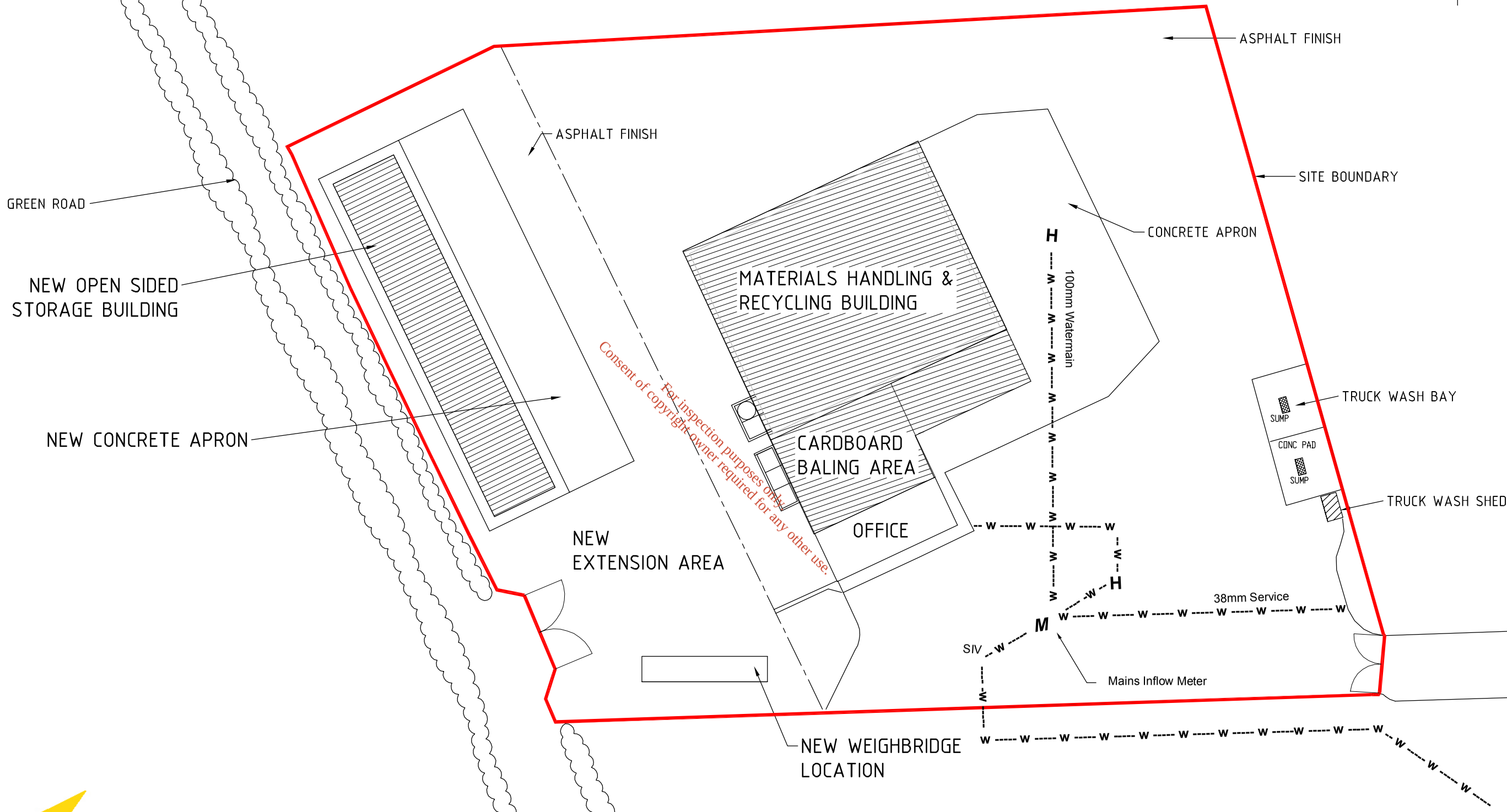
Rev.
A

FEHILY TIMONEY & COMPANY
CONSULTANTS IN ENGINEERING & ENVIRONMENTAL SCIENCES
CORE HOUSE, POULADUFF Rd, CORK, IRELAND.
Phone: +353-21-4964133, Fax.: +353-21-4964464, Email: info@fftco.ie
WEB SITE: www.fehilytimoney.ie

ORIGINAL DRAWING SIZE A1 - (841 x 594)

MAIN INFLOW METER

Scale 1:500



ONYX IRELAND Ltd.

REVIEW OF WASTE LICENCE

Figure D1f Rev1

LEGEND

-- w -- w --□ Mains Water Supply

APPENDIX III

Please find overleaf the following items:

(1) Onyx Noise Report
(2) Noise Monitoring Locations Drawing F.2.a
(3) Odour Abatement System Drawing F.1.a
(4) Dust Monitoring Reports
(5) Dust Sampling Points Drawing F.2.a
(6) Pest Control Stations Drawing D.1.g Rev1
(7) MSDS Sheet

ONYX IRELAND LTD.

NOISE MONITORING AT

SIX CROSS ROADS BUSINESSS PARK
WASTE TRANSFER STATION,
CARRIGNARD,
BUTLERSTOWN,
CO. WATERFORD.

OCTOBER 2005

This report has been prepared by Onyx Ireland Ltd

REPORT NUMBER:	**Noise Report W2005#01**
STATUS OF REPORT:	**Final**
DATE OF REPORT:	**23/10/05**
PREPARED BY:	**Ms Mary Dwane**

CONTENTS

Page

LIST OF APPENDICES

1. INTRODUCTION

ONYX Ireland Ltd. was granted a Waste Licence by the EPA (Waste Licence Reference No.177-1 in November 2003 to operate a Waste Transfer Station located at Six Cross Roads Business Park, Carrignard, Butlerstown, Co. Waterford. The site was previously permitted by Waterford Corporation but due to an increase in waste tonnages it was necessary to apply for an EPA Waste Licence, which was granted in November 2003. Condition 7.1 and schedule D.3 specify that Noise Monitoring must be carried out on an annual basis at the facility.

Personnel from Onyx Ireland Ltd. carried out the noise monitoring at the facility and subsequently visited the site on the 5^{h} and 6th October 2005 to conduct the night-time and daytime noise monitoring survey as per Conditions of Waste Licence 177-1. The Waste Licence requires that a night-time and daytime noise monitoring survey be carried out at three predetermined noise monitoring positions, (N1, N2 and N3) at the site on an annual basis and at two noise sensitive locations in the vicinity of the site NS1 and NS2. This report details the findings of this assessment.

1.1 SITE DESCRIPTION

The ONYX Ireland Ltd., waste transfer station is situated within the Six Cross Roads Business Park, Carrignard, approximately 2 km south west of Waterford City. The Waste Transfer Station is situated in the northwestern area of the industrial estate. The site layout plan is given in Appendix 1. The facility is surrounded in the industrial estate by various commercial and industrial buildings, within the business park. To the North of the facility is located the ONYX Managed Composting Facility, which is currently fully operational. Adjacent operational industrial units occupy the areas to the east of the ONYX site. The area to the west of the ONYX site comprises of currently undeveloped land that is zoned for industrial use. The eastern and northern boundaries of the ONYX site are shared with adjoining operational industrial units, within the industrial estate and the southern site boundary is shared with the adjacent construction site.

Land use in the area surrounding the industrial estate is predominantly agricultural. The industrial estate is situated between two third class public roads near the site. One of the third class roads leads to the townland of Ballybeg (to the north east of the site) via the six cross roads junction, to the south of the industrial park. The second third class road provides access from the townland of Kilbarry to the northwest of the site with the six cross roads junction. The waste transfer station is situated approximately 200m from the third class road to the west of the Business Park and approximately 300m from the third class road to the east of the site. The new Waterford outer Ring Road situated to the South of the Facility. The nearest residential dwelling to the site is located approximately 500 metres north east of the site (adjacent to the third class road to the east of the business park).

Waste handling activities at the facility consist of accepting and bulk loading of commercial industrial and municipal waste for disposal to KTK Landfill, Co Kildare, Tramore Landfill, Co Waterford, Powerstown Landfill, Co Carlow or Onyx Ireland Ltd. Ballymount, Dublin. In addition recyclable waste materials (cardboard, paper, timber, plastic and metal) are

segregated from the waste streams and sent off-site to recycling companies or to other Onyx Transfer facilities for further processing.

2. METHODOLOGY

2.1 NOISE MONITORING

The noise survey was conducted to be representative of both the daytime and night-time periods, and the permitted operating hours of the waste transfer station, 07:00 – 20.00 Monday to Friday and 07:00 – 18:00 on Saturdays. This comprised of a noise survey that was conducted during the night-time noise monitoring period (22:00 – 08:00), and the daytime noise monitoring period (08:00 – 22:00). Noise measurements were taken over appropriate sampling times i.e. 30-minutes during the daytime and nighttime noise survey. A number of acoustical parameters were noted for each sample period namely, the L_{Aeq}, L_{A10} and L_{A90}, and the. One-third octave band analysis was recorded at each noise monitoring location, to determine the presence of tonal components.

The noise monitoring was carried out using cirrus CR800A Sound Level Meter. 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.

L_{Aeq} Is the A-weighted equivalent continuous sound level during the 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.

$^1/_3$ Octave One-third octave band analysis is a method of analysing the detailed structure of a noise, i.e. the frequency spectrum of a noise. As the name suggests, these are bands of frequency, which are a third of the width of an octave band. A single-octave band is described by its "centre frequency", (which is the geometric mean of the upper and lower frequency limits). The centre frequencies of the one-third octave bands are 25 Hz, 31.5 Hz, 40 Hz, 50 Hz, 63 Hz, 80 Hz, 100 Hz, 125Hz, 160

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

dB(A) A logarithmic noise scale (decibel). The "A" indicates that a frequency weighting has been applied to take account of the variation in the sensitivity of the human ear as a function of frequency.

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

2.2 NOISE MONITORING LOCATIONS

Noise measurements were recorded at the northern (N1), Southern (N2) and Western (N3) site boundaries and at 2 locations outside of the facility to the Northeast and North West of the site, as outlined in Table 2.1. The locations of the noise monitoring points are given in Appendix 1. Noise levels at the site boundary monitoring positions were compared to the 55 dB(A) daytime and 45 dB(A) night-time sound pressure levels specified the Waste Licence for the facility.

Table 2.1 Noise Monitoring Locations

Measurement No.	Reference No.	Monitoring Period	Description
1	N1	Night-time	Northern Site Boundary
2	N2	Night-time	Southern Site Boundary
3	N3	Night-time	Western Boundary
4	NS1	Night-time	North West of Site
5	NS2	Night-time	North east of Site

Measurement No.	Reference No.	Monitoring Period	Description
1	N1	Day-time	Northern Site Boundary
2	N2	Day-time	Southern Site Boundary
3	N3	Day-time	Western Boundary
4	NS1	Day-time	North West of Site
5	NS2	Day-time	North east of Site

3. RESULTS

3.1 MONITORING CONDITIONS

Noise monitoring was carried out at three boundary positions (N1, N2 and N3 as specified in Table 2.1) at the Waste Transfer Station site and also at two noise sensitive locations to the North East and North West of the Facility. Monitoring was carried out representative of both the nighttime and daytime noise monitoring periods. There are no operations carried out at the waste transfer station during the night. The weather conditions during the monitoring period were dry with a slight breeze from a north-westerly direction

3.2 MONITORING LOCATIONS

3.2.1 Night-time Noise Monitoring

Northern Site Boundary (N1)

Noise monitoring at N1 was conducted at the northern site boundary, (refer to Appendix 1), which is delineated by a palisade fence and is bounded by the Local Authority Composting Site, which is managed by Onyx Ireland Ltd. There were no activities on-site at the Onyx Waste Transfer Station or at the adjacent composting site during the nighttime noise survey, with the exception of the operation of Blowers at the composting site.

Southern Site Boundary (N2)

The noise measurement at N2 was conducted at the southern site boundary, (refer to Appendix 1), which is also delineated by a palisade fence. The southern site boundary is delineated by a palisade fence and bounded by a construction site.

Western Site Boundary (N3)

The noise measurement at N3 was conducted at the Western site boundary, (refer to Appendix 1), which is also delineated by a palisade fence and is bounded by a third class road, used for access to the Onyx Facility.

Noise Sensitive Locations

NS1 – North East of Site
The noise measurement at NS1 was conducted in the Ballybeg estate, located to the North East of the Site. This is mainly a residential area.

NS2 – North West of Site
The noise measurement at NS2 was conducted on the Kilbarry Road, at the entrance to the industrial estate, to the North West of the Onyx Facility.

3.2.2 Daytime Noise Monitoring

Northern Site Boundary (N1)

The N1 daytime monitoring position was the same as the position at N1 during the night-time survey, (refer to section 3.2.1). Site activities had commenced and waste handling activities were operational on-site at the transfer station during the daytime noise-monitoring period. Operations had also commenced at the adjacent Composting site during monitoring

Southern Site Boundary (N2)

The N2 daytime monitoring position was the same as the position at N2 during the nighttime survey, (refer to section 3.2.1). Waste handling activities were also operational at the site during the daytime noise monitoring period at N2. Operational activities were in progress at the adjacent industrial units to the east and the south of the Onyx site during the noise survey.

Western Site Boundary (N3)

The N3 daytime monitoring position was the same as the position at N3 during the nighttime survey, (refer to section 3.2.1). Waste handling activities were also operational at the site during the daytime noise monitoring period at N3 and there was construction traffic passing approximately 50 meters to West of monitoring point.

Noise Sensitive Locations

NS1 – North West of Site
The NS1 daytime monitoring position was the same as the position at NS1 during the nighttime survey, (refer to section 3.2.1). The main activity was from passing traffic, as this is a mainly residential with very few industrial units.

NS2 – North East of Site
The NS2 daytime monitoring position was the same as the position at NS2 during the nighttime survey, (refer to section 3.2.1). There was activity in the adjacent industrial units in addition to construction traffic operating to the Southeast of the monitoring. There was also a significant amount of passing traffic on the Kilbarry road.

3.3 RESULTS

The noise levels recorded at each monitoring location, including noise sensitive locations for night-time and daytime monitoring requirements are presented in Table 3.1.

A noise source is considered tonal if a particular frequency is clearly audible or if a 5 dB(A) or greater noise level exists between flanking frequencies. In accordance with ISO 1996-1:1982 "*Description and Measurement of Environmental Noise*", a 5 dB(A) penalty is added to the measured ambient noise level (L_{Aeq}) when assessing noise impacts, if a tonal component is determined. The penalty of 5 dB(A) has been added to the ambient noise levels recorded during baseline noise survey where tonal components were determined.

Table 3.1 Nighttime and Daytime Noise Measurements recorded at Onyx Ireland Ltd., Waste Transfer Station - Six Cross Roads Business Park, Carrignard, Co. Waterford (5th & 6th October 2005).

Reference No.	Description	Measurement	Frequency A- Weighted											
			31.5	63	125	250	500	1k	2k	4k	8k	L_{Aeq}	L_{A10}	L_{A90}
Night-time														
N1	Northern Site Boundary	22.06 – 22.36 30 mins	59	46	42	48	45	39	38	40	38	46 No Tonal Components	49	45
N2	Southern Site Boundary	23.31 – 00.01 30 mins	48	46	42	39	40	44	38	39	39	47 No Tonal Components	49	44
N3	Western Site Boundary	22.50 – 23.20 30 mins	52	52	42	41	40	41	39	38	38	46 No Tonal Components	51	43
NS1	North West of Site	00.20 – 00.50 30 mins	59	50	42	42	49	44	40	38	38	53 No Tonal Components	55	49
NS2	North East of Site	01.10 – 01.40 30 mins	49	48	47	49	53	45	41	40	38	52 No Tonal Components	58	46

Reference No.	Description	Measurement	Frequency A- Weighted											
			31.5	63	125	250	500	1k	2k	4k	8k	L_{Aeq}	L_{A10}	L_{A90}
Daytime														
N1	Northern Site Boundary	11.40 – 12.10 30 mins	85	75	65	57	60	47	43	50	45	64 No Tonal Components	150	54
N2	Southern Site Boundary	10.57 – 11.27 30 mins	71	73	63	63	54	50	48	41	37	64 No Tonal Components	62	58
N3	Western Site Boundary	10.14 – 10.44 30 mins	63	58	46	43	50	46	49	41	39	55 No Tonal Components	68	48
NS1	North West of Site	12.32 – 13.02 30 mins	68	68	63	62	61	54	51	44	39	63 No Tonal Components	150	61
NS2	North East of Site	14.30 – 15.00 30 mins	71	76	67	67	60	58	51	45	38	66 No Tonal Components	69	55

4. DISCUSSION

Night-time and daytime sound pressure levels and third octave (tonal) measurements were recorded at three site boundary positions, (N1, N2 and N3) at the Onyx Ireland Ltd. waste transfer station at the Six Cross Roads Business Park and two additional locations to the South East and North West of the Site. The noise levels measured at the monitoring locations N1, N2 and N3 are compared to the noise emission limits specified in Waste Licence 177-1 for the facility, of 55 dB(A) daytime and 45 dB(A) night-time off-site at noise sensitive locations.

4.1 NIGHT-TIME NOISE MONITORING

4.1.1 Northern Site Boundary (N1)

The night-time L_{Aeq} measured at N1 was 46 dB(A), which marginally exceeds the limit value of 45 dB(A). There were no tonal components determined during the noise monitoring period at this point. The dominant noise source at N1 originated from equipment on the adjacent compositing site, such as blowers and also traffic movements at the nearby DHL facility. There were no operations at the Onyx Transfer Facility during this period. However, a noise level of 1dB(A) would not be audible to the ear and an exceedance of 1dB(A) would not be considered a source of nuisance. The background level recorded (L_{A90} level of 45 dB(A)), attributable to the traffic noise and noise from adjacent facilities is similar to the levels recorded on-site, which would indicate that noise levels recorded are due to off-site activities.

4.1.2 Southern Site Boundary (N2)

The L_{Aeq} monitored at N2 during the nighttime was 47 dB(A), which exceeds the recommended limit by 2dB(A). There were no tonal aspects detected during monitoring. The main source of noise at this location was from the new Outer Ring Road, located approximately 500 meters to the north of the facility. A steady flow of traffic was clearly audible during the monitoring period, including a large quantity of heavy goods vehicles. There were no operations at the Onyx facility during the period of monitoring. A background noise level of 44 dB(A) was recorded at this point.

4.1.3 Western Site Boundary (N3)

The L_{Aeq} monitored at N3 during the nighttime was 46dB(A) but there were no tonal components determined. The main noise sources at this location were from traffic noise in the distance to the north west of the monitoring point and also traffic noise to the south of the monitoring point on the outer ring road. A background level of 43 was recorded at this monitoring point.

4.1.4 North West of site (NS1)

The L_{Aeq} measured at noise sensitive location NS1 during the nighttime was 53dB(A) with no tonal components determined. This monitoring point is located in Ballybeg estate, to the north west of the facility, approximately 0.5 Km from the Onyx facility. The main noise sources at this location were traffic noise such as HGV's passing directly beside the monitoring point. There were no audible noise sources from the Onyx Facility at this monitoring point.

4.1.5 South East of Facility (NS2)

The L_{Aeq} measured at NS2 during the nighttime was 52dB(A) but there were no tonal components determined. The main noise sources at this location were from traffic noise on the Kilbarry Road, traffic in the industrial estate and traffic on the new Waterford Outer Ring Road. There were no audible sounds from the Onyx Transfer Station at this location during the monitoring period.

4.2 DAYTIME NOISE MONITORING

4.2.1 Northern Site Boundary (N1)

Noise levels monitored at N1 during the daytime monitoring period were influenced by a number of different noise sources. The L_{Aeq} measured at N1 during the daytime was 64dB(A), which is 9dB(A) in excess of the emission limit values specified. There was no tonal component detected at this monitoring point.

Noise levels at N1 during the daytime survey were generally influenced by on-site activities within the Onyx facility. These noise sources included the operation of the front end loader adjacent to the monitoring point, operation of the forklift, waste delivery vehicles and loading of 70m3 trailers for landfill. The operations at the composting facility, directly adjacent to the Onyx Site may also have attributed to the noise levels recorded at this location. A front-end loader was operational at the composting plant during monitoring, which would have contributed to noise levels. Background noise, represented by the L_{A90} level of 54 dB(A) may have been due to traffic and operations at the composting site and other facilities adjacent to the transfer facility would also have contributed to this reading.

4.2.2 Southern Site Boundary (N2)

The L_{Aeq} monitored at N2 during the daytime was 64 dB(A). There were no tonal components detected at this monitoring point. The noise level recorded at N2 during daytime monitoring was influenced by a number of sources.

The dominant noise source at this monitoring point may have been attributable to waste delivery/collection trucks arriving at the site and stopping on the weighbridge. Additional noise sources include construction traffic working adjacent to the facility, constructing new warehouses. Background noise (L_{A90} level of 58 dB(A)) attributable

to road traffic noise to the south of the site was also clearly audible and may possibly have contributed to the final noise level recorded.

4.2.3 Western Site Boundary (N3)

The L_{Aeq} monitored at N3 during the daytime was 55 dB(A), which is compliant with the limits outlined in licence 177-1. There were no tonal components detected at this monitoring point. The noise level monitored at N3 during the daytime was mainly by traffic entering and leaving the Onyx Site. A background noise level of 48 dB(A) was recorded at this monitoring point.

4.2.4 North West of site (NS1)

The L_{Aeq} monitored at NS1 during the daytime was 63 dB(A). There were no tonal components detected at this monitoring point. The dominant noise source was attributable to passing traffic on the Ballybeg Ring road and within the Ballybeg Housing estate. Activities from the Onyx facility were not audible at this location.

4.2.5 North East of Facility (NS2)

The L_{Aeq} monitored at NS2 during the daytime was 66 dB(A). No tonal components were detected at this location.

The noise level monitored at NS2 during the daytime was influenced by a number of sources, but mainly traffic on the Kilbarry Road and the Waterford Outer Ring road. A heavy flow of traffic was noted during the monitoring period, with a large amount of articulated vehicles passing the monitoring location.

4.3 SUMMARY

4.3.1 Night-time

The nighttime noise levels recorded at N1, N2 and N3 were marginally exceeded at each of the monitoring locations. Based on the background levels recorded at each of the monitoring locations, the most likely source of noise was due to off-site traffic noise, particularly from the outer ring road, located approximately 500 meters to the west of the facility. Also a level of 1 to 2 dB(A) would not be audible to the human ear. The levels recorded at the two noise sensitive locations were 52 and 53dB(A) respectively, which exceed the noise levels recorded at the Onyx facility. It is unlikely that any of the nighttime noise levels recorded at the Onyx site would be the cause a of noise nuisance. The exceedance was not associated with operations at the Onyx site as there were no activities at the Onyx facility during the noise-monitoring period. Noise levels recorded off-site at NS1 and NS2 were dominated by passing road traffic.

4.3.2 Daytime

The noise levels monitored at N1 and N2 during the daytime were both found to be elevated above the daytime noise limit value of 55 dB(A). However no tonal components were detected at any of the monitoring locations.

The L_{Aeq} level recorded at N1 was 64dB(A). The L_{Aeq} level recorded at N2 was also 64 dB(A), which is 9dB(A) above the recommended limits.

The elevated levels recorded at both N1 may have been due to on-site activities within the Onyx waste transfer facility and also activities at the adjacent composting facility. The most significant noise sources at the transfer facility were noted to be waste collection articulated trucks arriving at the site, reversing alarms from the forklift and front end loading machine and waste delivery vehicles. The noise sources from the composting site were associated with the operation of a front-end loader and on-site blowers.

The elevated noise levels at N2 may have been associated with the arrival and departure of waste trucks at the Onyx Facility. However a large amount of construction work was being conducted directly adjacent to the monitoring location during the monitoring period and traffic noise from the nearby outer ring road, located approximately 500 meters to the west of the site, was also clearly audible during monitoring, which would also have contributed significantly to the noise levels at this point.

Noise levels recorded at monitoring location N3 were within the licensed limits.

It should be noted that these noise levels have been determined at the site boundary of the Onyx facility (N1, N2 and N3), which is located within an industrial estate and that there are no noise sensitive receptors (residential properties) located within the vicinity of the site. Also levels measured at the Kilbarry Road were found to be 66dB(A), which is in excess of levels measured at the Onyx site. Operations at the facility were not audible at either NS1 or NS2 monitoring locations.

5. CONCLUSION

Condition 5.6 of Waste Licence 177-1 states that "*there shall be no clearly audible tonal or impulsive component in the noise emissions from the activity at the noise sensitive locations*". No tonal components were detected at the Ballybeg Estate, which is the nearest noise sensitive location, and noise measurements recorded levels of 63 dB(A) during daytime measurements and 53dB(A) at nighttime. Schedule C1 of the waste licence specifies that daytime noise levels at the facility will not exceed 55dB(A) L_{Aeq} and nighttime are not to exceed 45dB(A) L_{Aeq}. Nighttime levels were marginally exceeded at all locations, but as there were no operations at the facility at the time, therefore its unlikely that noise levels were attributable to the Onyx facility. Daytime noise levels were exceeded at N1 and N2, possibly due to operations at the facility and the also the adjacent composting plant. However the Onyx facility is located within an industrialised area, with the nearest noise sensitive location approximately 500m from the site.

Traffic noise from the nearby Waterford Outer Ring Road, was clearly audible during daytime and nighttime monitoring and would have contributed to the noise levels, particularly during nighttime monitoring.

It is therefore concluded that, although the daytime noise levels recorded at N1 and N2 were raised above the limit value of 55 dB(A), that the noise levels recorded at the site would not be expected to give rise to noise nuisance at noise sensitive locations in the area or the adjacent industrial facilities. The marginal exceedance recorded during nighttime monitoring would not give rise to nuisance at adjacent facilities or noise sensitive receptors and is unlikely to be caused by the Onyx Facility.

APPENDIX I

MAP OF NOISE MONITORING LOCATIONS

APPENDIX II

NOISE MEASUREMENTS REPORTS

N1 Monitoring Point

N3 Monitoring Point

Proposed New Monitoring Point D3

6" PVC

Asphalt Finish

Asphalt Finish

Interceptor Drain

Site Boundary

Roof Run Off Monitoring Point SW4

Concrete Apron

D1 Monitoring Point

Green Road

Materials Handling & Recycling Building

Truck Wash Bay

SUMP

CONC PAD

SUMP

Truck Wash Shed

New Open Sided Storage Building

Cardboard Baling Area

New Extension Area

Office

New Concrete Apron

Solids Seperator/oil Interceptor Capturing Runoff From Concrete Apron

Monitoring Point FW1

Grit Traps

Interceptor

Surface Water SW1

Surface Water Roof Runoff SW2

Before Interceptors 6" Pvc
After Interceptors 9" Pvc
Slope 1:65

9" PVC

6" PVC

Grit Trap

Oil Water Interceptor

Grit Trap

Surface Water Monitoring Point SW3

New Weighbridge Location

D2 Monitoring Point

N2 Monitoring Point

0m 2.5m 5m 7.5m 10m 12.5m 15m 17.5m 20m 22.5m 25m

Scale 1:250 @ A1

Surface Water Monitoring Points
SW1 258320 E, 109451 N
SW2 258317 E, 109451 N
SW3 258286 E, 109438 N
SW4 258253 E, 109506 N

Foul Water Monitoring Points
FW1 258381 E, 109453 N

Dust Monitoring Points
D1 258372 E, 109493 N
D2 258336 E, 109440 N
D3 258269 E, 109514 N

Noise Monitoring Points
N1 258326 E, 109519 N
N2 258362 E, 109435 N
N3 258243 E, 109511 N

Rev.	Drawn	Chkd	Apprvd	Date	Description

Name of Client
ONYX Ireland Ltd.

Name of Job
EPA Regulatory Report

Title of Drawing
Environmental Monitoring Points

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

Dwg. No.	Rev.
2004-115-05-Fig7	A

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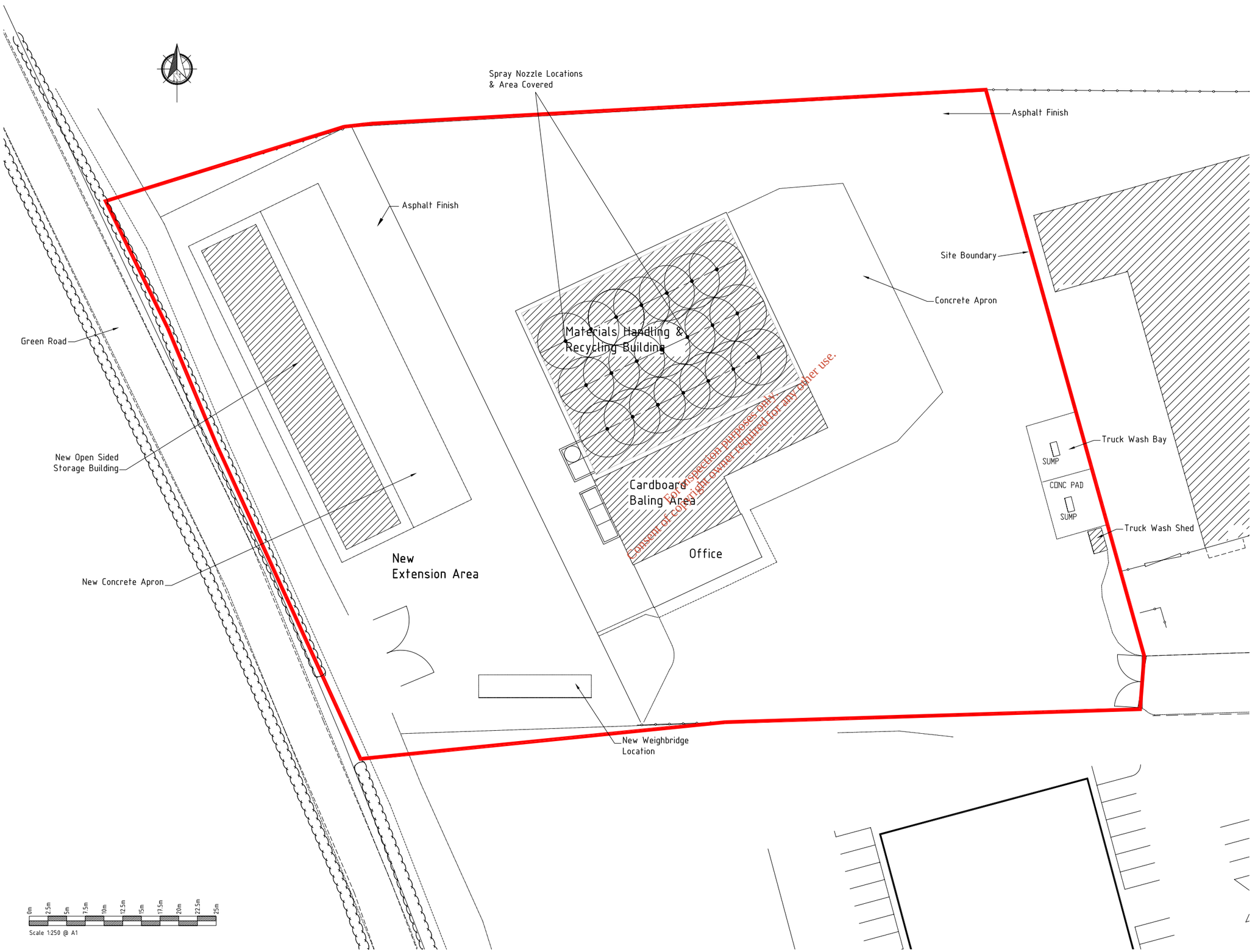
Drawing name: O: \ACAD\2004\115\05\po-eparr_Fig7.dwg



Rev.	Drawn	Chkd	Apprvd	Date	Description
A	PS	PL		02.03.2006	ISSUE FOR WASTE LICENSE REVIEW

Name of Client
ONYX Ireland Ltd.

Name of Job
ONYX, WATERFORD DEPOT
WASTE LICENSE REVIEW

Title of Drawing
ODOUR ABATEMENT SYSTEM

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

Dwg. No. 2006-115-02-Fig. F.1.a
Rev. A

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ORIGINAL DRAWING SIZE A1 - (841 x 594)

NATURAL SCALE 10mm 0 10 20 50 100mm

Dust Deposition Monitoring
At the ONYX Ireland Ltd, Six Cross Roads Business Park, Waterford

Report No: D2004-03W

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 20th October 04

This report is certified true and accurate
ONYX Ireland Ltd.

_____

Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. operates a waste transfer and recycling facility at Carrignard, Six Cross Roads Business Park, Waterford City, under Licence form the Environmental protection Agency (177-1). Schedule D of this permit requires that ONYX Ireland Ltd. carry out a dust monitoring program three times a year including twice during the period May to September.

This report details the results of the sampling event that took place between 1st September and the 1st October 2004. In addition the sampling techniques used and a broad interpretation of the results are included.

2.0 SAMPLING AND ANALYSIS

Sampling was carried out between the 1st September and the 1st October 2004 in accordance with the Standard Method VDI2119 using the Berghoff gauges. These were mounted at the sampling locations (Table 2.1) which were 1.5m above ground level. All sampling was carried out by the Environmental Officer of ONYX Ireland ltd. Once sampling had been completed the dust collection jars were covered and dispatched to Consultus laboratories Glanmire Industrial Estate, Glanmire, Cork. A copy of the analysis report is attached in Attachment I.

Table 2.1 Dust deposition locations

Location	Description	Co-ordinates
D1	North-eastern boundary of the site	258375E, 109495N
D2	South Boundary of site	258341E, 109456N
D3	Western boundary of site	358310E, 109483N

3.0 RESULTS

The results of the investigation are summarised in Table 3.1 below.

Table 3.1 Results of Dust Deposition Monitoring	
Sample Location	**Dust concentration (mg/m2/day)**
D1	354
D2	223
D3	Sample not available

4.0 DISCUSSION

The results of the dust monitoring program are detailed in table 3.1 above. All dust emitted from the facility can be described as fugitive. The primary source of dust on-site may be attributed to the transfer operations. To date there have been no complaints received in relation to dust emissions from the site.

Dust monitoring at D3 could not be carried out during the monitoring period as the location for the monitoring point has been removed due to current construction work on an extension to the ONYX facility.

When compared to the dust deposition limit of the Waste Licence 177-1 Schedule C (350mg/m2/day), it is evident that the dust levels for D1 is marginally above the Licence Limit.

Construction work at the ONYX facility, in relation to the proposed extension of the site has been on-going since early May 2004. There has also been both on-going construction work at the composting facility adjacent to ONYX to the north and the construction of the outer ring road for Waterford City (200m distant) to the west which may have contributed to the elevated dust levels at the ONYX facility. It is envisaged that this construction work will continue for the foreseeable future.

ATTACHMENTS

I

Dust Deposition Monitoring
At the ONYX Ireland facility, Six Cross Roads Business Park, Waterford

Report No: D2005-01W

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 2nd June 2005

This report is certified true and accurate
ONYX Ireland Ltd.

_____

Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. operates a waste transfer and recycling facility at Carrignard, six Cross Roads Business Park, Waterford City, under Licence form the Environmental protection Agency (177-1). Schedule D of this permit requires that ONYX Ireland Ltd. carry out a dust monitoring program three times a year including twice during the period May to September.

This report details the results of the sampling event that took place between 1st April and the 1st May 2005. In addition the sampling techniques used and a broad interpretation of the results are included.

2.0 SAMPLING AND ANALYSIS

Sampling was carried out between the 1st April and the 1st May 2005 in accordance with the Standard Method VDI2119 using the Berghoff gauges. These were mounted at the sampling locations (Table 2.1) which were 1.5m above ground level. All sampling was carried out by the Environmental Officer of ONYX Ireland ltd. Once sampling had been completed the dust collection jars were covered and dispatched to Consultus Laboratories, Glanmire, Co.Cork. A copy of the analysis report is attached in Attachment I.

Table 2.1 Dust deposition locations

Location	Description	Co-ordinates
D1	North-eastern boundary of the site	258375E, 109495N
D2	South Boundary of site	258341E, 109456N
D3	Western boundary of site	358310E, 109483N

3.0 RESULTS

The results of the investigation are summarised in Table 3.1 below.

Table 3.1 Results of Dust Deposition Monitoring	
Sample Location	**Dust concentration (mg/m2/day)**
D1	361.2
D2	273.8
D3	Sample point not available

4.0 DISCUSSION

The results of the dust monitoring program are detailed in table 3.1 above. All dust emitted from the facility can be described as fugitive. The primary source of dust on-site may be attributed to the transfer operations. To date there have been no complaints received in relation to dust emissions from the site.

Dust Monitoring at D3 could not be carried out during the monitoring period as the location for the monitoring point has been removed due the extension work carried out at the facility. A proposal has been forwarded to the Agency for the re-location of Monitoring Point D3.

When compared to the dust deposition limit of the Waste Licence 177-1 Schedule C (350mg/m2/day) it is evident that the dust levels for D1 at 361.2mg/m2/day is above the licence limit.

Although there has been on-going construction road work in the region of the facility it may not fully account for the levels of dust found at Monitoring Point D1. This Monitoring has been suspect to elevated levels of dust in the past. It is most probable that the source of these levels may be eminating from operations on the adjacent compost facility. Frequent turning of compost piles and screening of material is an essential part of the compost process which in its nature creates dust and airbourne particles. This in turn may be a contributing factor to the elevated levels of dust found at monitoring point D1.

The situation will be monitored closely for the next monitoring period that will take place in June 2005. The seasonal conditions should be drier which may account in an increase in the levels of dust produced on the compost facility.

ATTACHMENTS

I

Dust Deposition Monitoring
At the ONYX Ireland facility, Six Cross Roads Business Park, Waterford

Report No: D2005-03W

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 25th October 2005

This report is certified true and accurate
ONYX Ireland Ltd.

_____

Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. operates a waste transfer and recycling facility at Carrignard, six Cross Roads Business Park, Waterford City, under Licence form the Environmental Protection Agency (177-1). Schedule D of this permit requires that ONYX Ireland Ltd. carry out a dust monitoring program three times a year including twice during the period May to September.

This report details the results of the sampling event that took place between 1st September and the 30th September 2005. In addition the sampling techniques used and a broad interpretation of the results are included.

2.0 SAMPLING AND ANALYSIS

Sampling was carried out between the 1st September and the 30th September 2005 in accordance with the Standard Method VDI2119 using the Berghoff gauges. These were mounted at the sampling locations (Table 2.1) which were 1.5m above ground level. All sampling was carried out by the Environmental Officer of ONYX Ireland ltd. Once sampling had been completed the dust collection jars were covered and dispatched to Consultus Laboratories, Glanmire, Co.Cork. A copy of the analysis report is attached in Attachment I report no. 7082L.

Table 2.1 Dust deposition locations

Location	Description	Co-ordinates
D1	North-eastern boundary of the site	258375E, 109495N
D2	South Boundary of site	258341E, 109436N
D3	North Boundary of site	258269E, 109514N

3.0 RESULTS

The results of the investigation are summarised in Table 3.1 below.

Table 3.1 Results of Dust Deposition Monitoring	
Sample Location	**Dust concentration (mg/m2/day)**
D1	316.2
D2	284.0
D3	237.4

4.0 DISCUSSION

The results of the dust monitoring program are detailed in table 3.1 above. All dust emitted from the facility can be described as fugitive. The primary source of dust on-site may be attributed to the transfer operations. To date there have been no complaints received in relation to dust emissions from the site.

All the Dust Monitoring Points, D1, D2 and D3 are within the Emission Limit values of 350mg/m2/day for waste licence 177-1 respectively.

ATTACHMENT

CONSULTUS REPORT No. 7082L

Dust Deposition Monitoring
At the ONYX Ireland facility, Six Cross Roads Business Park, Waterford

Report No: D2005-03W

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 25th October 2005

This report is certified true and accurate
ONYX Ireland Ltd.

_____

Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. operates a waste transfer and recycling facility at Carrignard, six Cross Roads Business Park, Waterford City, under Licence form the Environmental Protection Agency (177-1). Schedule D of this permit requires that ONYX Ireland Ltd. carry out a dust monitoring program three times a year including twice during the period May to September.

This report details the results of the sampling event that took place between 1st September and the 30th September 2005. In addition the sampling techniques used and a broad interpretation of the results are included.

2.0 SAMPLING AND ANALYSIS

Sampling was carried out between the 1st September and the 30th September 2005 in accordance with the Standard Method VDI2119 using the Berghoff gauges. These were mounted at the sampling locations (Table 2.1) which were 1.5m above ground level. All sampling was carried out by the Environmental Officer of ONYX Ireland ltd. Once sampling had been completed the dust collection jars were covered and dispatched to Consultus Laboratories, Glanmire, Co.Cork. A copy of the analysis report is attached in Attachment I report no. 7082L.

Table 2.1 Dust deposition locations

Location	Description	Co-ordinates
D1	North-eastern boundary of the site	258375E, 109495N
D2	South Boundary of site	258341E, 109436N
D3	North Boundary of site	258269E, 109514N

3.0 RESULTS

The results of the investigation are summarised in Table 3.1 below.

Table 3.1 Results of Dust Deposition Monitoring	
Sample Location	**Dust concentration (mg/m2/day)**
D1	316.2
D2	284.0
D3	237.4

4.0 DISCUSSION

The results of the dust monitoring program are detailed in table 3.1 above. All dust emitted from the facility can be described as fugitive. The primary source of dust on-site may be attributed to the transfer operations. To date there have been no complaints received in relation to dust emissions from the site.

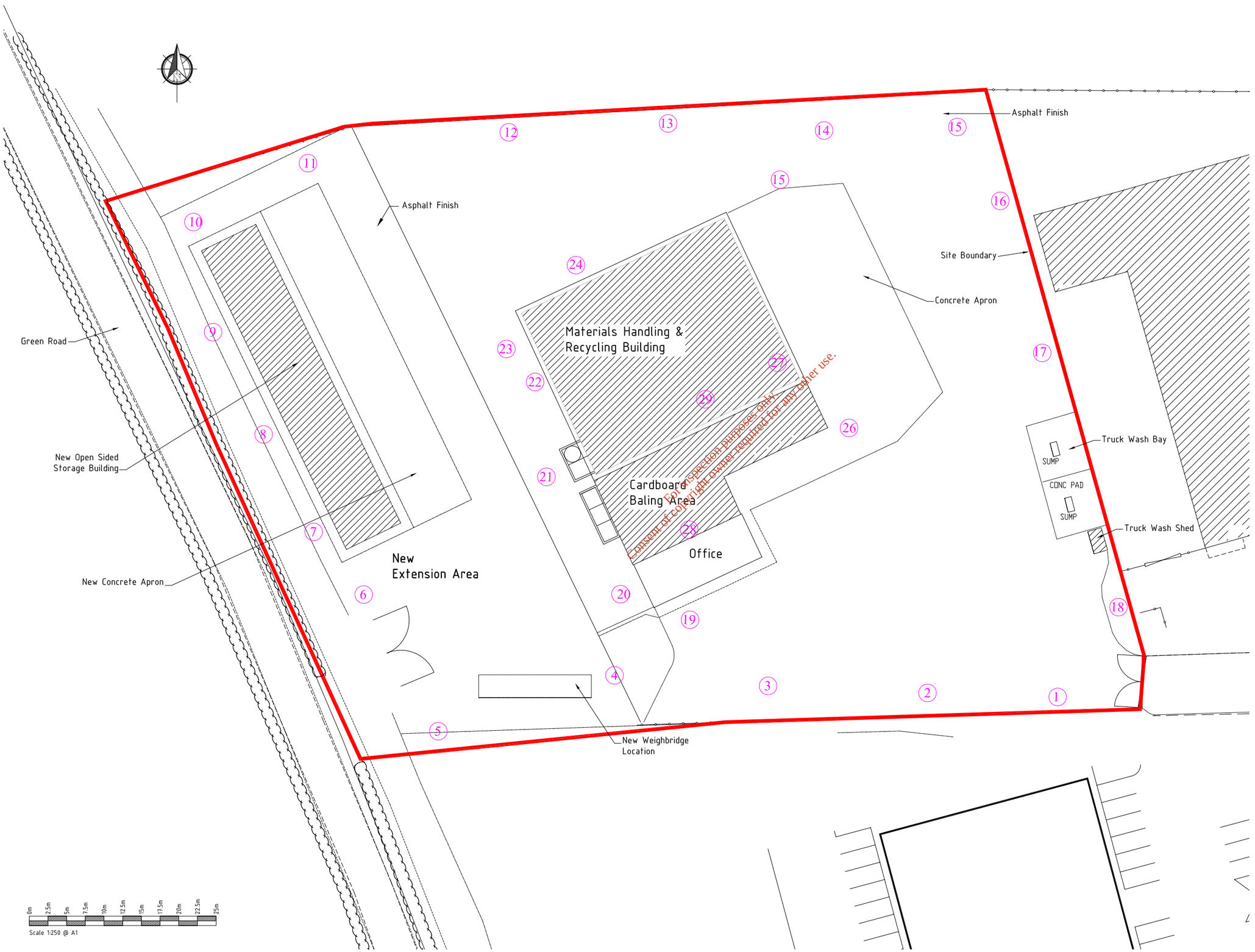
All the Dust Monitoring Points, D1, D2 and D3 are within the Emission Limit values of 350mg/m2/day for waste licence 177-1 respectively.

ATTACHMENT

CONSULTUS REPORT No. 7082L

Legend:

(5) Pest Control Station



Rev.	Drawn	Chkd	Apprvd	Date	Description
A	PS	PL		02.03.2006	ISSUE FOR WASTE LICENSE REVIEW

Name of Client
ONYX Ireland Ltd.

Name of Job
ONYX, WATERFORD DEPOT
WASTE LICENSE REVIEW

Title of Drawing
PEST CONTROL SYSTEM

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

Dwg. No. 2006-115-02-Fig. D.1.g Rev 1
Rev. A

O:/ACAD/2006/115/02/FIF

FEHILY TIMONEY & COMPANY
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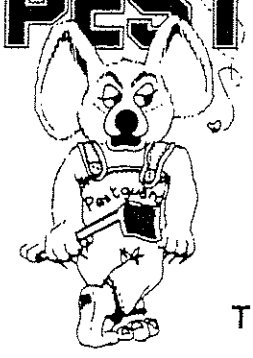
ORIGINAL DRAWING SIZE A1 - (841 x 594)

NATURAL SCALE 10mm 0 10 20 50 100mm

PESTGUARD
8 Manor Court Lane, Castleredmond, Midleton, Co. Cork.
Cork: 021 - 275330 Waterford: 051 - 870403 Dublin: 01 - 6704965 Mobile: 087 - 2574737.



THE CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH

1	**NAME OF SUBSTANCE:** Ficam W
2	**PURPOSE OF USE:** Insecticide
3	**SUBSTANCE SUPPLIED AS:** Concentrated wettable powder
4	**SUBSTANCE APPLIED AS:** Water based coarse spray
5	**ACTIVE INGREDIENTS CLASSIFIED AS:** HARMFUL
6	**CARRIER OR OTHER INGREDIENTS CLASSIFIED AS:** NOT CLASSIFIED
7	**ACTIVE INGREDIENTS:** 80% w/w Bendiocarb
8	**DELIVERY AND PACKAGING:** Cardboard box containing 10 x 15 grm of soluble sachets. Each sachet encased in a foil wrapper. Boxes to be inspected for damage on delivery.
9	**STORAGE:** On dry racking in accordance with HSE Guidance Note 19. Product not to be stored outside of original container unless statutory warning label is attached. Not to be stored in any amounts, and any area other than EPCS stores or service vehicles.
10	**TRANSPORT:** Only in EPCS vehicles fitted with bulkhead separating product from passengers and driver. If no bulkhead is in vehicles then product must be kept in plastic container. Product must be secured to avoid spillage.
11	**MIXING:** Fill applicator with water prior to adding concentrate. Wear gloves and open the outer foil wrapper then place the soluble sachet into the water. Allow 2 minutes for sachet to dissolve then mix in product by agitating water. Do not mix in windy conditions. Do not mix in area where spillage of product can cause immediate hazard.
12	**FORM OF APPLICATION AND PROCESS:** To be applied through a pneumatic sprayer with the nozzle size producing a coarse spray with a droplet size approximately 400-500 microns.
13	**PROCESS LOCATION:** To be directed to target pest harbourage either as crack and crevice treatment or band treatment. To be applied only as a control measure, not to be applied as a preventative measure.
14	**RESTRICTION OF PROCESS LOCATION:** Spray not to come into direct contact with food or food preparation surfaces. Do not apply the product while cats and other domestic animals are free to roam. It is safe to apply to these areas if the domestic animal is kept out of the process area until all spray is completely dry. This product is especially toxic to cats.
15	**M.E.L.** 0.6 mg per m^3 (10 minutes)

16	**O.E.S.** 0.2mg per m^3 (8 hours)
17	**RECOMMENDED R.P.E. TO ALL/PART PROCESS:** Disposable mask to P3 standard or half mask with filter to protect against organic vapours to BS2091.
18	**RECOMMENDED OTHER P.P.E. TO ALL/PART PROCESS:** Limited life coveralls, face shield, unlined nitrile gauntlet gloves not less than 0.4mm thick and not less than 300mm in length. Head cover or hood.
19	**ROUTES OF ABSORPTION** Inhalation Skin Absorption
20	**ASSESSMENT OF EXPOSURE THROUGH APPLICATION PROCESS:** If applying spray below waist level or into void that will not allow splash-back, then gloves are the only PPE required. If applying at or above waist level then coveralls, face shield and mask must be worn. If applying on hot surfaces that may give rise to vaporisation, then a mask must be worn at all times. Do not work in fall-out mist if spraying above head height.
21	**SPECIAL PRECAUTIONS FOR PEOPLE WORKING IN OR NEAR PROCESS AREA:** Spray or fall-out mist must not come into direct contact with people. Avoid spraying items that come into direct contact with people and ensure people do not touch sprayed material until dry. Items of bedding or clothing must not be sprayed. All personnel to be removed from room or treatment area when application treatment is undertaken. If possible, ensure area is well ventilated following application treatment.
22	**EMERGENCY PROCEDURES AGAINST ABSORPTION** **EYES**: Can cause temporary impaired vision and constriction of pupils. Rinse any contamination from eyes immediately with eye wash or water
	SKIN: Relatively low toxicity. Wash contaminated skin with soap and water.
	INGESTION: Harmful if swallowed. Consult doctor immediately.
	INHALATION: Symptoms can include dizziness, headaches, excessive sweating, salivation, abdominal pain, unconsciousness, convulsions and paralysis. See medical attention immediately.
23	**SPILLAGE:** Absorb in sand or other inert material. Transfer to container or transport to EPCS stores. Disposal will be via burial, burning or landfill site depending on quantity of waste and available registered disposal site.
24	**SUPPLIER:** Killgerm Chemicals
25	**HSE No:** 5390

Signed:  **Date:** 19 July 1999

APPENDIX IV

Please find overleaf the following item:

(1) Hydrology, Ecology and Archaeology Assessment 2001

Geology in Waterford Area

BASELINE HYDROGEOLOGY, ECOLOGY AND ARCHAEOLGY ASSESSMENTS AS PART OF A WASTE LICENCE APPLICATION FOR IPODEC IRELAND LIMITED, WASTE TRANSFER FACILITY LOCATED AT UNIT 14A, SIX CROSSROADS BUSINESS PARK, CARRIGANARD, WATERFORD.

MARCH 2001

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This report has been prepared by RPS Environmental Sciences Ltd

REPORT NUMBER:	**IR710/1**
STATUS OF REPORT:	**Revision 1**
DATE OF REPORT:	**14 March 2001**
PROJECT MANAGER:	**Dr Edward Molyneaux**
REPORT PREPARED BY:	**Norelle Healy**
PROJECT REVIEWED BY	**Dr Paul O'Donoghue**

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LIST OF APPENDICES

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1. INTRODUCTION

In accordance with the requirements of a Waste Licence Application IPODEC Ireland Limited must carry out various environmental assessments to determine the impacts of the waste transfer facility, located at Unit 14A, Six Cross Roads Business Park, Carriganard, Waterford, on the receiving environment. RPS Environmental Sciences (RPSES) Ireland Limited have been commissioned by (IPODEC Ireland Limited) to prepare the following:

- A Desk Based Regional Hydrogeological Assessment
- An Ecological Assessment
- An Archaeological Assessment

1.1. METHODOLOGY

This section outlines the methodologies adopted by RPSES.

Regional Hydrogeological Assessment

In order to assess the site's overall hydrogeological setting, RPSES conducted a desk-based study of publicly available information to assess the regional geology, hydrogeology, groundwater vulnerability and aquifer type of the area (Section 3). The following sources of information were reviewed:

- Geological Survey of Ireland (GSI) Bedrock Geology Map Sheet 22 (Scale 1:100,000), East Cork-Waterford. Bedrock Geology Map Sheet 23 (Scale 1:100,000), South Waterford.
- Geological Survey of Ireland (GSI) Groundwater Protection in Co. Waterford. Map 6(E) Groundwater Vulnerability. Map 5(E) County Waterford Aquifers.
- Geological Survey of Ireland-Groundwater Protection Schemes.
- Karst Working Group-The Karst of Ireland-Limestone Landscapes, Caves and Groundwater Drainage Systems.

The desk-based study also included consultation with the Geological Survey of Ireland (GSI) and Waterford County Council.

Ecological Assessment

The objective of the ecological assessment was to identify the nature conservation/ecological constraints associated with the development (Section 4). Field survey work, which was conducted by an RPSES ecologist on 29/1/01, involved a Phase 1 Habitat Survey of flora and fauna in the survey area. This survey follows the classification guidelines given in the Heritage Council *Guide to Habitats in Ireland* (Fossitt 2000). An assessment of the ecological value to mammals of the study area was made during the site visit. This survey consists of an assessment of the existing habitat value to mammals, a survey of mammal signs and an assessment of the existing level of habitat management and proposed development impact.

Archaeological Assessment

This was a desk-based assessment of the waste transfer facility within approximately 1-3.5 km radius of the development site (Section 5). The following sources of information were reviewed:

- Archaeological Inventory of County Waterford/compiled By Michael Moore, 1999
- Sites and Monuments Record (SMR) of Co. Waterford.

2. SITE DESCRIPTION

The IPODEC Site is situated at Six Cross Roads Business Park, Carriganard, Waterford, an area zoned for industrial development, and the location of which is illustrated in (Figure 2.1). The Lacken road that passes the front entrance to the business park is the main route for traffic in the area. The route is assessable from the N25 Waterford-Cork road. The predominant land use in the area is industrial. The north-east boundary is bordered by fields, while the east and south-east boundary is bordered by industrial premises. The Ballybeg housing estate is located approximately 500m to the north of the transfer station. The Lacken Road is the main road for the business park in the area and is used by another private waste contractor in the area.

The IPODEC plant at present occupies approximately one sixth of the site (1.5 acres). The site contains a waste transfer and recycling building where recycled materials are sorted and an office unit is attached to this building. A small truck washing unit is located near the gate on the eastern boundary of the site. A security fence has been erected approximately 2.5 metres in height around the site and this fence continues to the east and the south to take in the industrial estate. The perimeter fencing also incorporates two large entrance gates, approximately 5 metres in width. At present there are no commercial premises directly adjacent to the facility, however there will be developments on these sites in the future.

3. GEOLOGY/HYDROGEOLOGY

3.1. INTRODUCTION

IPODEC Ireland Limited, Unit 14A, Six Cross Roads Business Park, Carriganard, Waterford, are required as part of a Waste Licence Application to conduct a preliminary assessment of the hydrogeology in the vicinity of the facility.

3.2. GEOLOGY

3.2.1. Bedrock Geology

The IPODEC site is approximately 20ft above sea level and is located on the southern side of Waterford City and the River Suir. Bedrock geology is described on 1:100,00 maps from Series Sheet 22, East Cork-Waterford, Geological Survey of Ireland 1995 and Series Sheet 23, South Waterford, Geological Survey of Ireland 1995. The site is associated with Ordovician rocks of the Lower Palaeozoic Period. The entire bedrock geology of the site consists of the Ross Member of the Campile Formation. The Ross Member of the Campile Formation contains a dark grey slate with thin siltstone. The shale unit of the Ross Member contains a grey, green and black shale with minor tuffs. The area is locally faulted with igneous Dolerite rock to the southeast.

The Lower Palaeozoic rocks have undergone faulting and low-grade metamorphism. Strong folding has resulted in the development of joint systems which has increased the permeability of the units.

3.2.2. Quaternary Geology

Based on previous investigations in the vicinity of the Carriganard area conducted by MC O'Sullivan Consulting Engineers, Quaternary deposits are seen to generally consist of till. The boulder clay can be described as volcanic dominated, or sandstone dominated, depending on the underlying bedrock formation. In the IPODEC site the material overlying the Ross Member of the Campile Formation is generally sandy or silty gravelly clay, with silt and peat deposits in places.

Limited information is available on the nature and thickness of the quaternary subsoil deposits beneath the site, however, geological Survey of Ireland (GSI) archive records indicate that the depth of the quaternary subsoils is approximately 5m in the Carriganard area.

3.3. HYDROGEOLOGY

The hydrogeological resource of the area is governed by the degree and extent of fracturing and weathering in the bedrock geology while the vulnerability of this resource to contamination is directly related to the depth and nature of the overlying Quaternary soils.

3.3.1. Aquifer Vulnerability

Vulnerability is a term used to represent the intrinsic geological and hydrogeological characteristics that determine the ease with which groundwater may be contaminated by human activities.

Using the basic groundwater resource protection model (aquifer classification) proposed by the GSI, the bedrock underlying Carriganard is classified as a Regionally Important fissured aquifer (Rf). Based on the limited subsoil information available for the site, groundwater vulnerability would be considered high to extreme. Site specific borehole drilling information would enable a more accurate assessment to be made of vulnerability.

3.4. IMPACTS AND MITIGATION

The site is currently completely covered by hardstanding material (asphalt or concrete) thereby reducing the risk of the migration of any contaminants to the subsurface. All waste transfer activities (i.e. waste deposition, waste sorting, etc.) are undertaken internally within the hardstanding Transfer Building with no waste transfer activities occurring on external areas. Given the nature of the waste transferred through the facility (65% Commercial – cardboard, mixed plastic; 29% Municipal; 6% Construction & Demolition – rubble, wood, metal), it is considered that the waste material itself does not generate a significant leachate. Any potential leachate generated at the site is attributed to precipitation infiltration from wet skips being tipped on the Transfer Building floor. Surface water located on the floor is largely absorbed by the waste mass and/or directed to the fouls sewer via the concrete apron located adjacent to the Transfer Building, therefore the risk to groundwater is considered minimal.

Individual oil, diesel and waste quarantine areas are bunded in order to contain the potential impacts of a vessel rupture and/or spillage event. The design (volume and construction) of all bunds conform to standard bunding specifications (BS8007-1987). The retention capacity of bunded areas is as follows:

- 110% of the capacity of the largest tank or drum to be stored within the bunded area (2 No. oil storage areas for engine oil, lubricating oil, hydraulic oil and waste oil and diesel oil).

- 25% of the total volume of substance which could be stored within the bunded area (portable bunded units present within the Waste Quarantine Area for storage of waste oil, hydraulic oils, antifreeze, oil filters, batteries and within the Garage for storage of waste oil, hydraulic oils).

However, the integrity of the bunds is unknown and testing should be implemented in order to establish if the bunds provide complete sealed containment.

A Fire-Water Retention Risk Assessment has been prepared for the IPODEC site (refer to Report No. IR717/1: A Preliminary Risk Assessment for Fire-Water Retention for IPODEC Ireland Ltd., Waste Transfer Station located at Unit 14A, Six Crossroads Business Park, Carriganard, Waterford). On implementation of the recommendations made in the report, the risk of environmental contamination from firewater will subsequently, be minimal.

The site is operated in such a manner that the potential inputs to, and subsequent contamination of soil and groundwater environments are reduced or eliminated. It is the policy of IPODEC Ireland Ltd., to conduct its business of waste acceptance/storage/transfer at the waste transfer station in such a manner that associated activities minimise or eliminate any potential adverse effects on the environment. An appropriate Environmental Management System is currently under preparation and once installed and maintained should ensure effective management of the site and protection of the environment (soil, groundwater, surface water and air environments).

3.5. CONCLUSION

Based on the results of this baseline assessment it is concluded that the waste transfer facility has been designed and is operated in such a manner that the potential emissions to soil, groundwater and surface water environments arising from accidental or emergency situations during normal operations and/or abnormal conditions (material spillage or fire event situations) are minimal. The construction (oil storage/waste quarantine areas are bunded) and operation (the waste transfer facility workforce strictly adhere to standard operational procedures for all activities within the compound) of the waste transfer facility according to the BAT/EEC principle, therefore, ensures that inputs to, and subsequent contamination of soil and groundwater environments do not occur during normal and/or emergency conditions (material spillage or fire event situations). Furthermore, these mitigation measures combine to minimise the risk to the underlying groundwater resource (classified as **Rf** i.e. a Regionally Important fissured aquifer by the GSI).

4. ECOLOGY

4.1. INTRODUCTION

This section describes the existing environment in relation to habitats, flora and fauna recorded. The results of a Phase 1 habitat survey are presented. In addition a survey of the flora of the site and a mammal survey were carried out. Scientific names follow the nomenclature of Stace (1991) and are listed in Appendix 1.

4.2. EXISTING ENVIRONMENT

4.2.1. Habitat Survey

This section contains a description of the habitats in the study area and the results are illustrated on (Figure 4.2). The habitats found are listed below; numbers in brackets refer to the Heritage Council habitat codes. The habitats classified often contain similar species/species overlap as communities intergrade with each other, but are distinct from each other due to their topographical location and the dominant type of plant species present:

- Improved Grassland (GA1)
- Recolonising Bare Ground (ED3)
- Drainage Ditch (FW4)
- Hedgerows (WL1)
- Buildings and Artificial Surfaces (BL3)
- Earth Banks (BL2)

The field to the north of the site is an area used as grazing for horses. Perennial Rye-grass, White Clover and Broad–leaved Dock are abundant here. The field boundaries here consist of high banks with incomplete sections of Hawthorn and occasional Gorse bushes. A bank has recently been created along the northern boundary of the site. Improved pasture with field boundaries such as these, are also found to the northwest of the site.

To the west of the site there is an area of disturbed ground that has been raised and levelled during the development of the site. The area is regenerating with ruderal species such as Cock's-foot, Ribwort Plantain, White Clover, Spear Thistle and occasional small Gorse plants. To the west of this area there is a southerly flowing watercourse. The channel is shallow, and approximately 1 metre wide. It has a stone and silt bottom. There are small tussocks of Soft Rush alongside the stream, with Floating Sweet–grass and Water Parsnip being found in the stream. Between the stream and the road, which is to the west, is a Hawthorn hedge on a bank.

The area directly to the east of the site has been levelled and prepared for construction. The area directly to the south of the site is within the industrial estate. It is a level area that has been seeded with Perennial Rye-grass and White Clover.

4.3. MAMMALS

A survey of the site and the adjacent field boundaries was carried out to assess the suitability of the site as a habitat for mammals. The field survey confirmed the presence of two unprotected mammals, namely Foxes and Rabbits, within the study area. Evidence of Badgers (a protected species) was searched for but not found.

The watercourse to the west of the site may form part of the territory of the Otter (a protected species). No field evidence of this species was recorded on site but there are records from the Kilbarry Bog (O'Meara 1999), which is nearby. The location of Kilbarry Bog, a designated proposed National Heritage Area (pNHA), as listed by Duchas The Heritage Service, in relation to the IPODEC site is illustrated on (Figure 4.1)

Other species that may use the site are the Brown Rat, the Irish Stoat and the Hedgehog (a protected species). However, no evidence of these was found on-site.

4.4. IMPACTS AND MITIGATION

4.4.1. Habitats

The operations on site will have no impact on the ecology of the site as there are no nationally important or endangered habitat types recorded on the site or on the land adjacent to it. Improved grassland, recolonising bare ground and artificial surfaces are of little ecological interest. The impacts on these habitats are not considered to be of significance. The hedgerows, drainage ditch and earth bank are of poor quality and are habitats that are well represented in the local vicinity. As such they are of no more than local value. The development should not directly impact on these habitats, as they are not included in the development area. The watercourse to the west of the development site should not be affected by the development, provided best practice is followed and no extraction of water or outflow of contaminated water is directed into the stream (Appendix 1).

No significant impacts on any habitats are predicted, as a consequence no mitigation shall be necessary.

4.4.2. Mammals

As the development site is already subject to high levels of human disturbances, it is unlikely that the IPODEC facility will have any significant impacts on mammals. Otters may be indirectly affected through any impacts on the watercourse. However, if best practice is followed then no significant impacts should occur.

No significant impacts on any mammals are predicted, as a consequence no mitigation shall be necessary.

4.5. CONCLUSION

The operations on site will have no significant impact on the ecology of the site or areas adjacent to the site. Therefore, IPODEC are not required to put in place mitigation measures.

5. ARCHAEOLOGY

5.1. INTRODUCTION

A preliminary assessment of the archaeology in the vicinity of the IPODEC waste transfer facility .

5.1.1. Enclosures

Two enclosure sites are located approximately 2km and 3km of the IPODEC site, respectively. (Figure 5.1). A single circular enclosure in the townland of Carriganard (No. 823) and a subcircular enclosure in the townland of Lismore (No. 921).

Enclosures are so classified when a bank and/or fosse cannot be clearly defined. Most enclosures are distinguished by the fact that, though no longer visible on the ground, are seen from the air as clear circular patterns. However, while cartographic or photographic evidence may suggest that they were probably ringforts and are still important archaeologically as stratigraphy pertaining their use is still preserved beneath the ground surface. Some sites, which are still visible, but too eroded to be positively identified as ringforts or any other monument type are also classified as enclosure sites.

5.1.2. Ringforts

A single ringfort was identified in the study area in the townland of Ballygarran (No. 536) approximately 3.5km from the IPODEC site. This ringfort has an overgrown circular area (diam.29m) defined by an earthen bank with slight traces of outer fosse. A Star-shaped fort has been identified in the townland of Duagh (No. 1702) approximately 3.km from the site (Figure 6.1). This fort thought to date to the Elizabethan or Cromwllian period, although there are no contemporary records. Artefacts recovered at the site indicate this fort was used as a barracks in 1798.

There is copious evidence of dispersed defended settlements, the physical remains of which are still preserved in the Irish countryside. These are ringforts, the standard settlement site of the period, although their origins and demise are obscure. Most excavated ringforts have dates ranging from AD 500 to AD 1200, which can be called the Early Christian period. In County Waterford ringforts are called 'lios' and there are 33 townlands in the county with a 'lios' element in the name, indicating the existence of a ringfort at one time, even though the site itself might not survive.

A ringfort is a circular or subcircular area defined by one or more earthen banks and outer fosses. The banks are between 3m and 5m wide normally, and between 0.5m and 2m high. Some banks are now faced with stones which is a common feature of field banks, and would be applied equally to older banks. Originally the bank would have been further fortified with palisade and the area within the bank would have functioned as a small farmyard with a dwelling house. Within the ringfort there may have been other specialised areas devoted to particular tasks such as animal husbandry, ironworking, tanning or grain-storage. Ringforts are usually situated on the upper slopes of low hills and the majority are situated between 100ft and 600ft OD.

The average ringfort diameter is about 25m to 35m, and in Co. Waterford about 80% of the diameters range between 25m and 45m, which is similar to the figure for the country as a whole. Most of the ringforts in Co. Waterford have a single bank and fosse, but in about 10% of cases there is evidence of a second outer bank.

5.1.3. Earthworks

There are four earthwork sites identified are located within 3.5km from the IPODEC Site (Figure 5.1). Three of the sites are marked as circular enclosures (Waterford City No. 1233, Ballyhoo No. 1003, Lacken No. 1187 and Carrigavoe No. 1056). Earthwork sites in the townlands of Lacken (No. 1187) and Carrigavoe (No. 1056) are not visible at ground level, but these sites are marked on the first edition of the OS 6-inch maps (c. 1840).

Inevitably there are monuments which either because of their eroded and damaged condition, or some anomalous features associated with them, cannot be closely classified. Many of these were probably ringforts but little can be said about them positively except that they are of archaeological significance.

5.1.4. Ecclesiastical Sites

These sites encompass a broad range of physical remains of Christian worship and burial. The adoption of Christianity in the centuries following St Patrick's mission in the 5th century fundamentally altered the spiritual direction of the country. This led to the spiritual abandonment of earlier ritual sites and new structures were created for new forms of worship. The Church became an institution for both physical and social worship.

Church

The church as an institution created new forms of worship, which required new structures both social and physical. In it's long history in Ireland the church developed a degree of specialisation in its mission, which is reflected in the architectural style of the church buildings at different sites. Churches can be placed into five broad categories. These classifications include early churches pre-dating the reforms of the twelfth century; the churches of the high medieval monastic orders; medieval parish and other churches; post-medieval churches; and church sites where the remains are too fragmentary to allow a closer classification.

Christianity may have come early to the Waterford region. The early church was an episcopal one. These would have been wooden – stone structures. Elements of an early site church may include a large enclosure, which can later encompass a later graveyard, a Bullaun Stone, an Ogham Stone. Swan (1983) identified twelve elements of which an early site church may have and suggests that any three of them are sufficient to make an identification. Examples of early church sites located in the environs include one at Killbarry (No. 1365), located approximately 1.5km from the IPODEC facility, and one at Kill St. Laurence (No. 1387), located approximately 3km from the IPODEC facility.

The process of creating parishes was invigorated by the Anglo-Normans, for whom it was an important part of their system of government. The parish church also became the official burial ground from the late 12th century, which is usually situated in a townland with the same name as the parish such as the early episcopal church at Killure (No. 1389). This church is referred to in the O.S map as in ruins but it is an example of an important aspect of the 12th century reforms (i.e. the re-establishment of an episcopal church with a parochial system based on regions.

5.1.5. Portal Tomb

The portal tomb found in the townland of Ballindud (No. 1) is approximately 3km from the IPODEC site, has a sub-circular roofstone supported on one portal instead of two and the roofstone slopes in a SW direction (Figure 5.1).

Portal Tombs usually consist of a massive roofstone resting on two tall uprights, known as portals and a backstone. The sides of the chamber so formed consist of slabs resting against the portals and backstone. The heavier end of the roofstone usually rests on the portals and slopes down towards the back.

5.1.6. Standing Stones

While standing stones are often situated at prominent locations, such as on the crests of hills, a number of examples are found in more sheltered valley location as the single example found in the townland if Kill St. Laurence (No. 223) approximately 3.5km from the IPODEC site (Figure 5.1).

A single standing stone represents the third largest group of free standing megalithic stones in Ireland. The majority of Irish prehistoric standing stones are Bronze Age in date, although a few may be from the Iron Age. Prehistoric standing stones usually have a height of at least 1m and the orientation of their long axis is generally NE-SW, but WNW-ESE alignments are also known.

5.1.7. Fulachta Fiadh

In the townland of Killbarry a Fulachta Fiadh (No.362) lies in pasture at the top of a hill approximately 1km from the IPODEC site. Although not visible at ground level was noted in 1950's National Monuments Index (NMI) file.

A Fulachta Fiadh is a primitive washing or cooking site consisting of a stone or wood-lined excavated into the ground, which because of its location in marshy land or near a stream, naturally fills with water. Fulachta Fiadh mounds are the most numerous prehistoric monument type in Ireland with almost 2,000 known in County Cork alone. County Waterford maintains this pattern, but unfortunately these monuments are easily removed and an unknown number remain undetected in the landscape. They usually appear as low U-shaped, elliptical or round mounds 5m to 15m across, located near a small stream or in poorly drained areas.

5.2. NOTE

The Archaeological Inventory of County Waterford includes one site (Kilbarry No. 362) which is not included in Duchas, The Heritage Service Sites and Monuments website (Figure 5.1). This Fulachta Fiadh site is not visible at ground level, but noted in the 1950's (NMI file)

5.3. IMPACTS AND MITIGATION

There were no archaeological sites found within the hardstanding area of the IPODEC site or in the areas of land adjacent to the site. The nearest archaeological site identified was Fulachta Fiadh (No.362), approximately 1km from the site. Therefore the IPODEC site will have no impact on known archaeology sites in the area examined in the desktop survey (up to a distance of 3.5km from the site). No significant impact on the Archaeology of the area is predicted, as a consequence no mitigation measures shall be necessary.

However it is the policy of the National Monuments and Historic Properties Services (NMHPS), Duchas, The Heritage Service (Department of Arts, Heritage, Gaeltacht & the Islands), to avoid known archaeological sites if possible. If excavations or future related developments within the existing site come near or interfere with newly identified archaeological site full discussion with NMHPS should take place well in advance of any proposed development. It is required by Section 12(3) of the National Monuments (Amendment) Act 1994 that any interference / work to a known archaeological site should be notified in writing to the Minister two months in advance of the commencement of work.

5.4. CONCLUSION

There were no archaeological sites found within the hardstanding area of the IPODEC waste transfer facility or within 1km radius of the site. Therefore, the IPODEC site will have no significant impact on the archaeology of the site or areas adjacent to the site. IPODEC are therefore, not required to put in place mitigation measures.

APPENDIX 1

List of Identified Plant and Animal Species

Table A2.1 List of Plant Species

Table A2.1 List of Plant Species	
Common Name	Scientific Name
Broad-leaved Dock	*Rumex obtusifolius*
Cock's-foot	*Dactylis glomerata*
Floating Sweet-grass	*Glyceria fluitans*
Gorse	*Ulex europaeus*
Hawthorn	*Crataegus monogyna*
Lesser Water-parsnip	*Berula erecta*
Perennial Rye-grass	*Lolium perenne*
Ribwort Plantain	*Plantago lanceolata*
Spear Thistle	*Cirsium vulgare*
White Clover	*Trifolium repens*

Table A2.2 List of Animal Species	
Common Name	Scientific Name
Badger	*Meles meles*
Brown Rat	*Rattus norvegicus*
Fox	*Vulpes vulpes*
Hedgehog	*Erinaceus europaeus*
Irish Stoat	*Mustela erminea hibernica*
Otter	*Lutra lutra*
Rabbit	*Oryctolagus*

APPENDIX 2

Site Descriptions

1544 Trinity Without/Waterford City
OS 9:16:1 (759, 131) 'Waterford OD 0-1000 26064, 11204
Historic Town
Ballybricken Hill lies to W overlooking the city, and the walled suburbs occupy its E-facing slope. The Viking town is on a spur extending E from the base of Ballybricken Hill, between the W-E River Suir to N and St John's Pill to S. By the end of the medieval period both the city and the W suburbs extended over an area of 14ha, which was enclosed by a circuit of walls with 15 gates and 23 mural towers (Bradley *et al.* 1989, vol. 2, 129-265).

Waterford was loyal to the English Crown throughout the medieval period and proposed as a Royal city, although economic decline and the withdrawal of central authority in the 14th century led to a series of attacks by Anglo-Norman, Gaelic and even Continental factions. The fabric and fortunes of the city continued to decline throughout the 15th century and they only began to recover in 1495 after the city successfully repulsed a siege by Perkin Warbeck, Pretender to the English throne.

During the Confederate Wars Waterford joined the Catholic cause and was captured by the Ireton in 1650 (Smith 1746, 151-5). Surveys by Philips (c. 1680) and Goubet (c. 1695), and 17th-century maps, including that published in Ryland (1824, 106ff.), have enabled the medieval topography and defences of the town to be reconstructed. The Corporation began to remove obtrusive parts of the defences in the 18th century, but from c. 1990 some of the surviving sections of the town walls have been conserved and made accessible by the Corporation or the Civic Trust.

Waterford received its first bishop, consecrated at Canterbury, in 1096 and became the centre of a diocese consisting of the city and liberties, and the barony of Gaultiere. It was united with Lismore diocese in 1363, although separate cathedrals and chapters were maintained at both centres. Apart from the Cathedral of the Holy Trinity, called Christ Church, the city had seven parish churches.

1233 Waterford City
OS 9:11:6 (638, 159) Not indicated OD 200-300 25937, 11234
Earthwork (site)
In rough pasture towards the top of a S-facing slope. Marked as a circular enclosure or mound on the 1st ed. of the OS 6-inch map. Not visible at ground level.
9:4 6-6-1989

536 Ballygarran (Decies without Drum By.)
OS 24:15:3 (685, 129) Hachured OD 200-300 24043, 09910
Ringfort
At the E-facing crest of a N-S ridge. Overgrown circular area (diam. 29m) defined by an earthen bank (with 3.65m; int. H 0.6m; ext. H 1.6m at WNW) with slight traces of outer fosse, which is renewed as a field drain, SSW-W-ENE. Stone-facing has been added to the bank E-S. Entrance (Wth 1m) at SSW is probably modern.
24:66 18-9-1989

921 Lismore
OS 24:12:6 (863, 181) Not indicated OD 50-100 24231, 09966
Enclosure (site)
Subcircular area (diam. c. 35m) visible as a cropmark on aerial photographs (MM (30) 9-12).
24:112

1365 Killbarry
OS 17:3:3 (650, 577) 'Killbarry Church (in ruins), Preceptory (Site of)' OD 0-50 25951, 11035
Church
At the W edge of a broad marshy basin. The church of St Barry was granted to the Knights Templar before 1180 and passed to the Knights Hospitallers in 1311. It was framed out sometime before 1527 (Gwynn and Hadock 1970, 330, 336) although it continued in use as the parish church of Killbarry. It is described as in repair in 1615 (Anon. 1902, 111).

Described by O'Donovan c. 1840 as a church '40ft by 17ft' (*c.* 12.2m x 5.18m) with a double belfry over the W gable (O'Flanagan 1929, 1-2). A fragment of the S wall survives (L4m). A smaller building described as '17ft by 15ft' (c. 5.18m x 4.5m) and attached to the church, and a larger building (L58ft; *c.* 17.67m) S of the church *(ibid.)* have been removed without trace. A table tomb, possible late 16th century (Ryland 1824, 288), and architectural fragments including the remains of a pointed doorway, are within the rectangular graveyard.
17:3 18-5-1989

362 Kilbarry
OS 17:3:6 (640, 483) Not indicated OD 50-100 25941, 10936
Fulachta fiadh (tradition)
In pasture at the top of a hill. Fulachta fiadh noted in the 1950's (NMI file). Not visible at ground level.
17:4 18-5-89

1187 Lacken (Gaultiere By.)
OS 17:7:3 (650, 399) Not indicated OD 50-100 25951, 10847
Earthwork (site)
In pasture on an E-facing slope. Marked as a circular enclosure on the 1st ed. of the OS 6-inch map. Not visible at ground level.
17:14 18-5-1989

1 Ballindud
OS 17:8:1 (716, 425) 'Dolmen' OD 0-50 26022, 10874
Portal Tomb
In rough pasture, on a gentle W-facing slope. Sub-circular roofstone (dims. 4.3x3.8m; max. T1m) supported on one stone and facing SW. Depicted in Ryland (1824, 299-300) as supported on a second portal stone with a tall backstone. (Atkins 1896, 71; Borlase 1897, vol. 1, 62-3; O Nuallain 1983, 103).
17:16 16-6-1989.

823 Carriganard
OS 17:7:1 (505, 409) Not indicated OD 0-100 25798, 10857
Enclosure (site)
In an undulating landscape. Cropmark of a circular enclosure (diam. c. 35m) which is bisected by a N-S field bank, visible on aerial photographs (MM (78) 25-9, 34-5).
17:115

1387 Kill St. Laurence
OS 17:4:5 (816, 464) 'Kill St Lawrence Church (in Ruins)' OD 50-100 26127, 10917
Church (site)
On a slight rise in a low-lying landscape. Possible early ecclesiastical site and parish church of Kill St Lawrence within a rectangular graveyard. It was once part of the possessions of the Knights Hospitallers of Kilbarry **(1365)** (Nolan 1984, 47). Only the E gable with a rectangular window of Dundry stone inserted into a wider embrasure, and the W gable with a central doorway (largely destroyed) survives (int.dim. 9.7m E-W; ext. dim. 5.85m N-S).

The graveyard was used for famine burials and was enclosed by a rectangular masonry wall in the late 19th century. A fragment of a 17th century graveslab (Walton 1980, 70) was not located.. The graveyard is within a larger circular enclosure in rough pasture (dims. *c.* 130m N-S; *c.* 95m E-W) which is defined by a fosses (Wth at top 13.5m; Wth at base 4.5m; int. D 0.8m; ext. D 0.4m at S) E-SW, a curving road fence SW-NW and irregular field boundaries elsewhere.
17:5 22-5-1989

223 Kill St. Lawrence
OS 17:4:5 (824, 457) Not indicated OD 50-100 26135, 10909
Standing Stone (possible)
In wet, low-lying ground, outside and to the SE of the enclosure around Kill St Lawrence church **(1387)**. Shale stone (dims. c. 0.6m x c. 0.35m; original H 1.35m) roughly aligned N-S. The stone leans severely to W and may have been damaged in antiquity.
17:108 22-5-1989

1003 Ballyhoo
OS 17:7:6 (625, 375) Hachured OD 50-100 25926, 10822
Earthwork (site)
In pasture on an E-facing slope. Marked as a circular enclosure on the 1st ed. of the OS 6-inch map and as a quadrant of an enclosure on the current ed. Not visible at ground level.
17:13 18-5-1989

1389 Killure
OS 17:8:3 (872, 383) 'Church (in ruins)' OD 50-100 26187, 10832
Church
On the E side of a slight N-S ridge. Preceptory of the Knights Hospitallers first mentioned in 1300. By the Suppression in 1541 it was already farmed out (Gwynn and Hadock 1970, 334, 337) but the church continued as the parish church of Killure, although it is described as in ruins in 1615 (Anon. 1902, 110). Undifferentiated structure (int. dims. 15.1m E-W; 6.5m N-S), probably 13th century in date, of which the W gable and most of the N and S walls survive.

1056 Carrigavoe
OS 17:8:2 (820, 422) Not indicated OD 50-100 26132, 10872
Earthwork (tradition)
On a N-facing slope. Local tradition of an antiquity here. An area of scrub (dims. c. 30m E-W; c. 20m N-S) in the corner of a field represents the site.
17:17 22-8-1989

1702 Duagh
OS 17:7:5 (594, 316) Hachured OD 0-50 25893, 10759
Star-shaped fort
On a rise planted with cereal crop overlooking a stream to W and N. Fort thought to date to the Elizabethan (Poole 1930) or Cromwllian period (Carroll 1976a), although there are no contemporary records. O'Donovan (O'Flanagan 1929, 61) records that it was used as a barracks in 1798, a view which is supported by artefacts recovered at the site (Poole 1928). Rectangular platform (dims 62m N-S; 51m E-W) defined by low scarps (H 0.5m) except at N where there is a natural slope down to a stream (H c. 3m). Bastions are evident at the SE and SW corners as eroded mounds (diam. 25m; H 0.2-1.6m). (Kerrigan 1995, 102-3)

APPENDIX 3

Glossary

Tuff: a rock composed of compacted volcanic ash, crystals or rock fragments.

APPENDIX 4

REFERENCES

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Stace (1991). Field Flora of the British Isles. Cambridge University Press.

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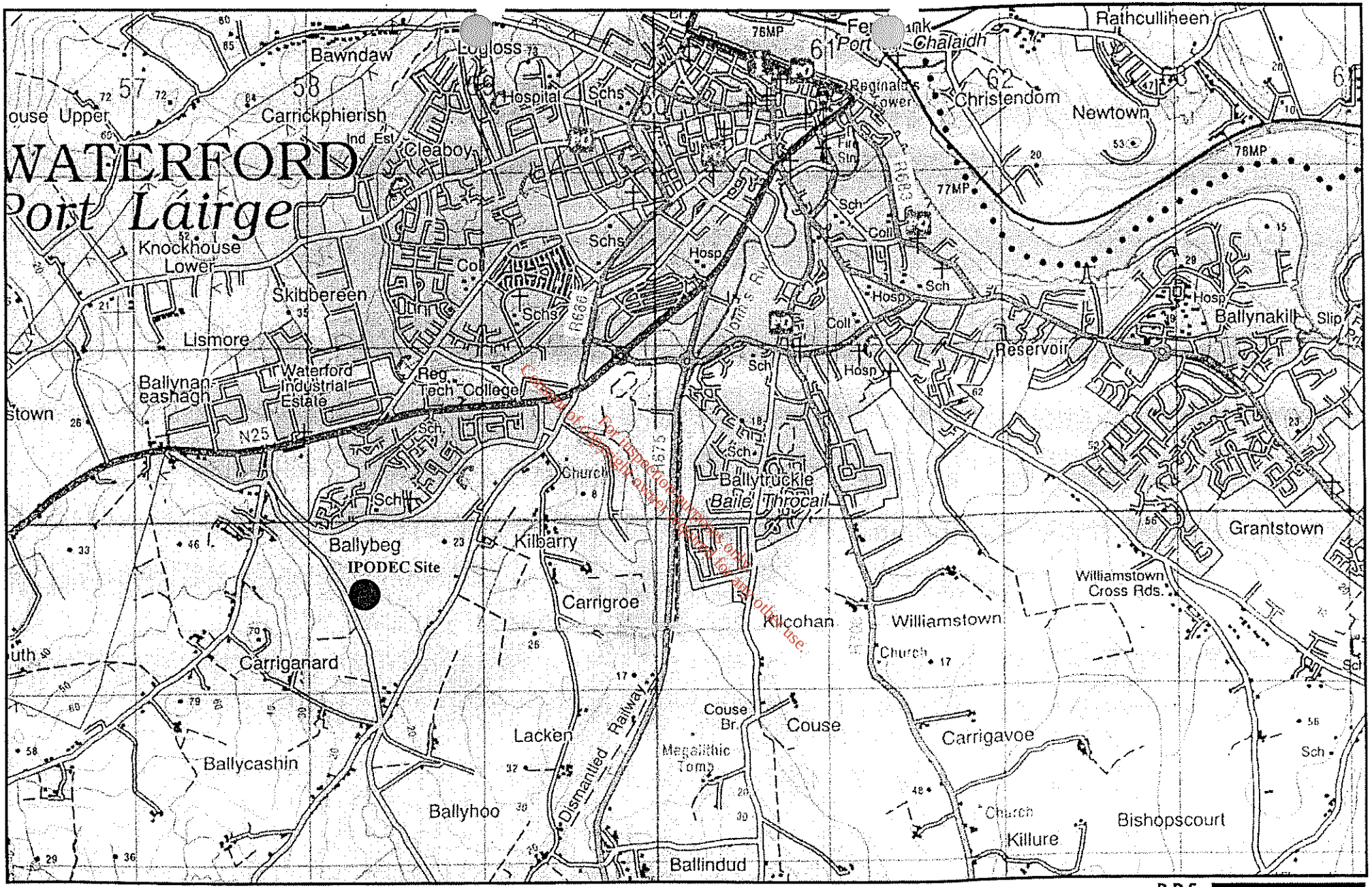
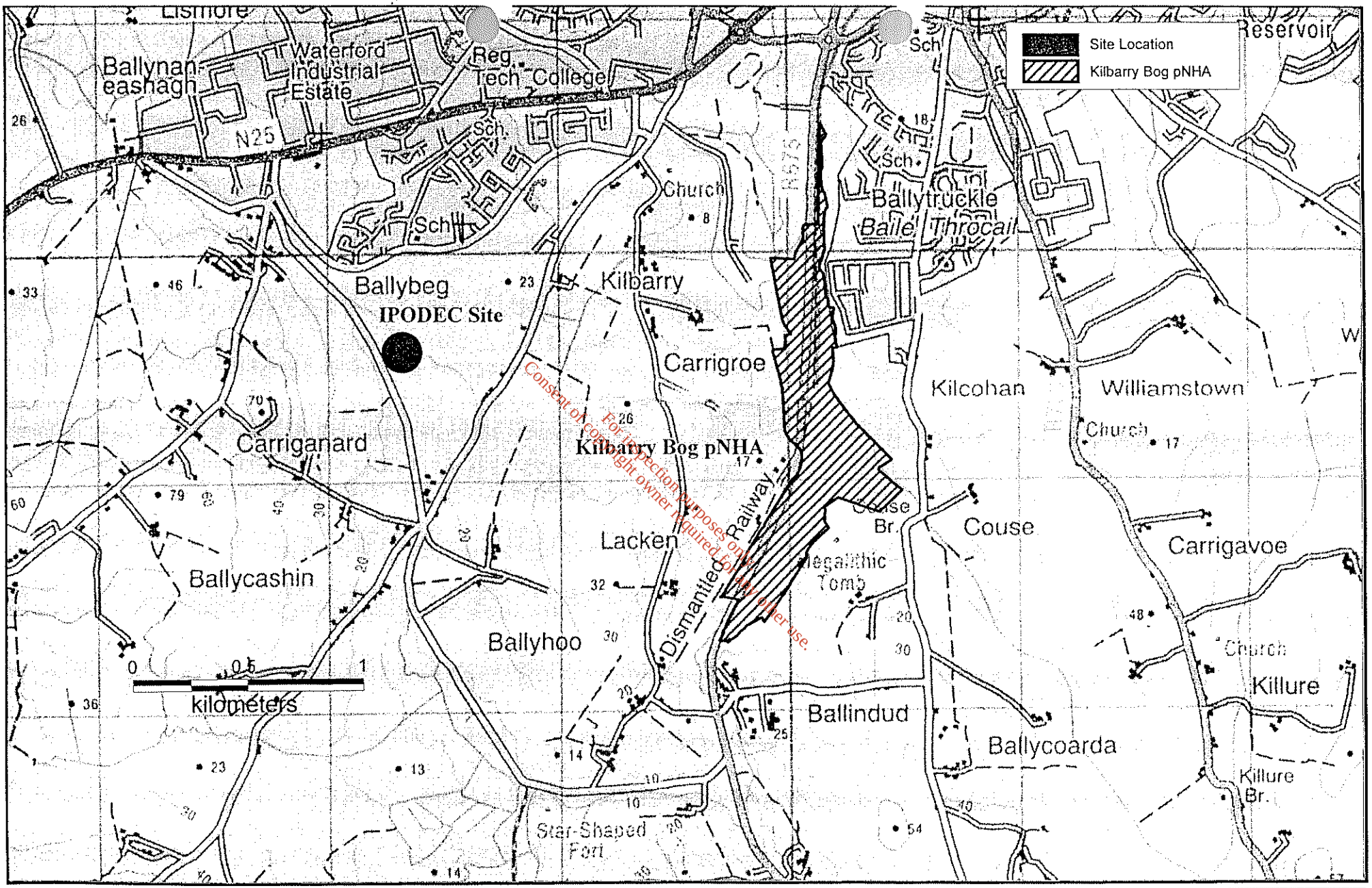


Location of IPODEC site at Carriganard, Six Cross Roads Business Park

RPS ENVIRONMENTAL SCIENCES IRELAND LIMITED

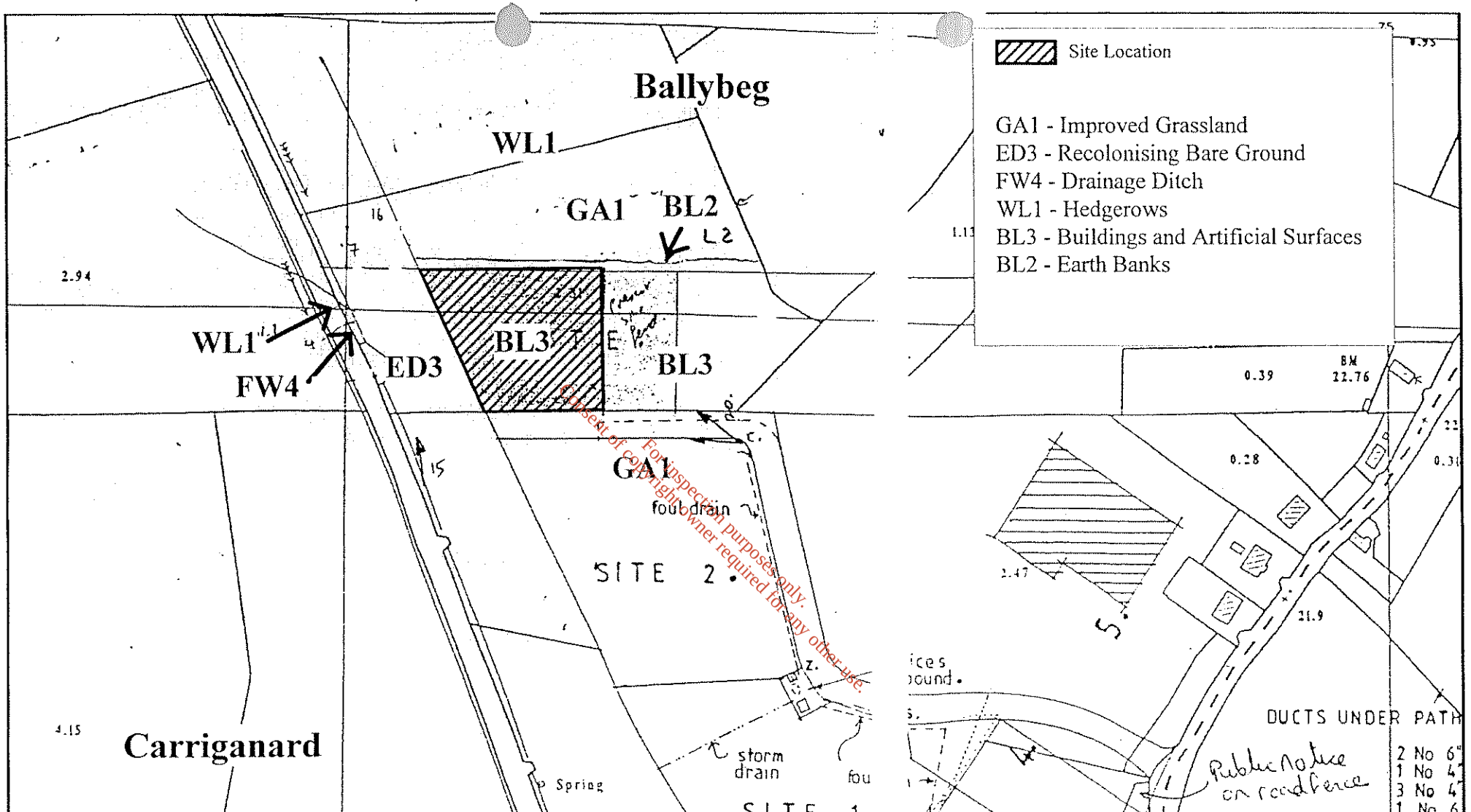
Figure 2.1



Location of Kilbarry Bog pNHA relative to IPODEC Site

RPS ENVIRONMENTAL SCIENCES IRELAND LIMITED

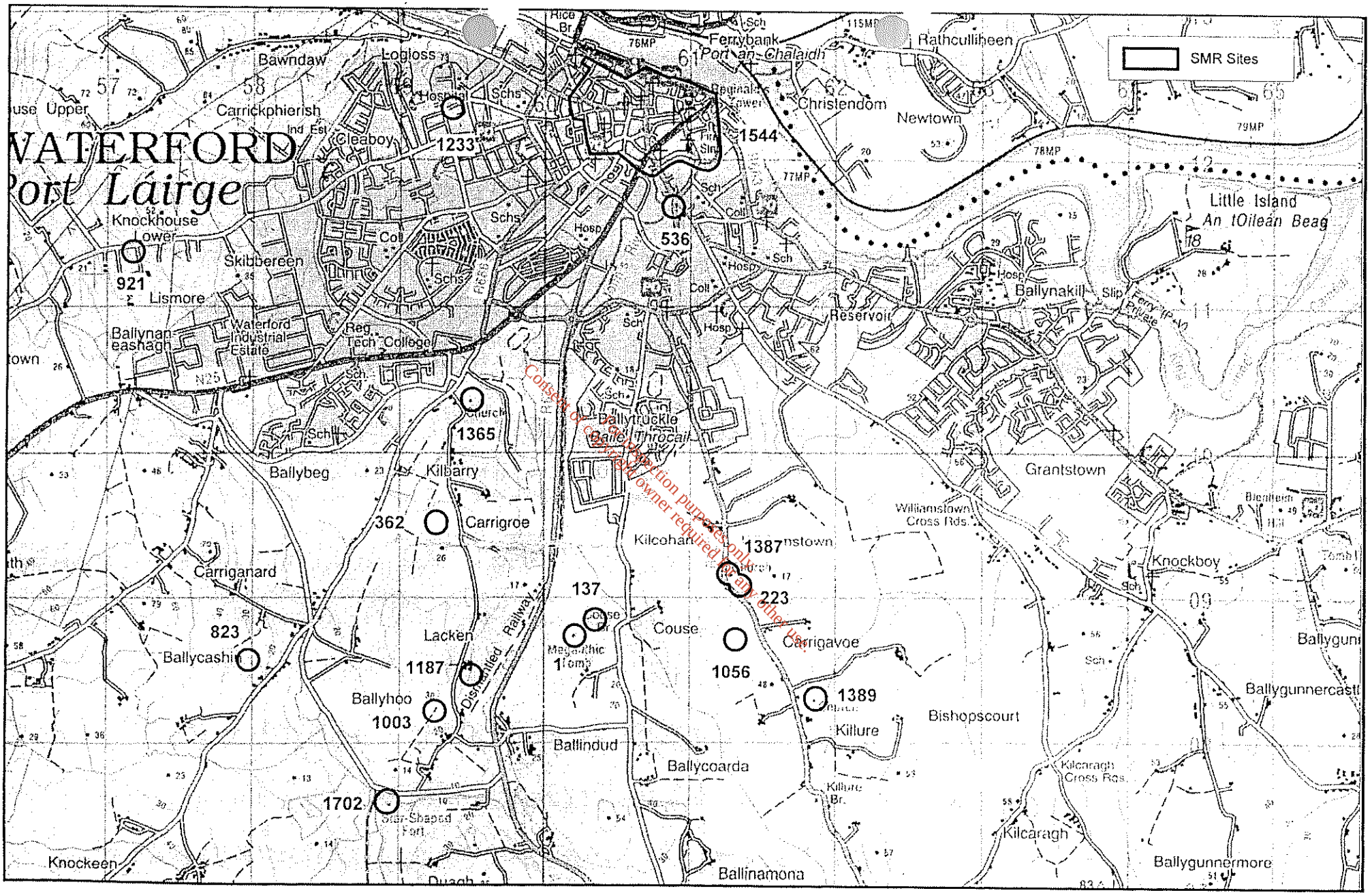
Figure 4.1



Habitats Recorded within & in the immediate environs of the study area

RPS ENVIRONMENTAL SCIENCES IRELAND LIMITED

Figure 4.2



Archaeological sites (from Co. Waterford Sites & Monuments Record) in immediate vicinity of the site

RPS ENVIRONMENTAL SCIENCES IRELAND LIMITED

Figure 5.1

APPENDIX V

Please find overleaf the following item:

(1) Site Services Plan Drawing B3

(2) Surface Water Sampling Report

(3) Foul Water Report

Asphalt Finish
Site Boundary
Interceptor Drain
6" PVC
Asphalt Finish
Roof Run Off Monitoring Point SW4
Green Road
Concrete Apron
Materials Handling & Recycling Building
Truck Wash Bay
New Open Sided Storage Building
Cardboard Baling Area
Truck Wash Shed
New Extension Area
Office
New Concrete Apron
Grit Traps
Solids Seperator/oil Interceptor Capturing Runoff From Concrete Apron
Monitoring Point FW1
Before Interceptors 6" Pvc
After Interceptors 9" Pvc
Slope 1:65
Interceptor Surface Water SW1
Surface Water Roof Runoff SW2
9" PVC
6" PVC
Grit Trap
Oil Water Interceptor
Grit Trap
Surface Water Monitoring Point SW3
New Weighbridge Location
STORM OUTFALL

FOUL MH COVER: 17.48m INV: 15.38m
STORM MH COVER: 17.42m INV: 15.85m
FOUL MH COVER: 16.87m INV: 15.94m
FOUL MH COVER: 16.99m INV: 15.59m
STORM MH COVER: 16.77m INV: 15.47m
STORM MH COVER: 17.22m INV: 15.62m
FOUL MH COVER: 17.28m INV: 14.99m
FOUL MH COVER: 16.69m INV: 14.48m
FOUL MH COVER: 16.21m INV: 14.01m
FOUL MH COVER: 16.35m INV: 14.12m
FOUL MH COVER: 16.70m INV: 14.78m
STORM MH COVER: 16.66m COVER: 15.38m

FOUL MH COVER: 17.37m INV: 16.24m
STORM MH COVER: 17.33m INV: 16.25m
FOUL MH COVER: 17.60m INV: 16.90m
STORM MH COVER: 17.51m INV: 16.81m

LOCATION OF FUTURE BUILDING 10
BUILDING 11 NOT PART OF THIS APPLICATION
BUILDING 12 FFL 17.
CONSTRUCT NEW RECHARGE POINT TO UPSTREAM TO DETAIL
PUMPING STATION

LEGEND:
STORM WATER SEWER
FOUL WATER SEWER
WATERMAIN

Surface Water Monitoring Points
SW1 258320 E, 109451 N
SW2 258317 E, 109451 N
SW3 258286 E, 109438 N
SW4 258253 E, 109506 N

Foul Water Monitoring Points
FW1 258381 E, 109453 N

Scale 1:500 @ A1

NATURAL SCALE

ORIGINAL DRAWING SIZE A1 - (841 x 594)

Rev.	Drawn	Chk'd	Apprvd	Date	Description
A	PS	PL		02.03.2006	ISSUE FOR WASTE LICENSE REVIEW

Name of Client: ONYX Ireland Ltd.

Name of Job: ONYX, WATERFORD DEPOT
WASTE LICENSE REVIEW

Title of Drawing: SITE SERVICES PLAN

Scales Used: 1:500 @ A1, 1:1000 @ A3

Dwg. No.: 2006-115-02-Fig. B.3
Rev.: A

O:\ACAD\2006\115\02\FIG

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Sampling and Analysis of Surface Water Emissions at the IPODEC Ireland Ltd. Facility, Six Cross Roads Business Park Waterford City

Report No. W01 SW 2004

Prepared By: Michael Storan
Environmental Officer
IPODEC Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 9th April 2004

This report is certified as true and accurate.
IPODEC Ireland Ltd.

_____
Michael Storan
Environmental Officer

1.0 INTRODUCTION

IPODEC Ireland Ltd. are required to monitor the emissions to surface water from their facility at Six Cross Roads Business Park, Waterford City, on a quarterly basis in accordance with the Waste Licence 177-1.

This report details the results of samples taken for the 1st quarter of 2004 from monitoring points SW1 and SW2 respectively and the analytical techniques used. In addition a broad interpretation of the results are included where necessary.

2.0 SAMPLING AND ANALYSIS

Grab samples of the surface water emissions from monitoring locations SW1 and SW2 were taken, in accordance with standard methods by the Environmental Officer of IPODEC Ireland Ltd. on the 3rd March 2004. The pH, temperature and conductivity of the samples were recorded immediately using an ORION 1230 pH meter. This meter was calibrated accordingly prior to use. The calibration data was recorded and retained at the IPODEC facility.

The samples were subsequently sent by courier to Alcontrol Laboratories Ireland, 18a Rosemount Business Park, Ballycoolin, Dublin 11. The procedures for analysis are detailed in Alcontrol laboratories Ireland report No. 04-B00962/01 (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are detailed in Table 3.1 below.

Table 3.1 Results of Surface Water Monitoring Points at SW1 and SW2			
Parameters	**SW1 Concentration**	**SW2 Concentration**	**ELV's as per Waste Licence 177-1**
PH (pH units)	7.67	6.09	-
Temperature (C)	10.9	10.4	-
BOD (mg/L)	9.0	<2	25 mg/L
Mineral Oils (ug/L)	<10	<10	5 mg/L
OFG (mg/L)	<1	<1	-
Suspended Solids (mg/L)	22	<10	35 mg/L
Conductivity (uS/cm @ 20 C)	194	40	-
Visual Inspection	Clear	Clear	-

4.0 DISCUSSION

The results of the analysis for SW1 and SW2 are detailed in Table 3.1 above.

The results indicate that the parameters measured for SW1 and SW2 are within the ELV's for the Waste Licence 177-1 for the 1st quarter of 2004.

Sampling and Analysis of Surface Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park Waterford City

Report No. W02 SW 2004

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 20th July 2004

This report is certified as true and accurate.
ONYX Ireland Ltd.

_____
Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to surface water from their facility at Six Cross Roads Business Park, Waterford City, on a quarterly basis in accordance with the Waste Licence 177-1.

This report details the results of samples taken for the 2nd quarter of 2004 from monitoring points SW1 and SW2 respectively and the analytical techniques used. In addition a broad interpretation of the results are included where necessary.

2.0 SAMPLING AND ANALYSIS

Grab samples of the surface water emissions from monitoring locations SW1 and SW2 were taken, in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. on the 22nd June 2004. The pH, temperature and conductivity of the samples were recorded immediately using an ORION 1230 pH meter. This meter was calibrated accordingly prior to use. The calibration data was recorded and retained at the ONYX facility.

The samples were subsequently sent by courier to Consultus Laboratories, Glanmire Industrial estste, Glanmire, Cork. The procedures for analysis are detailed in Consultus Laboratories Report No.4972J (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are detailed in Table 3.1 below.

Table 3.1 Results of Surface Water Monitoring Points at SW1 and SW2			
Parameters	**SW1 Concentration**	**SW2 Concentration**	**ELV's as per Waste Licence 177-1**
PH (pH units)	8.50	6.73	-
Temperature (C)	16.8	16.2	-
BOD (mg/L)	12	2	25 mg/L
Mineral Oils (ug/L)	<10	<10	5 mg/L
OFG (mg/L)	<10	<10	-
Suspended Solids (mg/L)	29	<5	35 mg/L
Conductivity (uS/cm @ 20 C)	278	82	-
Visual Inspection	Clear	Clear	-

4.0 DISCUSSION

The results of the analysis for SW1 and SW2 are detailed in Table 3.1 above.

The results indicate that the parameters measured for SW1 and SW2 are within the ELV's for the Waste Licence 177-1 for the 2nd quarter of 2004.

CONSULTUS REPORT

4972J

Sampling and Analysis of Surface Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park Waterford City

Report No. W03 SW 2004

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 18th October 2004

This report is certified as true and accurate.
ONYX Ireland Ltd.

_____
Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to surface water from their facility at Six Cross Roads Business Park, Waterford City, on a quarterly basis in accordance with the Waste Licence 177-1.

This report details the results of samples taken for the 3rd quarter of 2004 from monitoring points SW1 and SW2 respectively and the analytical techniques used. In addition a broad interpretation of the results are included where necessary.

2.0 SAMPLING AND ANALYSIS

Grab samples of the surface water emissions from monitoring locations SW1 and SW2 were taken, in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. on the 16th September 2004. The pH, temperature and conductivity of the samples were recorded immediately using an ORION 1230 pH meter. This meter was calibrated accordingly prior to use. The calibration data was recorded and retained at the ONYX facility.

The samples were subsequently sent by courier to Consultus Laboratories, Glanmire Industrial estste, Glanmire, Cork. The procedures for analysis are detailed in Consultus Laboratories Report No.8248 J (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are detailed in Table 3.1 below.

Table 3.1 Results of Surface Water Monitoring Points at SW1 and SW2			
Parameters	**SW1 Concentration**	**SW2 Concentration**	**ELV's as per Waste Licence 177-1**
PH (pH units)	6.65	6.49	-
Temperature (C)	16.2	15.7	-
BOD (mg/L)	3	<2	25 mg/L
Mineral Oils (ug/L)	728	<10	5 mg/L
OFG (mg/L)	<10	<10	-
Suspended Solids (mg/L)	7	<5	35 mg/L
Conductivity (uS/cm @ 20 C)	266	101	-
Visual Inspection	Clear	Clear	-

4.0 DISCUSSION

The results of the analysis for SW1 and SW2 are detailed in Table 3.1 above.

The results indicate that the parameters measured for SW1 and SW2 are within the ELV's for the Waste Licence 177-1 for the 3rd quarter of 2004.

CONSULTUS REPORT

4972J

Sampling and Analysis of Surface Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park Waterford City

Report No. W04 SW 2004

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 27th January 2005

This report is certified as true and accurate.
ONYX Ireland Ltd.

_____
Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to surface water from their facility at Six Cross Roads Business Park, Waterford City, on a quarterly basis in accordance with the Waste Licence 177-1.

This report details the results of samples taken for the 4th quarter of 2004 from monitoring points SW1 and SW2 respectively and the analytical techniques used. In addition a broad interpretation of the results are included where necessary.

2.0 SAMPLING AND ANALYSIS

Grab samples of the surface water emissions from monitoring locations SW1 and SW2 were taken, in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. on the 22nd December 2004. The pH, temperature and conductivity of the samples were recorded immediately using an ORION 1230 pH meter. This meter was calibrated accordingly prior to use. The calibration data was recorded and retained at the ONYX facility.

The samples were subsequently sent by courier to Consultus Laboratories, Glanmire Industrial estste, Glanmire, Cork. The procedures for analysis are detailed in Consultus Laboratories Report No.3392 K (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are detailed in Table 3.1 below.

Table 3.1 Results of Surface Water Monitoring Points at SW1 and SW2

Parameters	SW1 Concentration	SW2 Concentration	ELV's as per Waste Licence 177-1
PH (pH units)	7.1	6.4	-
Temperature (C)	8.3	8.0	-
BOD (mg/L)	6	2	25 mg/L
Mineral Oils (ug/L)	<10	<10	5 mg/L
OFG (mg/L)	-	-	-
Suspended Solids (mg/L)	23	7	35 mg/L
Conductivity (uS/cm @ 20 C)	146	83	-
Visual Inspection	Clear	Clear	-

4.0 DISCUSSION

The results of the analysis for SW1 and SW2 are detailed in Table 3.1 above.

The results indicate that the parameters measured for SW1 and SW2 are within the ELV's for the Waste Licence 177-1 for the 4th quarter of 2004.

Unfortunately the parameter for oils, fats and grease was not carried out at this monitoring event. This was an oversight on behalf of the Environmental Officer. Full analysis shall be carried out during the next monitoring event.

CONSULTUS REPORT

3392K

Sampling and Analysis of Surface Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park Waterford City

Report No. W01 SW 2005

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 5th May 2005

This report is certified as true and accurate.
ONYX Ireland Ltd.

_____
Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to surface water from their facility at Six Cross Roads Business Park, Waterford City, on a quarterly basis in accordance with the Waste Licence 177-1.

This report details the results of samples taken for the 1st quarter of 2005 from monitoring points SW1 and SW2 respectively and the analytical techniques used. In addition a broad interpretation of the results are included where necessary.

2.0 SAMPLING AND ANALYSIS

Grab samples of the surface water emissions from monitoring locations SW1 and SW2 were taken, in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. on the 24th March 2005. The pH, temperature and conductivity of the samples were recorded immediately using an ORION 1230 pH meter. This meter was calibrated accordingly prior to use. The calibration data was recorded and retained at the facility.

The samples were subsequently sent by courier to Consultus Laboratories Ireland, Glanmire, Cork. The procedures for analysis are detailed in Consultus laboratories Report No. 7882 K (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are detailed in Table 3.1 below.

Table 3.1 Results of Surface Water Monitoring Points at SW1 and SW2			
Parameters	**SW1 Concentration**	**SW2 Concentration**	**ELV's as per Waste Licence 177-1**
PH (pH units)	7.0	7.3	-
Temperature (C)	11.1	11.4	-
BOD (mg/L)	7	2	25 mg/L
Mineral Oils (ug/L)	<10	<10	5 mg/L
OFG (mg/L)	<10	<10	-
Suspended Solids (mg/L)	36	8	35 mg/L
Visual Inspection	Clear	Clear	-

4.0 DISCUSSION

The results of the analysis for SW1 and SW2 are detailed in Table 3.1 above.

The results indicate that the parameters for SW1 and SW2 are within the Emission Limit Values set down in Licence 177-1 with the exception of Suspended Solids parameter for SW1 monitoring point.
A result of 36 mg/L was obtained for this parameter which is marginally above the 35mg/L in accordance with licence 177-1.

Sampling and Analysis of Surface Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park Waterford City

Report No. W02 SW 2005

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 1st July 2005

This report is certified as true and accurate.
ONYX Ireland Ltd.

_____
Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to surface water from their facility at Six Cross Roads Business Park, Waterford City, on a quarterly basis in accordance with the Waste Licence 177-1.

This report details the results of samples taken for the 2nd quarter of 2005 from monitoring points SW1 and SW2 respectively and the analytical techniques used. In addition a broad interpretation of the results are included where necessary.

2.0 SAMPLING AND ANALYSIS

Grab samples of the surface water emissions from monitoring locations SW1 and SW2 were taken, in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. on the 7th June 2005. The Temperature of the samples was recorded immediately.

The samples were subsequently sent by courier to Consultus Laboratories Ireland, Glanmire, Cork. The procedures for analysis are detailed in Consultus laboratories Report No. 9784 K (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are detailed in Table 3.1 below.

Table 3.1 Results of Surface Water Monitoring Points at SW1 and SW2			
Parameters	**SW1 Concentration**	**SW2 Concentration**	**ELV's as per Waste Licence 177-1**
PH (Ph units)	7.2	6.9	-
Temperature (C)	16.6	16.0	-
BOD (mg/L)	5	23	25 mg/L
Mineral Oils (ug/L)	<10	<10	5 mg/L
OFG (mg/L)	<10	<10	-
Suspended Solids (mg/L)	<5	5	35 mg/L
Visual Inspection	Clear	Clear	-

4.0 DISCUSSION

The results of the analysis for SW1 and SW2 are detailed in Table 3.1 above.

The results indicate that the parameters for SW1 and SW2 are within the Emission Limit Values set down in Licence 177-1.

ATTACHMENT II

CONSULTUS LABORATORIES

REPORT No. 9784K

Sampling and Analysis of Surface Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park Waterford City

Report No. W03 SW 2005

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 14th October 2005

This report is certified as true and accurate.
ONYX Ireland Ltd.

_____
Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to surface water from their facility at Six Cross Roads Business Park, Waterford City, on a quarterly basis in accordance with the Waste Licence 177-1.

This report details the results of samples taken for the 3rd quarter of 2005 from monitoring points SW1 and SW2 respectively and the analytical techniques used. In addition a broad interpretation of the results are included where necessary.

2.0 SAMPLING AND ANALYSIS

Grab samples of the surface water emissions from monitoring locations SW1 and SW2 were taken, in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. on the 21st September 2005. The Temperature of the samples was recorded immediately.

The samples were subsequently sent by courier to Consultus Laboratories Ireland, Glanmire, Cork. The procedures for analysis are detailed in Consultus laboratories Report No. 6404L and 6403L respectively (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are detailed in Table 3.1 below.

Table 3.1 Results of Surface Water Monitoring Points at SW1 and SW2			
Parameters	**SW1 Concentration**	**SW2 Concentration**	**ELV's as per Waste Licence 177-1**
PH (Ph units)	7.6	7.5	-
Temperature (C)	12.0	13.0	-
BOD (mg/L)	<4	<2	25 mg/L
Mineral Oils (ug/L)	<10	<10	5 mg/L
OFG (mg/L)	<10	<10	-
Suspended Solids (mg/L)	17	<5	35 mg/L
Visual Inspection	Clear	Clear	-

4.0 DISCUSSION

The results of the analysis for SW1 and SW2 are detailed in Table 3.1 above.

The results indicate that the parameters for SW1 and SW2 are within the Emission Limit Values set down in Licence 177-1.

ATTACHMENT II

CONSULTUS LABORATORIES

REPORT No. 6402 L and 6403L

Sampling and Analysis of Surface Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park Waterford City

Report No. W04 SW 2005

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 25th January 2006

This report is certified as true and accurate.
ONYX Ireland Ltd.

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Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to surface water from their facility at Six Cross Roads Business Park, Waterford City, on a quarterly basis in accordance with the Waste Licence 177-1.

This report details the results of samples taken for the 4th quarter of 2005 from monitoring points SW1 and SW2 respectively and the analytical techniques used. In addition a broad interpretation of the results are included where necessary.

2.0 SAMPLING AND ANALYSIS

Grab samples of the surface water emissions from monitoring locations SW1 and SW2 were taken, in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. on the 13th December 2005. The Temperature of the samples was recorded immediately.

The samples were subsequently sent by courier to Consultus Laboratories Ireland, Glanmire, Cork. The procedures for analysis are detailed in Consultus laboratories Report No. 1587M and 1588M respectively (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are detailed in Table 3.1 below.

Table 3.1 Results of Surface Water Monitoring Points at SW1 and SW2			
Parameters	**SW1 Concentration**	**SW2 Concentration**	**ELV's as per Waste Licence 177-1**
PH (Ph units)	7.1	7.2	-
Temperature (C)	9.0	8.0	-
BOD (mg/L)	<4	<4	25 mg/L
Mineral Oils (ug/L)	<10	<10	5 mg/L
OFG (mg/L)	<10	<10	-
Suspended Solids (mg/L)	<5	<5	35 mg/L
Visual Inspection	Clear	Clear	-

4.0 DISCUSSION

The results of the analysis for SW1 and SW2 are detailed in Table 3.1 above.

The results indicate that the parameters for SW1 and SW2 are within the Emission Limit Values set down in Licence 177-1.

ATTACHMENT II

CONSULTUS LABORATORIES

REPORT No. 1587M and 1588M

Sampling and Analysis of Foul Water Emissions at the IPODEC Ireland Ltd. Facility, Six Cross Roads Business Park, Waterford City

Report No. W01 FW –2004

Prepared By: Michael Storan
Environmental Officer
IPODEC Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 9th March 2004

This report is certified as true and accurate.
IPODEC Ireland Ltd.

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Michael Storan
Environmental Officer

1.0 INTRODUCTION

IPODEC Ireland Ltd. are required to monitor the emissions to foul sewer from their facility at Six Cross Roads Business Park, Waterford City, in accordance with the Waste Licence 177-1 issued by the Environmental Protection Agency.

This report details the results of the samples taken on 3rd March 2004.

2.0 SAMPLING AND ANALYSIS

A grab sample of the foul sewer emissions from monitoring point FW1 was taken in accordance with standard methods by the Environmental Officer of IPODEC Ireland Ltd. at the Waterford Transfer Station on the 3rd March 2004. The pH, temperature and conductivity of the sample were recorded immediately using an ORION 1230 pH/conductivity meter. This meter was calibrated prior to use. The calibration data was recorded and retained at the IPODEC facility. The sample was sent immediately by courier to Alcontrol laboratories, 18a Rosemount Business Park, Ballycoolin, Dublin 11. The procedure for analysis of the sample are detailed in report No. 04-B00962/01 (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are discussed in table 3.1 below.

Table 3.1 Results of Foul Monitoring at FW1		
Parameters	**Concentration**	**ELV's as per Waste Licence 177-1**
PH (pH units)	7.35	6-9
Temperature (C)	11.5	18
BOD (mg/L)	108	400
COD (mg/L)	67	1,100
Suspended Solids (mg/L)	18	300
MBAS (mg/L)	<0.2	0.2
Conductivity (uS/cm @20 C)	217	1,500
OFG (mg/L)	<1	10
Visual Inspection	cloudy	-

In addition the Flow Rate to Foul Sewer was measured at **0.3765 m3/hour.**

4.0 DISCUSSION

The results of the analysis for FW1 are detailed in table 3.1 above.

The results indicate that the parameters measured for FW1 are within the ELV's for the Waste Licence 177-1 for the 1st quarter of 2004.

ATTACHMENT I

ALCONTROL REPORT NO. 03-B04279

Sampling and Analysis of Foul Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park, Waterford City

Report No. W02 FW –2004

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 20th July 2004

This report is certified as true and accurate.
ONYX Ireland Ltd.

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Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to foul sewer from their facility at Six Cross Roads Business Park, Waterford City, in accordance with the Waste Licence 177-1 issued by the Environmental Protection Agency.

This report details the results of the samples taken on 22nd June 2004.

2.0 SAMPLING AND ANALYSIS

A grab sample of the foul sewer emissions from monitoring point FW1 was taken in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. at the Waterford Transfer Station on the 22nd June 2004. The pH, temperature and conductivity of the sample were recorded immediately using an ORION 1230 pH/conductivity meter. This meter was calibrated prior to use. The calibration data was recorded and retained at the ONYX facility. The sample was sent immediately by courier to Consultus laboratories, Glanmire Industrial estate, Glanmire, Cork. The procedure for analysis of the sample are detailed in report No. 4972J (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are discussed in table 3.1 below.

Table 3.1 Results of Foul Monitoring at FW1		
Parameters	**Concentration**	**ELV's as per Waste Licence 177-1**
PH (pH units)	6.64	6-9
Temperature (C)	16.2	18
BOD (mg/L)	580	400
COD (mg/L)	1232	1,100
Suspended Solids (mg/L)	73	300
MBAS (mg/L)	<0.01	0.2
Conductivity (uS/cm @20 C)	1214	1,500
OFG (mg/L)	22	10
Visual Inspection	cloudy	-

In addition the Flow Rate to Foul Sewer was measured at **0.8113 m3/hour.**

4.0 DISCUSSION

The results of the analysis for FW1 are detailed in table 3.1 above.

The results indicate that the BOD, COD and OFG parameters measured for FW1 are outside the ELV's for the Waste Licence 177-1 for the 2nd quarter of 2004. The Foul water drain had previously been desludged on the 26th May 2004 and was due again at the end of June.

Two days following collection of the samples the Foul Water drainage system was desludged. A record of this cleaning of the drain is kept on file for your attention.

ATTACHMENT I

CONSULTUS LABORATORIES

REPORT 4972 J

Sampling and Analysis of Foul Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park, Waterford City

Report No. W03 FW –2004

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 18th Oct 2004

This report is certified as true and accurate.
ONYX Ireland Ltd.

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Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to foul sewer from their facility at Six Cross Roads Business Park, Waterford City, in accordance with the Waste Licence 177-1 issued by the Environmental Protection Agency.

This report details the results of the samples taken on 16th September 2004.

2.0 SAMPLING AND ANALYSIS

A grab sample of the foul sewer emissions from monitoring point FW1 was taken in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. at the Waterford Transfer Station on the 16th September 2004. The pH, temperature and conductivity of the sample were recorded immediately using an ORION 1230 pH/conductivity meter. This meter was calibrated prior to use. The calibration data was recorded and retained at the ONYX facility. The sample was sent immediately by courier to Consultus laboratories, Glanmire Industrial estate, Glanmire, Cork. The procedure for analysis of the sample are detailed in report No. 8248J (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are discussed in table 3.1 below.

Table 3.1 Results of Foul Monitoring at FW1		
Parameters	**Concentration**	**ELV's as per Waste Licence 177-1**
PH (pH units)	8.1	6-9
Temperature (C)	8.8	18
BOD (mg/L)	42	400
COD (mg/L)	93	1,100
Suspended Solids (mg/L)	19	300
MBAS (mg/L)	0.01	0.2
Conductivity (uS/cm @20 C)	279	1,500
OFG (mg/L)	<10	10
Visual Inspection	cloudy	-

In addition the Flow Rate to Foul Sewer was measured at **0.366 m3/hour.**

4.0 DISCUSSION

The results of the analysis for FW1 are detailed in table 3.1 above.

The results indicate that all of the parameters measures are within the ELV,s as set out according to Waste Licence 177-1 for the reporting period.

ATTACHMENT I

CONSULTUS LABORATORIES

REPORT 8248 J

Sampling and Analysis of Foul Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park, Waterford City

Report No. W04 FW –2004

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 27th January 2004

This report is certified as true and accurate.
ONYX Ireland Ltd.

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Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to foul sewer from their facility at Six Cross Roads Business Park, Waterford City, in accordance with the Waste Licence 177-1 issued by the Environmental Protection Agency.

This report details the results of the samples taken on 22nd December 2004.

2.0 SAMPLING AND ANALYSIS

A grab sample of the foul sewer emissions from monitoring point FW1 was taken in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. at the Waterford Transfer Station on the 22nd December 2004. The pH, temperature and conductivity of the sample were recorded immediately using an ORION 1230 pH/conductivity meter. This meter was calibrated prior to use. The calibration data was recorded and retained at the ONYX facility. The sample was sent immediately by courier to Consultus laboratories, Glanmire Industrial estate, Glanmire, Cork. The procedure for analysis of the sample are detailed in report No. 3392K (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are discussed in table 3.1 below.

Table 3.1 Results of Foul Monitoring at FW1		
Parameters	**Concentration**	**ELV's as per Waste Licence 177-1**
PH (pH units)	8.1	6-9
Temperature (C)	8.8	18
BOD (mg/L)	42	400
COD (mg/L)	93	1,100
Suspended Solids (mg/L)	19	300
MBAS (mg/L)	0.01	0.2
Conductivity (uS/cm @20 C)	279	1,500
OFG (mg/L)	<10	10
Visual Inspection	cloudy	-

In addition the Flow Rate to Foul Sewer was measured at **0.1385 m3/hour.**

4.0 DISCUSSION

The results of the analysis for FW1 are detailed in table 3.1 above.

The results indicate that all of the parameters measures are within the ELV,s as set out according to Waste Licence 177-1 for the reporting period.

ATTACHMENT I

CONSULTUS LABORATORIES

REPORT 3392K

Sampling and Analysis of Foul Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park, Waterford City

Report No. W01 FW –2005

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 5th May 2005

This report is certified as true and accurate.
ONYX Ireland Ltd.

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Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to foul sewer from their facility at Six Cross Roads Business Park, Waterford City, in accordance with the Waste Licence 177-1 issued by the Environmental Protection Agency.

This report details the results of the samples taken for the first quarter of 2005 from monitoring point FW1 and the analytical techniques used. In addition a broad interpretation of the results are included where necessary.

2.0 SAMPLING AND ANALYSIS

A grab sample of the foul sewer emissions from monitoring point FW1 was taken in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. at the Waterford Transfer Station on the 24th March 2005. The pH, temperature and conductivity of the sample were recorded immediately using an ORION 1230 pH/conductivity meter. This meter was calibrated prior to use. The calibration data was recorded and retained at the ONYX facility. The sample was sent immediately by courier to Consultus laboratories, Glanmire Industrial estate, Glanmire, Cork. The procedure for analysis of the sample are detailed in report No. 7881K (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are discussed in table 3.1 below.

Table 3.1 Results of Foul Monitoring at FW1

Parameters	**Concentration**	**ELV's as per Waste Licence 177-1**
PH (pH units)	6.9	6-9
Temperature (C)	10.2	18
BOD (mg/L)	111	400
COD (mg/L)	233	1,100
Suspended Solids (mg/L)	64	300
MBAS (mg/L)	0.19	0.2
Conductivity (uS/cm @20 C)	394	1,500
OFG (mg/L)	<10	10
Visual Inspection	cloudy	-

In addition the Flow Rate to Foul Sewer was measured at **0.138 m3/hour** for 24th March 2005**.**

4.0 DISCUSSION

The results of the analysis for FW1 are detailed in table 3.1 above.

The results indicate that all of the parameters measures are within the ELV,s as set out according to Waste Licence 177-1 for the reporting period.

ATTACHMENT I

CONSULTUS LABORATORIES

REPORT 7881K

Sampling and Analysis of Foul Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park, Waterford City

Report No. W02 FW –2005

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 1st July 2005

This report is certified as true and accurate.
ONYX Ireland Ltd.

_____
Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to foul sewer from their facility at Six Cross Roads Business Park, Waterford City, in accordance with the Waste Licence 177-1 issued by the Environmental Protection Agency.

This report details the results of the samples taken for the second quarter of 2005 from monitoring point FW1 and the analytical techniques used. In addition a broad interpretation of the results are included where necessary.

2.0 SAMPLING AND ANALYSIS

A grab sample of the foul sewer emissions from monitoring point FW1 was taken in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. at the Waterford Transfer Station on the 7th June 2005. The temperature of the sample was recorded immediately using an ORION 1230 pH/conductivity meter. The sample was sent immediately by courier to Consultus laboratories, Glanmire Industrial estate, Glanmire, Cork. The procedure for analysis of the sample are detailed in report No. 9785K (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are discussed in table 3.1 below.

Table 3.1 Results of Foul Monitoring at FW1		
Parameters	**Concentration**	**ELV's as per Waste Licence 177-1**
PH (pH units)	6.1	6-9
Temperature (C)	15.9	18
BOD (mg/L)	**430**	400
COD (mg/L)	635	1,100
Suspended Solids (mg/L)	46	300
MBAS (mg/L)	<0.01	0.2
Conductivity (uS/cm @20 C)	610	1,500
OFG (mg/L)	<10	10
Visual Inspection	cloudy	-

In addition the Flow Rate to Foul Sewer was measured at **0.0204 m3/hour** for 7th June 2005**.**

4.0 DISCUSSION

The results of the analysis for FW1 are detailed in table 3.1 above.

The results indicate that all of the parameters measures are within the ELV,s for Waste licence 177-1 with the exception of BOD. A BOD result of 430mg/L was recorded which marginally exceeded the Licence Limit of 400mg/L.

The site drains had not been desludged for several weeks before this sampling event. The last recorded event when the drainage system was cleaned was on the 7th of April 2005. Onyx was unable to desludge the drainage system until a suitable disposal facility could be found and approval was granted from the Agency. As a result there was additional build up of contaminants in the drainage system over this period giving rise to the elevated BOD level in the Foul Sewer Monitoring Point.

The Agency granted approval for the disposal of the interceptor sludge to Sita Environmental on 28th June 2005. Subsequently the drainage system is scheduled to be desludged on week ending 8th July 2005.

ATTACHMENT I

CONSULTUS LABORATORIES

REPORT 9785K

Sampling and Analysis of Foul Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park, Waterford City

Report No. W03 FW –2005

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 14th October 2005

This report is certified as true and accurate.
ONYX Ireland Ltd.

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Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to foul sewer from their facility at Six Cross Roads Business Park, Waterford City, in accordance with the Waste Licence 177-1 issued by the Environmental Protection Agency.

This report details the results of the samples taken for the third quarter of 2005 from monitoring point FW1 and the analytical techniques used. In addition a broad interpretation of the results are included where necessary.

2.0 SAMPLING AND ANALYSIS

A grab sample of the foul sewer emissions from monitoring point FW1 was taken in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. at the Waterford Transfer Station on the 21st September 2005. The temperature of the sample was recorded immediately. The sample was sent immediately by courier to Consultus laboratories, Glanmire Industrial estate, Glanmire, Cork. The procedure for analysis of the sample are detailed in report No. 6404L (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are discussed in table 3.1 below.

Table 3.1 Results of Foul Monitoring at FW1		
Parameters	**Concentration**	**ELV's as per Waste Licence 177-1**
PH (pH units)	7.4	6-9
Temperature (C)	12.0	18
BOD (mg/L)	**7**	400
COD (mg/L)	68	1,100
Suspended Solids (mg/L)	84	300
MBAS (mg/L)	0.09	0.2
Conductivity (uS/cm @20 C)	234	1,500
OFG (mg/L)	<10	10
Visual Inspection	cloudy	-

In addition the Flow Rate to Foul Sewer was measured at **0.06775 m3/hour** for 21st September 2005**.**

4.0 DISCUSSION

The results of the analysis for FW1 are detailed in table 3.1 above.

The results indicate that all of the parameters measures are within the ELV,s for Waste licence 177-1.

ATTACHMENT I

CONSULTUS LABORATORIES

REPORT 6404L

Sampling and Analysis of Foul Water Emissions at the ONYX Ireland Ltd. Facility, Six Cross Roads Business Park, Waterford City

Report No. W04 FW –2005

Prepared By: Michael Storan
Environmental Officer
ONYX Ireland Ltd.
Six Cross Roads Business Park
Waterford City

Date: 25th January 2006

This report is certified as true and accurate.
ONYX Ireland Ltd.

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Michael Storan
Environmental Officer

1.0 INTRODUCTION

ONYX Ireland Ltd. are required to monitor the emissions to foul sewer from their facility at Six Cross Roads Business Park, Waterford City, in accordance with the Waste Licence 177-1 issued by the Environmental Protection Agency.

This report details the results of the samples taken for the fourth quarter of 2005 from monitoring point FW1 and the analytical techniques used. In addition a broad interpretation of the results are included where necessary.

2.0 SAMPLING AND ANALYSIS

A grab sample of the foul sewer emissions from monitoring point FW1 was taken in accordance with standard methods by the Environmental Officer of ONYX Ireland Ltd. at the Waterford Transfer Station on the 13th December 2005. The temperature of the sample was recorded immediately. The sample was sent immediately by courier to Consultus laboratories, Glanmire Industrial estate, Glanmire, Cork. The procedure for analysis of the sample are detailed in report No. 1589M (a copy of which is attached).

3.0 RESULTS AND DISCUSSION

The results of the analysis are discussed in table 3.1 below.

Table 3.1 Results of Foul Monitoring at FW1		
Parameters	**Concentration**	**ELV's as per Waste Licence 177-1**
PH (pH units)	7.3	6-9
Temperature (C)	9.0	18
BOD (mg/L)	25	400
COD (mg/L)	79	1,100
Suspended Solids (mg/L)	42	300
MBAS (mg/L)	0.02	0.2
Conductivity (uS/cm @20 C)	344	1,500
OFG (mg/L)	<10	10
Visual Inspection	cloudy	-

In addition the Flow Rate to Foul Sewer was measured at **0.075 m3/hour** for 13th December 2005**.**

4.0 DISCUSSION

The results of the analysis for FW1 are detailed in table 3.1 above.

The results indicate that all of the parameters measures are within the ELV,s for Waste licence 177-1.

ATTACHMENT I

CONSULTUS LABORATORIES

REPORT 1589M

APPENDIX VI

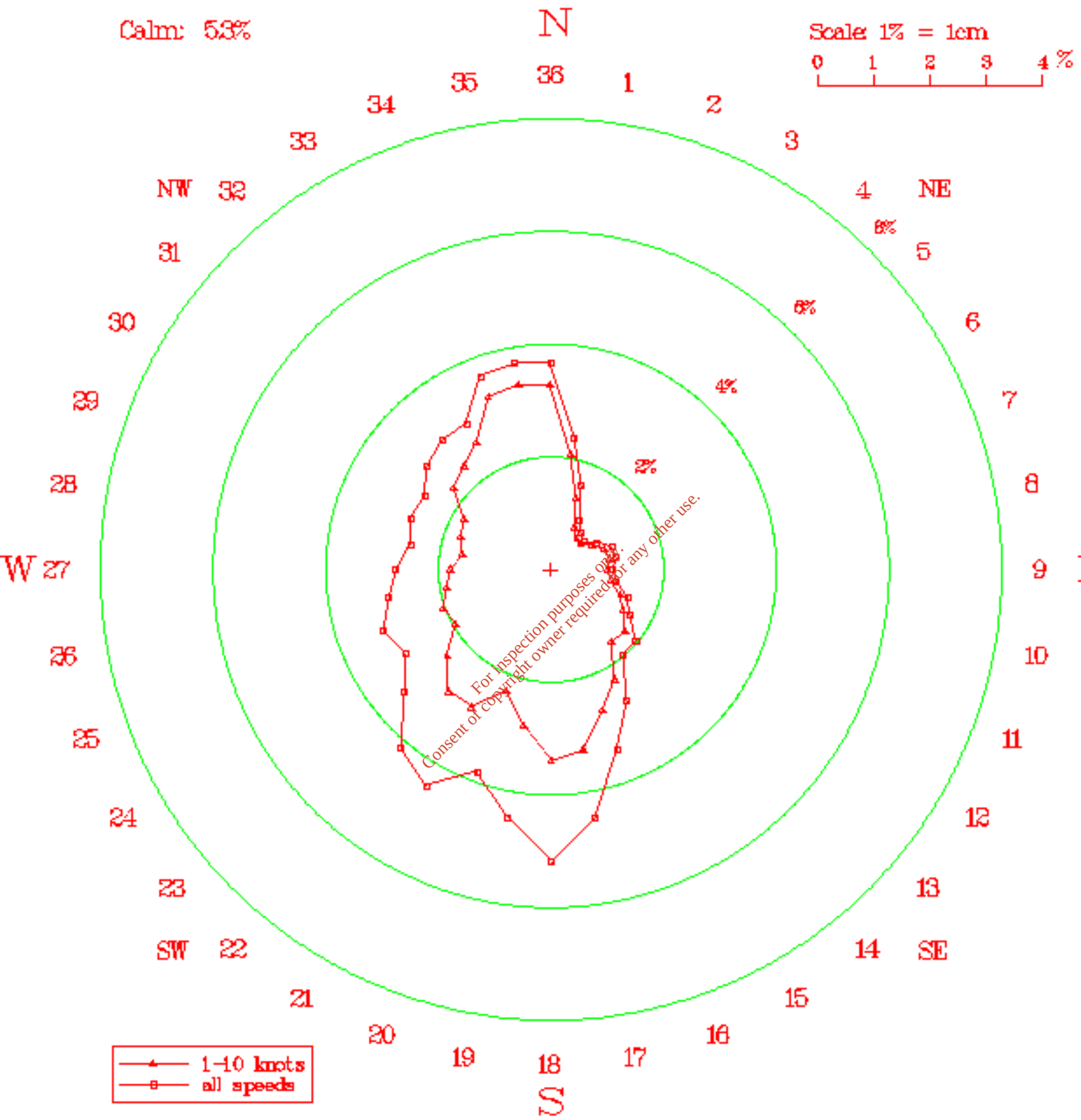
Please find overleaf the following item:

(1) Wind Rose for Kilkenny Station

(2) Wind Rose for Rosslare Station

KILKENNY 1990–2005

Percentage Frequency of Occurrence of Wind Directions



Percentage Frequency of Occurrence of Wind Speeds

+ less than 0.1

0	1–3	4–6	7–10	11–16	17–21	22–27	28–33	34–40	41–47	over 48	knots
5.3	22.7	22.8	25.8	18.3	3.8	1.1	0.1	+	0.0	0.0	%

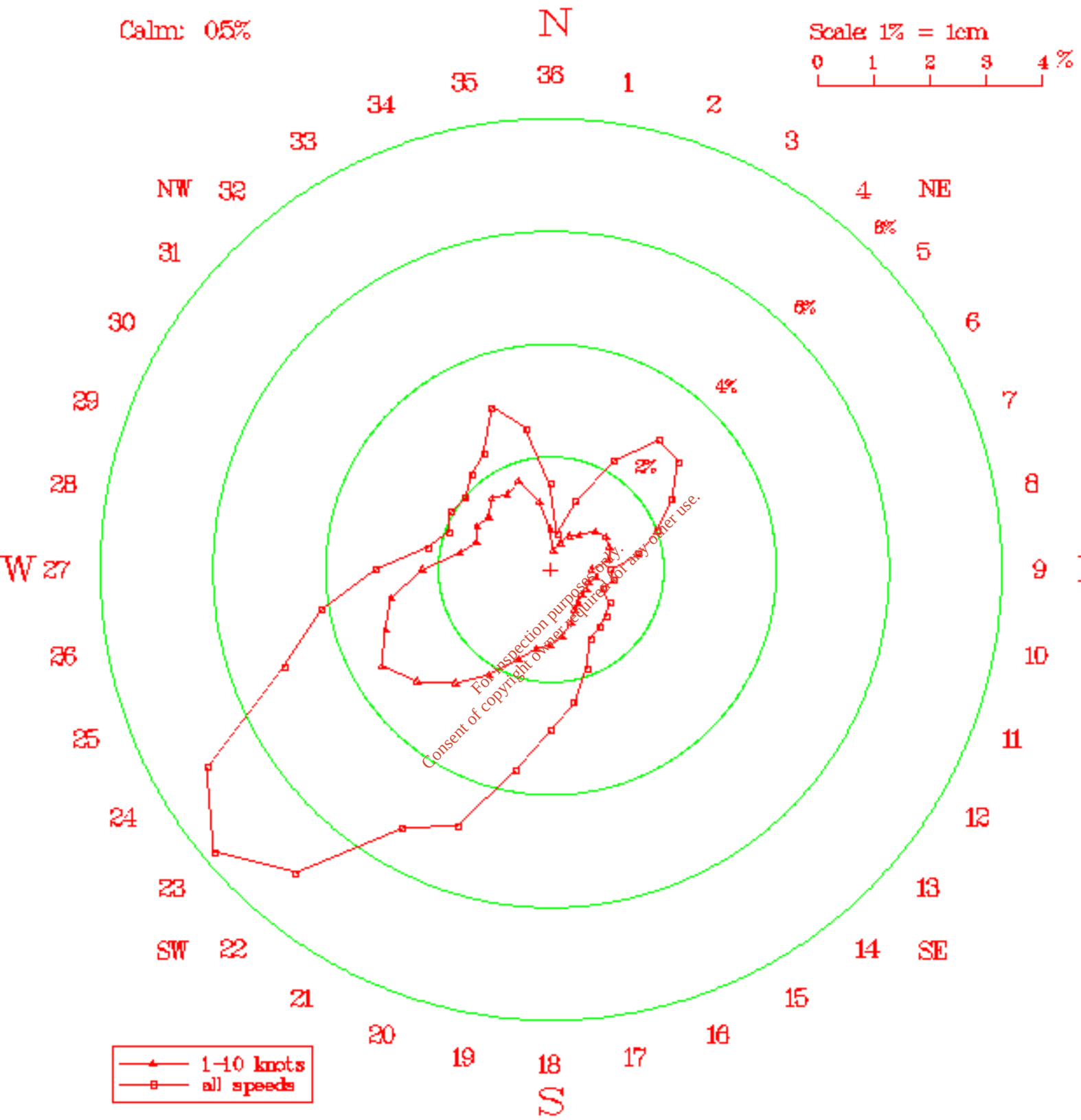
mean wind speed: 7.1 knots standard deviation: 5.1 knots

anemometer height: 12m

Met Eireann, Glasnevin Hill, Dublin 9.

ROSSLARE 1990–2005

Percentage Frequency of Occurrence of Wind Directions



Percentage Frequency of Occurrence of Wind Speeds

+ less than 0.1

0	1–3	4–6	7–10	11–16	17–21	22–27	28–33	34–40	41–47	over 48	knots
0.5	7.7	16.8	26.5	31.8	11.1	4.6	0.8	0.1	+	0.0	%

mean wind speed: 11.0 knots
standard deviation: 5.9 knots
anemometer height: 12m

Met Eireann, Glasnevin Hill, Dublin 9.

APPENDIX VII

Please find overleaf the following item:

(1) RPS Ecology Report 2005

DOCUMENT CONTROL SHEET

Client	Onyx Ireland Limited					
Project Title	Onyx Ecology					
Document Title	Ecological Assessment					
Document No.	MCE0301RP0001D01					
This Document Comprises	DCS	TOC	Text	List of Tables	List of Figures	No. of Appendices
	1	1	12	0	1	3

Rev.	Status	Author(s)	Reviewed By	Approved By	Office of Origin	Issue Date
01	draft	Emily McCarthy	Rick Mundy		Cork	17/01/2006

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APPENDICES

1 INTRODUCTION

In accordance with requirements of a Waste Licence Application ONYX must carry out an ecological assessment to determine the impacts of a Waste Transfer Facility, located in Unit 14 A, Six Cross Roads Business Park, Carriganard, Waterford, on the receiving environment. RPS Group have been commissioned by ONYX to prepare an ecological assessment of the area.

This section provides an assessment of the likely impact of the operation of the facility on the terrestrial ecological environment, i.e. terrestrial habitat, and terrestrial flora and fauna, including semi-aquatic mammals and birds. The assessment focuses on ecological features of conservation significance; both within, and in the vicinity of the site. The report will also review and update information previously reported by RPS in March 2001 (RPS Environmental Sciences, 2001).

Scientific names of plants and animals mentioned in the text are listed in Appendix 2.

2 METHODOLOGY

Initially, a desktop study was carried-out in order to identify any legally protected species or habitats that may be present within or close to the proposed development site, and to locate any designated nature conservation sites, such as proposed Natural Heritage Areas (pNHAs) candidate Special Areas of Conservation (cSACs), or Special Protection Areas for birds (SPAs), in the vicinity of the proposed development.

A field survey of the site was carried out on the 8th of December 2005 to examine the habitats, flora and fauna at the site; to evaluate their ecological importance; and to assess the potential impacts of the proposed development on them. The habitat survey of the site (Phase 1 Habitat Survey) followed the methodology of JNCC (1992). This survey also updated information previous reported by RPS in March 2001. Habitats within and adjacent to the development site were examined and were classified according to *A Guide to Habitats in Ireland* (Fossitt, 2000), published by the Heritage Council. The potential for the habitats present at the site to hold rare or protected plant species was assessed.

A mammal survey of the site was carried out, which concentrated on protected species such as badger, otter and red squirrel. The site was searched for tracks and signs of mammals according to methodology described in *Animal Tracks and Signs* (Bang and Dahlstrom, 2001); and *The Mammal Detective* (Strachan, 1995). Likely impacts of the proposed development upon mammals were identified and assessed. Where appropriate, mitigation measures are proposed in order to minimise ecological impacts of the proposed development.

2.1.1 Criteria for Identification of Ecological Constraints

The results of the baseline surveys were evaluated to determine the significance of the features located in the route corridor on an importance scale ranging from:

- International
- National
- County
- High Local Importance
- Local Importance
- Local Value
- Insignificant

For an explanation of the criteria used in this assessment see Appendix 1.

The significance of impacts was assessed on a combined basis of the value of the feature being affected and the magnitude of the impact. Impacts on features of less than local value are not considered to be potentially significant. The terminology used to define impact significance is described in Appendix 1.

Consultation has been carried out with National Parks and Wildlife Service (NPWS) Rare Plants Database, and with the appropriate staff in National Parks and Wildlife Service. At the current time, we are awaiting a response and / or comments and information from National Parks and Wildlife Service.

3 EXISTING ENVIRONMENT

The study area is located within a wider landscape, which was once agricultural farmland but has now altered to one dominated by industrial development. An area of agricultural land remains to the north west of the facility, however this has been modified to such an extent that it no longer retains any significant natural character, and is of very low ecological value. The Waste Transfer Facility is located within the Six Cross Roads Business Park hence much of the surrounding land it is dominated by business units. The facility is serviced by two roads, one located to the south within the industrial estate and another to the west (Lacken Road).

3.1 DESIGNATED SITES

The site of the Waste Transfer Facility does not overlap any designated sites for nature conservation. A review of the designated sites within 5km of the study area was carried out. This allowed for an assessment of any potential indirect impacts caused by the proposed scheme on sites of conservation importance. There is one proposed Natural Heritage Area (pNHA) and one candidate Special Area of Conservation (cSAC) within 5km of the proposed development. Details of these are presented in Table 3.1. The location of these sites are shown in Figure 1. The National Parks and Wildlife Service Site Synopses for designated sites listed below are presented in Appendix 3.

Table 3.1: Designated sites located within 5km of the proposed development.

Name	Site Code	Key Features	Distance + direction from site
Lower River Suir cSAC	2137	A number of Habitats Directive Annex I habitats occur, including the priority habitat, alluvial forest and also old oak woodlands, floating river vegetation and Atlantic and Mediterranean salt meadows. A number of Habitats Directive Annex II species occur, including freshwater pearl-mussel white-clawed crayfish, Atlantic salmon, twaite shad, sea lamprey, brook lamprey, river lamprey and otter. The site also holds Birds Directive Annex I species, including Greenland White-fronted Goose, Golden Plover, Whooper Swan and Kingfisher.	3.5km north
Kilbarry Bog pNHA	1700	Reedswamp and freshwater marsh. Dominated by Common Reed, important as the only remaining wetland in the vicinity. Summer Snowflake, a nationally scarce plant species occurs, and Reed Warbler, a nationally scarce bird species breeds.	1.4 km east

There are no designated Special Protection Areas for birds (SPAs) within 5km of the proposed development. The nearest SPA is Tramore Backstrand (site code 4027), 7.2 km to the south.

The proposed development will not have any negative impacts on any of these designated sites.

Candidate Special Areas of Conservation (cSAC) are protected under the European Union (EU) Habitats Directive (92/43/EEC), as implemented in Ireland by the European Communities (Natural Habitats) Regulations, 1997. Special Protection Areas (SPA's) are protected under the EU Habitats Directive, which complements EU directive 79/409/EEC, The Directive on the Conservation of Wild Birds ('The Birds Directive'), under which the SPA's were initially established. Whilst the Wildlife

(Amendment) Act 2000, under which proposed Natural Heritage Areas (pNHAs) are protected, they will not have statutory recognition until the consultative process with landowners has been completed; this process is currently underway.

3.1.1 Habitats

The distribution of habitats within, and adjacent to, the proposed development site are described below. The codes (such as GA1) that are given after each habitat type are those given in *A Guide to Habitats in Ireland* (Fossitt, 2000). A habitat map showing the distribution of habitats of the Waste Transfer Facility can be seen in Figure 1.

Buildings and artificial surfaces (ED3)

The Waste Transfer Facility and the majority of the surrounding area fall under this category. Business units are currently being constructed to the south of the facility. Another area occupied by buildings and artificial surfaces exists to the east of the facility that is currently occupied by 'DHL', and similarly to north, occupied by the 'Kilbarry Composting Plant'. The OSI (Ordinance Survey Ireland) has not updated its mapping to show the layout of these facilities (which have been newly constructed) therefore there locations have been approximated (see Figure 1).

Areas of this habitat type within the study area are not considered to be of any significant ecological value.

Improved agricultural grassland (GA1)

Areas of improved agricultural grassland, which are typically species-poor, are present to the northwest of study area. A small area of improved grassland (GA1) exists to the northeast corner of the Kilbarry Composting Plant. This supports species indicative of improved grassland as described by Fossitt (2000) such as, clovers, rye-grasses and meadow-grasses.

Areas of this habitat type within the study area are not considered to be of any significant ecological value.

Hedgerows (WL1)

A discontinuous hedgerow is located along the western boundary of the site. This is dominated by Hawthorn, with some Bramble.

Comparison with previous survey carried out by RPS (2001)

A number of alterations have occurred to the land surrounding the Waste Transfer Facility since the previous survey in 2001. Firstly the area of the facility has been increased to accommodate a new open sided storage building and a weighbridge. These additions extend over an area that was previously classified as recolonising bare ground (ED3) forming a new boundary with Lacken Road. The drainage ditch (FW4) which was recorded in the previously survey along the western boundary of the facility has been redirected and the water is presently being piped underground.

Areas of improved grassland (GA1) reported in the previous survey (2001) have now been developed into buildings and artificial surfaces (ED3). This includes the northern boundary that is currently adjacent the Kilbarry Composting Plant, and the southern boundary along which business units are currently being constructed.

3.2 FLORA

Common plant species recorded during the field survey on the 8th of December 2005, are detailed in the habitat descriptions in Section 3.2. During the survey, the habitats were also assessed as to their potential suitability for rare plants. The site lies within Ordnance Survey National Grid 10km square S50. A plant species list for this 10km square was generated from the CD-Rom version of the *New Atlas of British and Irish Flora* (Preston *et. al.,* 2002). This list was then compared to the lists of species protected under the Flora (Protection) Order of 1999; and those included in the Irish Red Book (Curtis and McGough, 1988). Table 3.2 shows these species with details of the records presented in Preston *et. al*. (2002).

Table 3.2 Rare or Protected Plant Species recorded from 10km squares S50 and S51, as indicated in Preston *et. al*. (2002).

Species	Status within 10km square S50	Protected / Rare Status
Cowslip	Pre-1970	Northern Ireland protection, Red Data Book 'Not Threatened'
Pale Dog-violet	1987-99	Flora (Protection) Order; Red Data Book 'Vulnerable'
Sea Knotgrass	1987-99	Red Data Book 'Not Threatened'
Sharp-leaved Fluellen	Pre-1970	Red Data Book 'Vulnerable'
Green-winged Orchid	Pre-1970	Red Data Book 'Vulnerable'

Cowslip is included within the "*Grassland Habitat Group*" in the Irish Red Data Book (Curtis and McGough, 1988). It was recorded by Preston *et. al*. (2002) pre-1970 from 10km square S50. This species is listed in the Red Data Book as 'Not Threatened' in the Republic of Ireland, but it rare, and is protected in Northern Ireland. Webb *et. al*., (1996) describe its distribution as being distribution as being *rare in the North-east and South-west,* frequent in the *centre*, occurring in *pastures.* Whilst suitable habitat may exist for this plant within the study area it was not recorded during the course of the field survey.

There is no suitable habitat present for Pale Dog-violet, Sea Knotgrass, Sharp-leaved Fluellen or Green-winged Orchid in the study area.

Comparison with previous survey carried out by RPS (2001)

No rare or protected plant species were recorded at the Waste Transfer Facility during the survey in March 2001 (RPS Environmental Sciences, 2001) or during the recent survey (2005), and none are considered likely to occur. Section 4.2 assess the potential impacts of the operation of the facility on the flora within the surrounding area.

3.3 FAUNA

3.3.1 Birds

Table 3.3 shows the bird species recorded during the site visit, 8th December 2005. All of these species can be considered to be common species of lowland Ireland.

Table 3.3: Bird species recorded at study area, 8th December 2005

Species	Number Recorded	Details
Wren	1	Singing in tree
Robin	1	In the hedgerow
Pied Wagtail	1	In the hedgerow
Blackbird	2	Feeding on the grassland
Magpie	1	Flying overhead

The proposed development site lies within Ordnance Survey (OS) National Grid 10km square S50. Gibbons *et. al*. (1993) gives the distribution of breeding bird species by 10km OS National Grid square. Table 3.4 shows the species of high conservation concern recorded breeding in 10km National Grid square S50. The species included are those listed either on the 'Red List' by Newton *et. al*. (2000), as being of high conservation concern in Ireland; listed in the Irish Red Data Book (Whilde, 1993) or listed under Appendix 1 of the EU 'Birds Directive'.

Table 3.4: Bird Species of High Conservation Concern Recorded in OS 10km Square S50 by Gibbons *et. al*. (1993).

Species	Breeding status within 10km square S50	Notes
Barn Owl	Confirmed breeding	Red Data Book 'Indeterminate' status. It is also listed on the Birdwatch Ireland (1999) 'Red List'.
Chough	Probably / possible breeding	Annex I of the EU Birds Directive, Red Data Book 'Rare' status.
Curlew	Probably / possible breeding	Birdwatch Ireland (1999) 'Red List'.
Lapwing	Possible Breeding	Birdwatch Ireland (1999) 'Red List'.
Yellowhammer	Confirmed breeding	Birdwatch Ireland (1999) 'Red List'.

No suitable breeding habitat exists for any of the species listed in Table 3.3 within or in the vicinity of the proposed development. The habitats present within the site are not of any importance to any bird species of high conservation concern.

3.3.2 Mammals

Hayden and Harrington (2000) give the distribution of mammal species in Ireland by 20km squares, each of which is composed of four National Grid 10km squares. The subject lands lie within the 20km square comprising National Grid 10km squares S40, S41, S50 and S51. Table 3.5 shows the protected mammal species recorded in this 20km square by Hayden and Harrington (2000).

Table 3.5 Protected Mammal Species Recorded by Hayden and Harrington (2000) as Occurring in the 20km x 20km Square Within Which the Site is Located.

Species	Indication of population	Level of Protection
Hedgehog	Throughout Ireland	Bern Convention Appendix III.
Pygmy shrew	Throughout Ireland	Bern Convention Appendix III.
Common / soprano pipistrelles	Throughout Ireland	Irish Red Data Book 'Internationally Important'. Habitats Directive Annex IV. Bern Convention Appendix II.
Brown long-eared bat	Throughout Ireland	Irish Red Data Book 'Internationally Important'. Habitats Directive Annex IV. Bern Convention Appendix II.
Mountain (Irish) hare	Throughout Ireland	Protected under Wildlife Order 1985.Irish Red Data Book 'Internationally important'. Annex V Habitats Directive Annex V. Bern Convention Appendix III.
Red squirrel	Scattered throughout Ireland, but with evidence of a recent decline.	Wildlife (Amendment) Act (2000).
Pine marten	Found predominantly in western Ireland with scattered sites elsewhere.	Wildlife (Amendment) Act (2000). Bern Convention Appendix III. Irish Red Data Book 'Internationally Important'.
(Irish) stoat	Found throughout Ireland	Wildlife (Amendment) Act (2000). Bern Convention Appendix III.
Badger	Found throughout Ireland	Irish Red Data Book 'Internationally Important' Wildlife (Amendment) Act (2000).
Otter	Found throughout Ireland	Irish Red Data Book 'Internationally important'. Habitats Directive Annex II and IV. Bern Convention Appendix III. Wildlife (Amendment) Act (2000).

No badger setts or evidence of badger activity were found during the field survey, and no setts are known in the immediate vicinity of the proposed development. No suitable habitat is present for otter, Irish hare, pine marten, brown long-eared bat or red squirrel at the site. The hedgerow could support pygmy shrew and hedgehog and it is possible that Irish stoat may also use this area on occasion. Common or soprano pipistralle bats may use the site for feeding, as a commuting route, or possible even for roosting, but the site is unlikely to be of importance to these or any other protected mammal species. Other unprotected mammal species that may use the site include brown rat, and red fox however no evidence of these was found during the site visit.

Comparison with previous survey carried out by RPS (2001)

No rare or protected species were recorded at the Waste Transfer Facility during the survey in March 2001 (RPS Environmental Sciences, 2001) and none were recorded during the recent survey (2005). Section 4.3 assesses the potential impacts of the operation of the facility on the fauna within the surrounding area.

3.3.3 Other fauna

As there are no aquatic habitats at the site, there is no suitable habitat for fish, amphibians or aquatic invertebrates, and no highly suitable habitat exists at the site for viviparous lizard. The habitats present at the site are commonly found habitats throughout lowland Ireland and there is no reason to suppose that the site holds any rare or noteworthy invertebrate species.

4 EVALUATION AND POTENTIAL IMACTS

This Section outlines the potential impacts that could result from the operation of the Waste Transfer Facility in the absence of avoidance or mitigation measures. Measures to reduce or eliminate the potential impacts are described in this section 5.

4.1.1 DESIGNATED SITES

No impacts on any designated site are anticipated as a result of the operation of the Waste Transfer Facility.

4.1.2 HABITATS

No nationally important or rare habitat types were recorded within or adjacent to the Waste Transfer Facility. The most common habitat recorded within the site is buildings and artificial surfaces, which is considered to be of no significant ecological value. Hence, the habitats at the site is not likely to be of greater than Local Value, and impacts of the operation of the facility on these habitats is likely to result in No Change to the ecological value of the site.

4.2 FLORA

No rare or protected plant species were recorded during the field survey. The habitats at the site do not appear suitable for any rare or protected species of flora. Hence, the flora at the site is not likely to be of greater than Local Value, and impacts of the proposed development on flora is likely to result in No Change to the ecological value of the site.

4.3 FAUNA

4.3.1 Birds

No bird species of high conservation concern are known to occur, or are suspected of occurring, at or adjacent to the proposed development site. The site is likely to hold a bird fauna typical of lowland agricultural and urban situations in southern Ireland. Hence, the bird populations of the site are of no more than Local Value and the impact of the proposed development on bird populations is assessed as being No Change.

4.3.2 Mammals

Desktop research shows that several protected mammal species may occur in the vicinity of the Waste Transfer Facility, including pygmy shrew, hedgehog and pipistrelle bat species, none of these species are however known from the site, and there is no reason to suppose the site is of any particular importance to any of these species. Hence, the mammal population of the site is probably of only Local Value.

The proposals for the site will not result in loss of buildings or hedgerows, and there is no reason to suppose that any value that the site may have for mammals will decrease. Hence there are not considered to be any potential negative impacts on protected mammals, and the impact of the proposed development on mammals is therefore assessed as No Change.

4.3.3 Other Fauna

There is no reason to suppose that any other faunal communities within the Waste Transfer Facility are of more than Local Value, and the impact of the proposed development on them is assessed as being No Change.

5 MITIGATION

Proposed changes to the operation of the Waste Transfer Facility at Six Cross Roads Business Park will have no significant impact on the ecology of the site or areas adjacent the site. No impacts on designated sites are anticipated as a result of the operation of the facility.

All of the habitats, flora and fauna within the facility have been evaluated as being of Local Value and the operation of the facility has been assessed as resulting in No Change to the ecological value of the site. Therefore there is no necessity for ONYX to put mitigation or remedial measures in place. A similar assessment was made following the 2001 survey by RPS (RPS Environmental Sciences, 2001).

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APPENDIX 1

EVALUATION OF ECOLOGICAL IMPORTANCE AND ASSESSMENT OF IMPACT SIGNIFICANCE

Introduction

While the EPA *Guidelines* (EPA, 1995) provide a defined terminology for describing impact significance, for ecological assessments, this terminology has not proved to have been of much use in practise: a review of 28 recent Environmental Impact Statements found that only one of these used this terminology (Gittings, 1998). In fact, a terminology specifically defined with reference to ecology is required for description of ecological impact significance. The following terminology has been developed on this basis and is used to describe impact significance in this EIS.
The impact significance is a combined function of the value of the affected feature (its ecological importance), the type of impact and the magnitude of the impact.

Evaluation of Ecological Importance

Table A1.1: Criteria for assessing ecological importance

Importance	Criteria
International	Sites which qualify for designation as SACs or SPAs
National[1]	Sites which qualify for designation as NHAs Sites which hold Red Data Book (Curtis and McGough, 1988) plant species Sites which hold nationally rare invertebrate species, subject to an evaluation as to whether their known status may be largely due to under-recording Sites which hold nationally rare vertebrate species (as defined by Whilde, 1993) Sites which hold nationally important bird populations (defined as 1% of the national population; Sheppard, 1993)
County	Sites which hold nationally scarce plant species (recorded from less than 65 10 km squares), unless they are locally abundant Sites which hold nationally scarce invertebrate species (recorded from less than 65 10 km squares[2]), unless they are locally abundant and subject to an evaluation as to whether their known status may be largely due to under-recording Sites which hold regionally scarce vertebrate species Sites which hold semi-natural habitats likely to be of rare occurrence within the county Sites which hold the best examples of a semi-natural habitat type within the county
High Local Importance	Sites which hold semi-natural habitats and/or species likely to be of rare occurrence within the local area Sites which hold the best examples of a high quality semi-natural habitat type within the local area
Local Importance	Sites which hold high quality semi-natural habitats
Local Value	Any semi-natural habitat

[1] the island of Ireland.

[2] based pro-rata on the British criteria of 100 10 km squares (JNCC, 1995).

There is no systematic evaluation of ecological importance below a national scale in Ireland. Even for sites of national importance (i.e. pNHAs), there are no formal criteria available for their evaluation. The criteria shown in Table A1.1 have been developed by RPS Consultants. This is based on an international-national-county-local scale. The local scale is approximately equivalent to one 10 km square but can be operationally defined to reflect the character of the area of interest. For example, for riparian features it could be a section of a river catchment. Because most sites will fall within the local scale, this is sub-divided into high local importance-local importance-local value.

Assessment of Impact Type and Magnitude

Criteria for assessing impact type and magnitude are presented in

Table A1.2: and A1.3 respectively.

Table A1.2: Criteria for assessing impact type

Impact type	Criteria
Positive impact:	A change to the ecology of the affected feature which improves its conservation status.
Negative impact:	A change to the ecology of the affected feature which reduces its conservation status.

Table A1.3: Criteria for assessing impact magnitude

Impact magnitude	Definition
No change:	No discernible change in the ecology of the affected feature.
Imperceptible Impact:	A change in the ecology of the affected site, the consequences of which are strictly limited to within the development boundaries.
Slight Impact:	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary, but these consequences are not considered to significantly affect the distribution and/or abundance of species or habitats of conservation importance[1].
Moderate Impact:	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary. These consequences are considered to significantly affect the distribution and/or abundance of species or habitats of conservation importance.
Substantial Impact:	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary. These consequences are considered to significantly affect species or habitats of high conservation importance and to potentially affect the overall viability of those species or habitats in the wider area[2].
Profound Impact:	A change in the ecology of the affected site which has noticeable ecological consequences outside the development boundary. These consequences are considered to be such that the overall viability of species or habitats of high conservation importance in the wider area[2] is under a very high degree of threat (negative impact) or is likely to increase markedly (positive impact).

[1] it is not possible to define specific numerical thresholds, as different species/habitat have varying degrees of resilience to ecological perturbation.
[2] i.e., the area relevant to the assessed importance of the feature.

APPENDIX 2

SCIENTIFIC NAMES OF PLANT AND ANIMAL SPECIES MENTIONED IN THE TEXT

Table A2.1: Plants

Common Name	Scientific Name
Bramble	*Rubus fruticosus AGG.*
clovers	*Trifolium* spp.
Common Reed	*Phragmites australis*
Cowslip	*Primula veris*
Green-winged Orchid	*Orchis morio*
meadow-grasses	*Poa* spp.
Pale Dog-violet	*Viola lactea*
rye-grasses	*Lolium* spp.
Sea Knotgrass	*Polygonum maritimum*
Sharp-leaved Fluellen	*Kickxia elatine*
Summer Snowflake	*Leucojum aestivum*
White Clover	*Trifolium repens*

Table A2.2 Birds

Common Name	Scientific Name
Barn Owl	*Tyto alba*
Blackbird	*Turdus merula*
Chough	*Pyrrhocorax pyrrhocorax*
Curlew	*Numenius arquata*
Golden Plover	*Pluvialis apricaria*
Greenland White-fronted Goose	*Anser albifrons flavirostris*
Kingfisher	*Alcedo atthis*
Lapwing	*Vanellus vanellus*
Magpie	*Pica pica*
Pied Wagtail	*Motacilla alba*
Reed Warbler	*Acrocephalus scirpaceus*
Robin	*Erithacus rubecula*
Whooper Swan	*Cygnus cygnus*
Wren	*Troglodytes troglodytes*
Yellowhammer	*Emberiza citrinella*

Table A2.3 Mammals

Common Name	Scientific Name
Badger	*Meles meles*
Brown long-eared bat	*Plecotus auritus*
Brown rat	*Rattus norvegicus*
Common pipistrelle	*Pipistrallus pipistrellus*
Hedgehog	*Erinaceous europaeus*
(Irish) stoat	*Mustela erminea hibernica*
Mountain (Irish) hare	*Lepus timidus hibernicus*
Otter	Lutra lutra
Pine marten	Mustes mustes
Pygmy shrew	Sorex minutus
Red fox	*Vulpes vulpes*
Red squirrel	*Sciurus vulgaris*
Soprano pipistrelle	*Pipistrellus pygmaeus*

Table A2.3 Other Fauna

Common Name	Scientific Name
Atlantic salmon	*Salmo salar*
Brook lamprey	*Lampetra planeri*
Freshwater pearl-mussel	*Margaratifera margaratifera*
River lamprey	*Lampetra fluviatilis*
Sea lamprey	*Petromyzon marinus*
White-clawed Crayfish	*Austropotamobius pallipes*

APPENDIX 3

NATIONAL PARKS AND WILDLIFE SERVICE SITE SYNOPSES

SITE NAME: KILBARRY BOG

SITE CODE: 001700

On the southern outskirts of Waterford city, The derelict Great Southern Railway, now a footpath, follows a wetland area known as Kilbarry Bog to the north and Ballynakill marsh to the south. Not a bog in the true sense but an area of reedswamp and freshwater marsh, which has been designated a Natural Heritage Area (NHA).

The former extent of the wetland has been reduced by municipal rubbish dumping and subsequent reclamation to the north, the reclaimed area lies outside the current NHA. The designated area includes two reed beds, mainly species poor and dominated by Common Reed (Phragmites australis) but with large amounts of the two Pond Sedges (Carex riparia and C. acutiformis). Willow (Salix aurita) bushes are scattered. Other reedswamp species include Meadowsweet (Filipendula ulmaria), Marsh Valerian (Valeriana officinalis), and Tufted Hair-grass (Deschampsia cespitosa).

Around the swamp margins the vegetation grades into marsh and then to wet grassland with Bottle sedge (Carex rostrata), Brown Sedge (Carex disticha), Creeping Bent (Agrostis stolonifera) and Soft Rush (Juncus effusus), and widespread Yellow Flag (Iris pseudacorus) and Tall Fescue (Festuca arundinacea). The Royal Fern, scattered in the margins, is a handsome addition to the flora.

Summer Snowflake (Leucojum aestivum) is recorded from Kilbarry from as early as 1900, but it is questionable whether this is a naturally occurring, or introduced species here - if naturally occurring, it is the rarest plant species recorded from the site. However this is the only remaining wetland in the vicinity, and some of the species that can be considered typical of neutral wetlands, such as Bottle Sedge, are not recorded elsewhere in Waterford County. Thus the value of the site in a local context is unquestionable, and its quality as a habitat may warrant a status greater than of local importance. Its proximity to a major settlement promotes its amenity value.

In the past this wetland has suffered serious damage. It is essential that the value of this site is now recognised and respected.

SITE NAME : LOWER RIVER SUIR

SITE CODE : 002137

This site consists of the tidal stretches of the River Suir, some of its tidal tributaries and a relatively long freshwater stretch of the Clodiagh River. The Suir flows through the counties of Tipperary, Kilkenny and Waterford before joining the Barrow/Nore at Cheekpoint. In the vicinity Carrick-on-Suir the river follows the limestone floor of the Carrick Syncline. This ribbon of limestone, however, dies out before the Suir reaches the sea and in its lower portion the river traverses through Old Red Sandstone and Ordovician rocks in the region of Waterford. The freshwater stretches of the Clodiagh River traverse Silurian rocks, through narrow bands of Old Red Sandstone and Lower Avonian Shales before reaching the carboniferous limestone close to its confluence with the Suir.

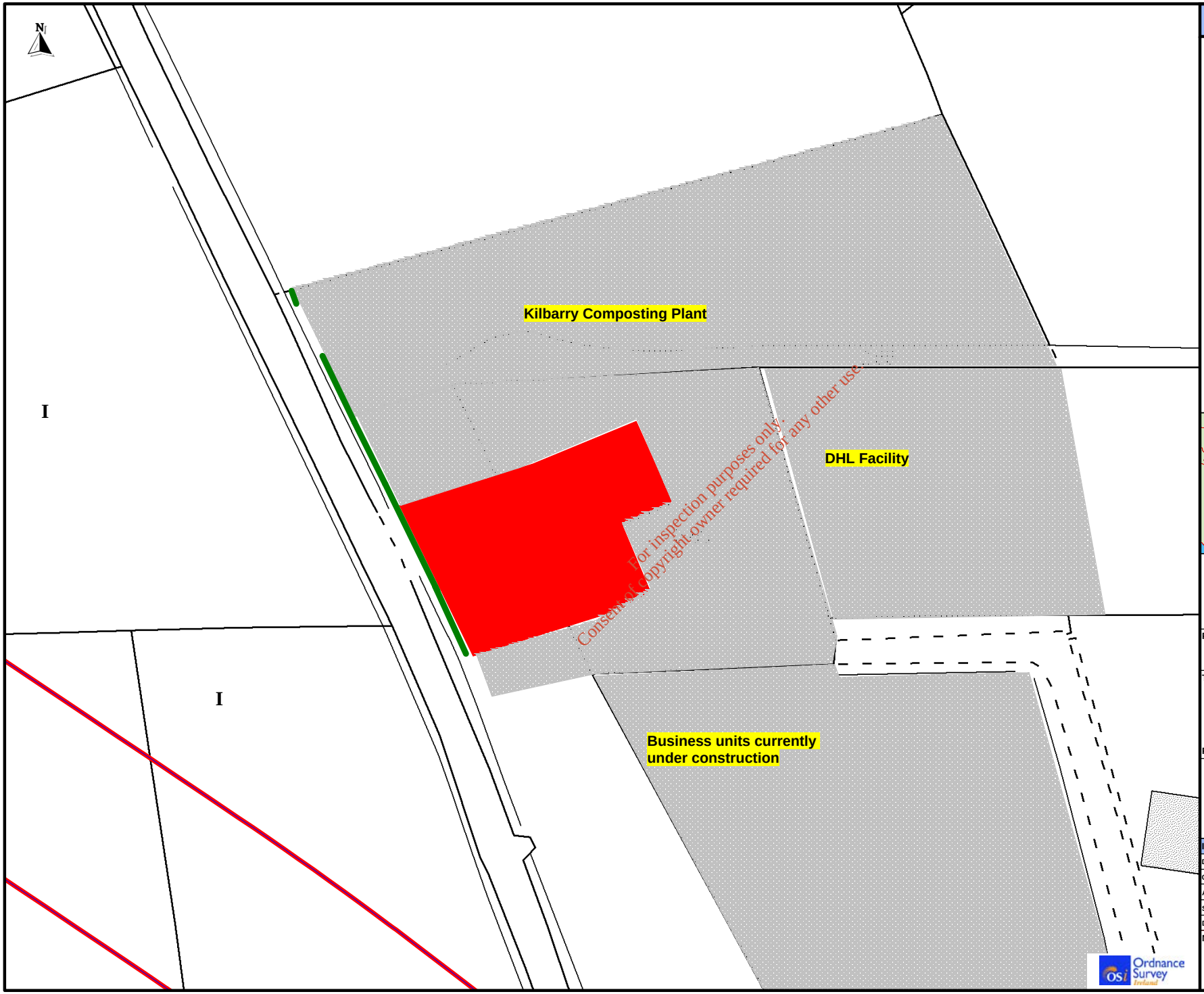
There are a number of Annex I habitats (EU Habitats Directive) contained within the site, including the priority habitat Alluvial Forest. This habitat is declining in Europe as a result of drainage and reclamation. The best examples of this type of woodland are found on the islands just below Carrick-on-Suir and at Fiddown Island. Species occurring here include Almond Willow (*Salix triandra*), White Willow (*S. alba*), Grey Willow (*S. cinerea*), Osier (*S. viminalis*), with Iris (*Iris pseudacorus*), Hemlock Water-dropwort (*Oenanthe crocata*), Angelica (*Angelica sylvestris*), Pendulus Sedge (*Carex pendula*), Meadowsweet (*Filipendula ulmaria*) and Valerian (*Valeriana officinalis*). The terrain is littered with dead trunks and branches and intersected with small channels which carry small streams to the river. The bryophyte and lichen floras appear to be rich and require further investigation. A small plot is currently being coppiced and managed by National Parks and Wildlife. In the drier areas the wet woodland species merge with other tree and shrub species including Ash (*Fraxinus excelsior*), Hazel (*Corylus avellana*), Whitethorn (*Crataegus monogyna*) and Blackthorn (*Prunus spinosa*). This adds further to the ecological interest of this site.

Old oak woodlands are also of importance at the site. The best examples are seen in Portlaw Wood which lies on both sides of the Clodiagh River. On the south-facing side the stand is more open and the Oaks (mainly *Quercus robur)* are well grown and spreading. Ivy (*Hedera helix*) and Bramble (*Rubus fruticosus*) are common on the ground, indicating relatively high light conditions. Oak regeneration is dense, varying in age from 0-40 years and Holly (*Ilex aquifolium*) is fairly common but mostly quite young. Across the valley, by contrast, the trees are much more closely spaced and though taller are poorly grown on average. There are no clearings; large Oaks extend to the boundary wall. In the darker conditions, Ivy is much rarer and Holly much more frequent, forming a closed canopy in places. Oak regeneration is uncommon since there are as yet few natural clearings. The shallowness of the soil on the north-facing slope probably contributes to the poor tree growth there. The acid nature of the substrate has induced a “mountain” type Oakwood community to develop. There is an extensive species list present throughout including an abundance of mosses, liverworts and lichens. The rare lichen *Lobaria pulmonaria,* an indicator of ancient woodlands, is found.

Floating river vegetation is evident in the freshwater stretches of the River Suir. Typical species found include Canadian Pondweed (*Elodea canadensis*), Milfoil (*Myriophyllum* spp.), Fennel Pondweed (*Potamogeton pectinatus*), Curled Pondweed (*P. crispus*), Perfoliate Pondweed (*P. perfoliatus*), Pond Water-crowfoot (*Ranunculus peltatus*), other Crowfoots (*Ranunculus* spp.) and the moss *Fontinalis antipyretica.* At a couple of locations along the river, Opposite-leaved Pondweed (*Groenlandia densa*) occurs. This species is protected under the Flora (Protection) Order, 1999.

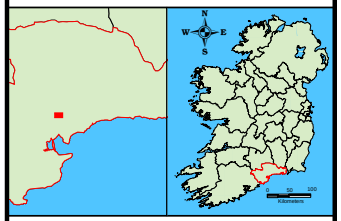
Salt meadows occur below Waterford city in old meadows where the embankment is absent, or has been breached, and along the tidal stretches of some of the in-flowing rivers below Little Island. There are very narrow, non-continuous bands of this habitat along both banks. More extensive areas are also seen along the south bank at Ballynakill, the east side of Little Island, and in three large salt meadows between Ballynakill and Cheekpoint. The Atlantic and Mediterranean sub types are generally intermixed. The species list is extensive and includes Red Fescue (*Festuca rubra*), Oraches (*Atriplex* spp.), Sea Aster (*Aster tripolium*), Sea Couch Grass (*Elymus pycnanthus*), frequent Sea Milkwort (*Glaux maritima*), occasional Wild Celery (*Apium graveolens*), Parsley Water-dropwort (*Oenanthe lachenalii*), English Scurvygrass (*Cochlearia anglica*) and Sea Arrowgrass (*Triglochin maritima*). These species are more representative of the Atlantic sub-type of the habitat. Common Cord-grass (*Spartina anglica*), is rather frequent along the main channel edge and up the internal channels. The legally protected (Flora (Protection) Order, 1999) Meadow

Barley (*Hordeum secalinum*) grows at the landward transition of the saltmarsh. Sea Rush (*Juncus maritimus*), an indicator of the Mediterranean salt meadows, also occurs.
Other habitats at the site include wet and dry grassland, marsh, reed swamp, improved grassland, coniferous plantations, deciduous woodland, scrub, tidal river, stony shore and mudflats.
The site is of particular conservation interest for the presence of a number of Annex II animal species, including Freshwater Pearl Mussel (*Margaritifera margaritifera* and *M. m. durrovensis*), Freshwater Crayfish (*Austropotamobius pallipes*), Salmon (*Salmo salar*), Twaite Shad (*Alosa fallax fallax*), three speceis of Lampreys - Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*) and River Lamprey (*Lampetra fluviatilis*) and Otter (*Lutra lutra*). This is one of only three known spawning grounds in the country for Twaite Shad.
The site also supports populations of several other animal species. Those which are listed in the Irish Red Data Book include Daubenton's Bat (*Myotis daubentoni*), Natterer's Bat (*M. nattereri*), Pipistrelle (*Pipistrellus pipistrellus*), Pine Marten (*Martes martes*), Badger (*Meles meles*), the Irish Hare (*Lepus timidus hibernicus*), Smelt (*Osmerus eperlanus*) and the Frog (*Rana temporaria*).
Parts of the site have also been identified as of ornithological importance for a number of Annex I (EU Birds Directive) bird species, including Greenland White-fronted Goose (10), Golden Plover (1490), Whooper Swan (7) and Kingfisher. Figures given in brackets are the average maximum counts from 4 count areas within the site for the three winters between 1994 and 1997. Wintering populations of migratory birds use the site. Flocks are seen in Coolfinn Marsh and also along the reedbeds and saltmarsh areas of the Suir. Coolfinn supports nationally important numbers of Greylag Geese on a regular basis. Numbers between 600 and 700 are recorded. Other species occurring include Mallard (21), Teal (159), Wigeon (26), Tufted Duck (60), Pintail (4), Pochard (2), Little Grebe (2), Black-tailed Godwit (20), Oystercatcher (16), Lapwing (993), Dunlin (101), Curlew (195), Redshank (28), Greenshank (4) and Green Sandpiper (1). Nationally important numbers of Lapwing (2750) were recorded at Faithlegg in the winter of 1996/97.
Landuse at the site consists mainly of agricultural activities including grazing, silage production, fertilising and land reclamation. Arable crops are also grown. Both professional and leisure fishing takes place on the rivers. Recreational activities such as boating and walking are also popular. Several industrial developments border the site, which discharge into the river, including three dairy related operations and a tannery.
The Lower River Suir contains excellent examples of a number of Annex I habitats, including the priority habitat Alluvial Forest. The site also supports populations of several Annex II animal species and a number of Red Data Book animal species. The presence of two legally protected plants (Flora (Protection) Order, 1999) and the ornithological importance of the river adds further to the ecological interest of this site.



Legend

- Hedgerow (WL1)
- Buildings and artificial surfaces (ED
- Site location
- I — Improved agricultura grassland (GA1)



Project
Onyx Ecology

Title
Habitat Plan of Waste Transfer Facility

Figure 2

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Notes

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