



ENVIRONMENTAL IMPACT STATEMENT

GREENSTAR ENVIRONMENTAL SERVICES

DOCK ROAD

LIMERICK

Prepared For: -

Greenstar Environmental Services Ltd,
Dock Road,
Limerick.

Prepared By: -

O' Callaghan Moran & Associates,
Granary House,
Rutland Street,
Cork.

May 2013

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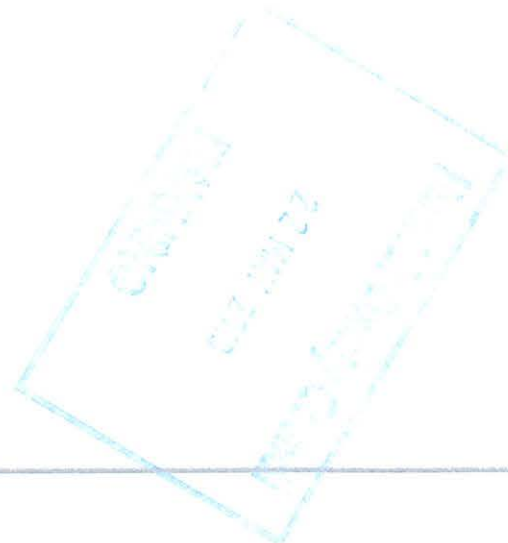
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NON-TECHNICAL SUMMARY

Introduction

This Environmental Impact Statement (EIS) examines the potential impacts and significant effects on the environment associated with the proposal to increase the amount of wastes accepted at the Greenstar Environmental Services (GES) Materials Recovery and Transfer Facility at the Dock Road.

The facility operates under planning permission issued by Limerick County Council (Council) and a Waste Licence granted by the Environmental Protection Agency (the Agency). GES intends to apply to the Council and the Agency for approval to increase the amount of waste that can be accepted at the facility to 130,000 tonnes/year.

There will be no change or either the types of waste accepted, or the way the waste is handled, processed and stored. The only change will be an increase in the number of trucks that bring the unprocessed waste to the site and removing the processed materials.

Description of the Development

Existing Site

The site is located in Ballykeefe Townland, Dock Road, on the western fringe of Limerick City (Figure 1), an area dominated by industrial use. The land to the south is occupied by commercial and industrial operations including Cussen & Co Crane Hire Limited (Cussen), Dore Commercials and MW Fuels. The Ballinacurra Creek is to the east and the lands to the north and west are undeveloped.

Site Development

It is not proposed to either construct any buildings/structures, or provide additional waste processing equipment. At present water from the toilets and canteen is treated in an onsite wastewater treatment plant with the treated effluent discharged to a percolation area. It is proposed to stop using the on-site plant and percolation area and instead connect to the Council's wastewater treatment plant, which is located approximately 100m to the west of the site. The current Waste Licence includes a provision for this connection.

The facility can operate seven days per week twenty four hours per day. At present, there are two eight hour shifts operating from 6am to 2pm and from 2pm to 10pm.

Existing Environment, Potential Environmental Effects and Mitigation Measures

Climate

The climate in the area is mild and wet, with the prevailing wind direction from the south west. The proposed changes will not have any affect on the climate.

Soil/Geology

The facility is located on 'Made Ground'. The bedrock beneath the site is limestone. The groundwater in the bedrock is likely to be brackish, due to its proximity to the tidal stretch of the River Shannon. The proposed changes do not require any excavation works or discharges to ground or groundwater and therefore will have no impact on the soils and geology.

Water

The facility is located in the catchment of the River Shannon. At present, rainwater falling on the site drains to Bunlickey Lake. The run-off passes through an oil interceptor before it enters the drain. The proposed increase in the amount of waste accepted does not require either excavation works, or new discharges to water and groundwater and therefore will have no impact on waters. Stopping the use of the on-site waste water treatment plant and

connecting to the City Council's wastewater treatment plant will reduce the risk of site operations having an adverse effect on groundwater.

Ecology

As the entire site consists of open paved areas, with buildings, there are no sensitive ecological habitats within the site boundaries. Bunlickey Lake, which is 500m to the west of the site and the stretch of the River Shannon, which is 400m to the north are protected sites under the EU Habitats and Birds Directives (Special Protection Area (SPA) and Special Area of Conservation (SAC)).

A screening assessment of the impacts the proposed change would have on the SPA and SAC was carried out. It concluded that as the change does not require the construction of any new buildings, the use of any additional equipment that could be a cause of disturbance, or result in any new or changes to existing emissions from the facility, it will have no impact on either the SPA or the SAC and therefore mitigation measures are not required.

Air Quality

The existing emissions to air from the site are dust and vehicle and plant exhaust emissions. The routine dust monitoring carried out as required by the Waste Licence has established that dust emissions are not a cause of nuisance. The proposed change will not result in any new sources of dust and therefore mitigation measures are not needed.

The increase in the amount of waste accepted will result in extra vehicle movements and an associated increase in the exhaust emissions; however these will be very small in the context of the site's location in a well established industrial area. The trucks used to transport the wastes to and from the site are fitted with catalytic converters to reduce the amount of nitrous oxides in the exhaust gas.

Noise

The transport and processing of the wastes are sources of noise. However, the routine noise monitoring carried out at the facility has established that the current operations are not having any impacts on the closest noise sensitive locations. The proposed change will not result in any new sources of noise and therefore will have an imperceptible impact on noise and mitigation measures are not needed.

Landscape

The site and surrounding area is not of any special scenic or landscape importance. As it is not proposed to change the layout or construct/demolish any buildings, there will be no change to the landscape character and mitigation measures are not needed.

Traffic

The proposed changes will result in an increase in the number of trucks arriving at and leaving the site. An assessment of the impacts has established that the road network has sufficient capacity to handle the increase in traffic, taking account of the cumulative traffic from existing and approved developments in the surrounding area. The road markings on the right hand turning lane into the Estate have become eroded and will be repainted.

Cultural Heritage

There are no known features of archaeological or cultural heritage significance within the site boundaries. As the proposed changes do not require the construction/demolition of any buildings or ground disturbance they will have no impact on either known, or unknown features and therefore mitigation measures are not needed.

Human Beings

The landuses in the area surrounding the site are predominantly commercial and industrial. The closest residences to the site are more than 500m from the site boundary. The current operations are not having any impact on people working and living in the surrounding area. The proposed change will result in an increase in truck movements in and out of the site however this will have a negligible impact on human beings in the surroundings area. Therefore mitigation measures are not needed.

Material Assets

Neither the site nor its immediate environs have a significant leisure or amenity potential. The proposed change is in keeping with the current operations and will help in securing employments and increasing the waste recovery rates. The change will not have any impact on material assets either within the Industrial Estate or in the surrounding area. Therefore mitigation measures are not needed.

Interaction of the Foregoing

The assessment took into consideration the impacts of the existing facility, the proposed change and other planned developments in the surrounding area. The proposed change will not introduce any new or additional sources of emissions with the exception of exhaust gases from the trucks. The connection to the municipal foul sewer will have a positive impact, as it will eliminate any risk soil and groundwater.

PREAMBLE

This Environmental Impact Statement (EIS) examines the potential impacts and significant effects on the environment of the proposal to increase the quantity of waste accepted at the Greenstar Environmental Services Ltd (GES) Materials Recovery and transfer Facility at Dock Road, Limerick.

The facility operates under planning permissions issued by Limerick County Council (the Council) and a Waste Licence issued by the Environmental Protection Agency (EPA). The amount of waste that can be accepted at the facility annually under the Waste Licence is limited to 90,000 tonnes. GES intends to apply to the Council and the EPA for approval to increase the amount of waste that can be accepted to 130,000 tonnes annually.

An EIS is required as the proposed increase in the amount of waste accepted (40,000 tonnes/year) exceeds 50% of the threshold for waste management activities (25,000 tonnes/year) in the European Communities (Environmental Impact Assessment) (Amendment) Regulations 1999 (EIA Regulations).

The information contained in the EIS complies with Paragraph 2 of the Second Schedule of the European Communities Environmental Impact Assessment Regulations 1989, as amended by the European Communities (Environmental Impact Assessment) (Amendment) Regulations 2001. It takes into account the cumulative effects of existing and proposed developments in the area surrounding the site

The EIS follows the grouped format structure recommended in the Guidelines on the Information to be Contained in Environmental Impact Statements (March 2002), published by the EPA, and the EPA's Advice Notes to these Guidelines. This structure assesses each relevant topic in a separate Chapter describing the existing environment, the impacts associated with the activity and, where considered necessary, the proposed mitigation measures.

Public Consultation

GES held EIS scoping discussions with the Council in December 2012 and also informed Cussens Crane Hire, owners of the site. A separate meeting was held with the Environmental Protection Agency in January 2013.

Project Team

O' Callaghan Moran & Associates (OCM) were the prime consultants in producing this EIS, and were assisted by a number of specialist service providers. Unless otherwise referenced, OCM were responsible for completing the baseline surveys and assessment of impacts.

O'Callaghan Moran & Associates – Environmental Consultants: Prime Consultants

Address: Granary House,
Rutland Street,
Cork.

Telephone: 021 - 4321521

Fax: 021 - 4321522

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TOBIN Consulting Engineers – Traffic Impact Assessment

Address: Block 10-4 Blanchardstown Corporate Park
Dublin 15,
Ireland

Telephone: 01 - 8030406

Fax: 01 8030409

Dixon Brosnan- Dust & Noise Monitoring

Address: Shronagreehy,
Kealkill,
Bantry,
Co Cork

Telephone: 086 – 813 1195

Difficulties in Compiling the Required Information

OCM did not encounter any particular difficulties in compiling the required information. As the proposed change does not involve either the construction/demolition of any buildings, or any significant ground disturbance, specialist Archaeological & Cultural Heritage, Ecological and Visual Impact assessments were not carried out.

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1. INTRODUCTION

1.1 The Applicant

GES is part of the Greenstar group, one of Ireland's largest waste management companies. Greenstar operates eleven Materials Recovery/Transfer Facilities in counties Dublin, Cork, Kilkenny, Limerick, Sligo, Waterford, Wexford and Wicklow and employs over 500 people. There are 20 full time employees based at the Ballykeefe facility.

Greenstar was established in 2000 and over time its business focus has, in line with national policy, shifted from landfill disposal to the recovery and recycling of wastes. In 2012, Greenstar achieved a recovery rate of almost 66% of the wastes accepted at the Ballykeefe facility. Given the current lack of indigenous recycling and recovery capacity, a significant tonnage of waste is shipped overseas for recovery/recycling.

1.2 Facility Overview

1.2.1 Site History

The site is located in the townland of Ballykeefe on lands that were reclaimed in the 1970's. The landowner, Cussen & Co Crane Hire Limited (Cussen), began a skip hire business on the site sometime afterwards and also used it for truck sales, vehicle hire and repair.

In 1994, Cussen obtained planning permission (876/94) for the retention of a workshop extension, vehicle wash and compound and the erection of 2 No. 5,000 gallon fuel tanks with pumps and security fencing.

In 1995, Cussen obtained planning permission (162/95) for the erection of 6 No. industrial units and the provision of a wastewater treatment plant. Cussen also obtained planning permission (968/95) for the retention of raised lands.

In November 1998, Cussen applied to the Environmental Protection Agency (EPA) for a Waste Licence to accept 75,000 tonnes of commercial, industrial and domestic non-hazardous wastes and also applied for planning permission for upgrade works, which included the construction of Building 1 and ancillary works. The planning permission (PL 13.110811) and Waste Licence (W0082-01) were issued in 2000 and Building 1 was constructed in 2001.

IPODEC Ireland Ltd. which was renamed Onyx and subsequently Veolia Environmental Services Ireland Ltd (VESI), acquired the Cussen waste business in 2001. The Waste Licence was transferred to VESI in April 2002, however, Cussen retained ownership of the site and control of a portion of the licensed area for use in their crane hire business. In October 2002, VESI was granted planning permission (02/984) for the construction of Building 2 and ancillary works and these were completed in 2003.

In November 2002, VESI applied to the Agency to review the Licence and the revised Licence (W0082-02) was granted in November 2003. In 2010, GES acquired the trade and assets of VESI, which included the Ballykeefe facility.

1.2.2 Waste Activities

The facility accepts and processes non hazardous mixed municipal solid waste and mixed and source segregated dry recyclables that are primarily collected in the Mid West Region. The waste activities are regulated by the Waste Licence (W0082-02) a copy of which is in Appendix 1.

The Waste Licence authorises the acceptance of 90,000 tonnes of waste annually. The waste processing includes transfer of the mixed dry recyclables, the baling of the source segregated dry recyclables (paper, plastic, cardboard) and the baling of the

mixed municipal solid waste. The baled recyclables are sent to off-site recovery facilities for further processing, while the baled mixed municipal solid waste is sent for recovery to overseas waste to energy plants.

1.3 Proposed Changes

GES intends to apply to for planning permission and a revised Waste Licence to increase the amount of waste accepted at the facility to 130,000 tonnes/year. The proposed increase is to allow GES compete for business in the domestic and commercial waste collection market and offer waste treatment services to authorised waste collectors in the Mid West and adjoining Regions.

There will be no change to either the types of waste accepted, or the way the waste is handled, processed and stored. The only change will be an increase in the number of vehicles that bring the unprocessed waste to the site and remove the processed materials.

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2. WASTE MANAGEMENT & PLANNING POLICY

2.1 Introduction

This Chapter presents an overview of the relevant national and regional waste policies and demonstrates how the proposed changes are consistent with both national and regional waste management policy objectives. It is based on national Waste Policy Statements, the Replacement Waste Management Plan for the Limerick/Clare/Kerry Region 2006 – 2011, the Limerick County Development Plan 2011 -2016 and the Southern Environs Local Area Plan 2011-2017.

2.2 Waste Management & Planning Policy

National Waste Management Policy

The foundation policy statement on waste management policy “*Changing Our Ways*” was issued by the Department of the Environment and Local Government’s policy in September 1998. This statement firmly based national policy on the EU Waste Management Hierarchy, which was subsequently amended in 2008. In descending order, the current preference is: -

- Prevention;
- Preparing for Reuse;
- Recycling;
- Other Recovery (including energy recovery);and
- Disposal

The 2002 government policy statement ‘*Preventing and Recycling Waste - Delivering Change*’ identified initiatives to achieve progress at the top of the Waste Hierarchy in terms of preventing waste arising and increasing recycling rates.

In *'Waste Management – Taking Stock and Moving Forward' 2004*, the significant improvement in recycling rates achieved since 1998 were recognised, but the need for further expansion was emphasised. The statement confirms that Ireland's national policy approach remains *'grounded in the concept of integrated waste management, based on the internationally recognised waste hierarchy, designed to achieve, by 2013, the ambitious targets set out in Changing Our Ways'*.

The EU Waste Framework Directive 2008/98/EC was introduced to coordinate waste management in the Member States to limit the generation of waste and optimise the organisation of waste treatment and disposal. The Directive, which also established the first EU wide recycling targets, was transposed into Irish Law by the European Communities (Waste Directive) Regulations 2011 (S. I. No.126 of 2011).

The most recent Policy Statement *'A Resource Opportunity: Waste Management Policy In Ireland 2012'* is also predicated on the EU Waste Management Hierarchy and encompasses a range of measures across all tiers namely, prevention, preparation for reuse, recycling, other recovery and disposal.

The Statement sets out how the higher tiers can reduce Ireland's reliance on finite resources, virtually eliminate reliance on landfill and minimise the impact of waste management on the environment. It is a policy objective that when waste is generated, the maximum value must be extracted from it by ensuring that it is reused, recycled or recovered.

Waste Management Plan for the Limerick/Clare/Kerry Region 2006-2011

The current Waste Management Plan for the Limerick/Clare/Kerry Region 2006-2011 (the current Plan) encompasses areas of planning, regulation, collection, recycling, recovery and disposal of non hazardous wastes generated within the region. It sets out the policy for an integrated approach to waste management for the next 25 years in the region. It also recognises the cross regional dimension to modern waste management and does not confine solutions to County or regional boundaries.

The current Plan has recently been evaluated in the context of the EU Waste Framework Directive. The evaluation has determined that there is a need to prepare a new Plan to take account of the requirements of the Directive and the proposal to amend the existing waste

management regions. However, the current Plan remains in force until the new plan is adopted.

It is a policy objective of the current Plan to focus on encouraging householders and the private sector to maximise reuse and recycling in the Region. It is a target to achieve a recycling rate of 45% for the Region by 2013. The current Plan recognises the value of private investment in ensuring adequate infrastructure for the recovery/recycling of materials.

The proposed change to the GES facility is consistent with national and regional waste policy objectives, as it will increase the treatment capacity in the Mid West Region to get the maximum value from the waste and will contribute to the achievement and maintenance of national and regional recycling targets.

Limerick County Development Plan 2010-2016

The Limerick County Development Plan 2010-2016 and its daughter South Environs Local Area Plan 2011-2017 set out the development strategy for the sustainable future growth of the county.

The Development Plan recognises that Limerick/Kerry/Clare Waste Management Plan define the waste management objective for the county. The particular objectives of the Development Plan that are of relevance to the proposed development are:

Objective IN O41: Regional Waste Management Plan

It is the objective of the Council to implement the provisions of the Waste Management Hierarchy and the Regional Waste Management Plan 2006-2011, and any subsequent review of this Waste Management Plan as it applies to this Council area. All prospective developments in the County will be expected to take account of the provisions of the Regional Waste Management Plan and adhere to those elements of it that relate to waste prevention and minimisation, waste recycling facilities, and the capacity for source-segregation.

Objective IN O47: Provision of Transfer Facilities

It is the objective of the Council to support the development of recycling sites/waste disposal sites or transfer stations and associated developments in appropriate locations, subject to normal planning and environmental sustainability considerations. In assessing applications for these types of development, the Planning Authority will have regard to the Groundwater Protection Plan and appropriate response matrix.

The proposed increase in the quantity of waste accepted at the facility is consistent with the objectives of the EU Waste Management Hierarchy, as it will increase the amount of waste recovered within the Mid West and adjoining regions and maximise the value from the wastes accepted at the facility.

The proposed development is consistent with Council's objective of supporting the development of recycling sites in appropriate locations. An assessment of the hydrogeological conditions, details of which are presented in Chapter 8 has confirmed the site is suitable for the proposed development in the context of the Groundwater Protection Plan.

Southern Environs Local Area Plan 2011-2017 (SELAP)

The site is located in an area designated as 'Industry' Zoned Land (Ref Section 4.3.4.2 of the SELAP). This zoning accommodates existing and proposed heavy industrial uses north and south of the Dock Road and its purpose is to facilitate opportunities for industrial uses, activity and processes, which might give rise to land use conflict in other zonings.

The planning objective of relevance to the proposed development is:

Objective ED 1: Economic Development Proposals

It is the objective of the Council to permit proposals for sustainable new industrial and enterprise development or extensions to existing industrial development in appropriately zoned areas, where it can be clearly demonstrated that the proposal;

a) is located on appropriately zoned land;

b) is appropriate to the respective area in terms of size and the type of employment generating development to be provided;

c) would not result in adverse transport effects:

d) would have no significant detrimental effect on the surrounding areas or on the amenity of adjacent and nearby occupiers, and

e) would not result in any significant negative impact on the conservation value of any Special Protection Area, Special Area of Conservation or Natural Heritage Area or any such sites proposed for designation.

The facility is located in appropriately zoned land and the proposed change will contribute to the long term sustainability of employment at the site. An assessment of the impacts of increased traffic, details of which are presented in Chapter 6, has confirmed the proposed development will not result in any adverse effects.

An assessment of the impacts on the surrounding area including amenity uses, which is presented in Chapter 15, has confirmed that the proposed changes will not have any significant detrimental effect. A Natura Impact Statement Stage 1 Screening Assessment, details of which are presented in Chapter 9, has established that the proposed development will not result in any significant impact on the conservation value of any Special Protection Area or Special Area of Conservation.

2.3 Need for the Development

The facility has been authorised by the EPA since 2000 and is an integral part of the waste recovery infrastructure in the Mid West Region. Its primary function has changed over time from waste disposal to preparing waste for recovery.

The incoming wastes are processed to separate out the different recyclable materials, which include, paper, cardboard, plastics, metals and organic content. Mixed municipal wastes are compacted and baled and exported to overseas waste to energy recovery facilities.

Arising from a combination of changes in the private waste collection industry in the Mid West and adjoining regions and waste policy changes promoting the diversion of waste from and towards alternative treatments, including waste to energy, GES has identified an opportunity to increase recycling/recovery rates at the facility. To achieve this, there is a need to expand the facility's processing capacity.

3. ALTERNATIVES EXAMINED

This Chapter addresses the alternatives considered, including plant locations and configurations and a 'Do Nothing' scenario.

3.1 Alternative Sites

The facility is specifically designed for and has established use for waste management. It is located in an Industrial Estate, where other occupants operate outside normal business hours. It has the capacity to process the increased waste volumes without the provision of any new infrastructure, plant and equipment.

The alternative to not increasing amount of wastes accepted would be to develop a new facility at another location. This would involve either the acquisition/leasing of a suitable building, or the construction of a new facility and the provision of new processing equipment. Given the relatively small amount of wastes involved (40,000 tonnes/annum), the development of a new facility by GES at another location is not economically viable.

Site activities are not a source of significant adverse environmental impacts and do not result in the impairment of the amenities in the surrounding area. The proposed changes will not result in any new emissions and will not require the provision of any new or additional emission control and mitigation measures. Therefore, relocation to an alternative site is not necessary from an environmental viewpoint.

The facility is close to Limerick Docks, which is the shipping point for the municipal solid waste exported to overseas waste to energy recovery facilities. Relocating to another site would result in an increase in both emissions from transport vehicles and transport costs. Therefore, continuing to use the Ballykeeffe facility is the best environmental and economic option.

3.2 Alternative Configurations & Technologies

The existing site layout, buildings, plant and equipment can readily accommodate the proposed increase in waste inputs. Therefore, there is no need for alternative configurations or technologies.

3.3 The Do Nothing Alternative

If GES does not obtain approval to increase the amount of waste accepted, its ability to compete for business in the Mid-West Region will be adversely affected and it will not be able to provide waste recovery outlets to other waste collectors operating in the region. This will mean waste will have to go to landfill, which is not consistent with either EU or national waste management policy objectives.

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4. FACILITY DESCRIPTION

4.1 Introduction

This Chapter presents an overview of the existing facility location, layout, operation and emissions. More information on the ambient environmental conditions is presented in the following Chapters, which address specific impacts associated with the proposed increase in the quantities of wastes accepted.

4.2 Site Location

The subject site is located in the townland of Ballykeefe, off the main N69 Limerick to Tralee road on Dock Road (Figure 4.1). It is in an industrially zoned area on the western fringe of Limerick City and is bounded to the south, southeast and southwest by industrial premises. To the east and north is the Ballinacurra Creek, which is a tributary of the Shannon. The lands north of the Ballinacurra and between it and the Shannon are undeveloped. The Limerick City Council wastewater treatment plant (WWTP) is to the west of the site and separated from it by an open field. Further to the northwest is Bunlickey Lake.

4.3 Site Layout

The site layout is shown on Drawing No.002. The facility is approximately 120m off the Dock Road and is accessed by a common access road serving the facility and other occupiers of the industrial lands.

The current Waste License area encompasses approximately 2.38 hectares (ha) and comprises two discrete parts. The first, which is outlined in green on the Figure 4.2, is controlled by GES and contains the facility (20,000 m²). The second (3,800m²), which is outlined in blue, is controlled by Cussen & Co Crane Hire Ltd (Cussen), the landowners of the entire licensed area.



O'Callaghan Moran & Associates.
 Granary House, Rutland Street,
 Cork, Ireland.
 Tel. (021) 4321521 Fax. (022) 4321522
 email: info@ocallaghanmoran.com

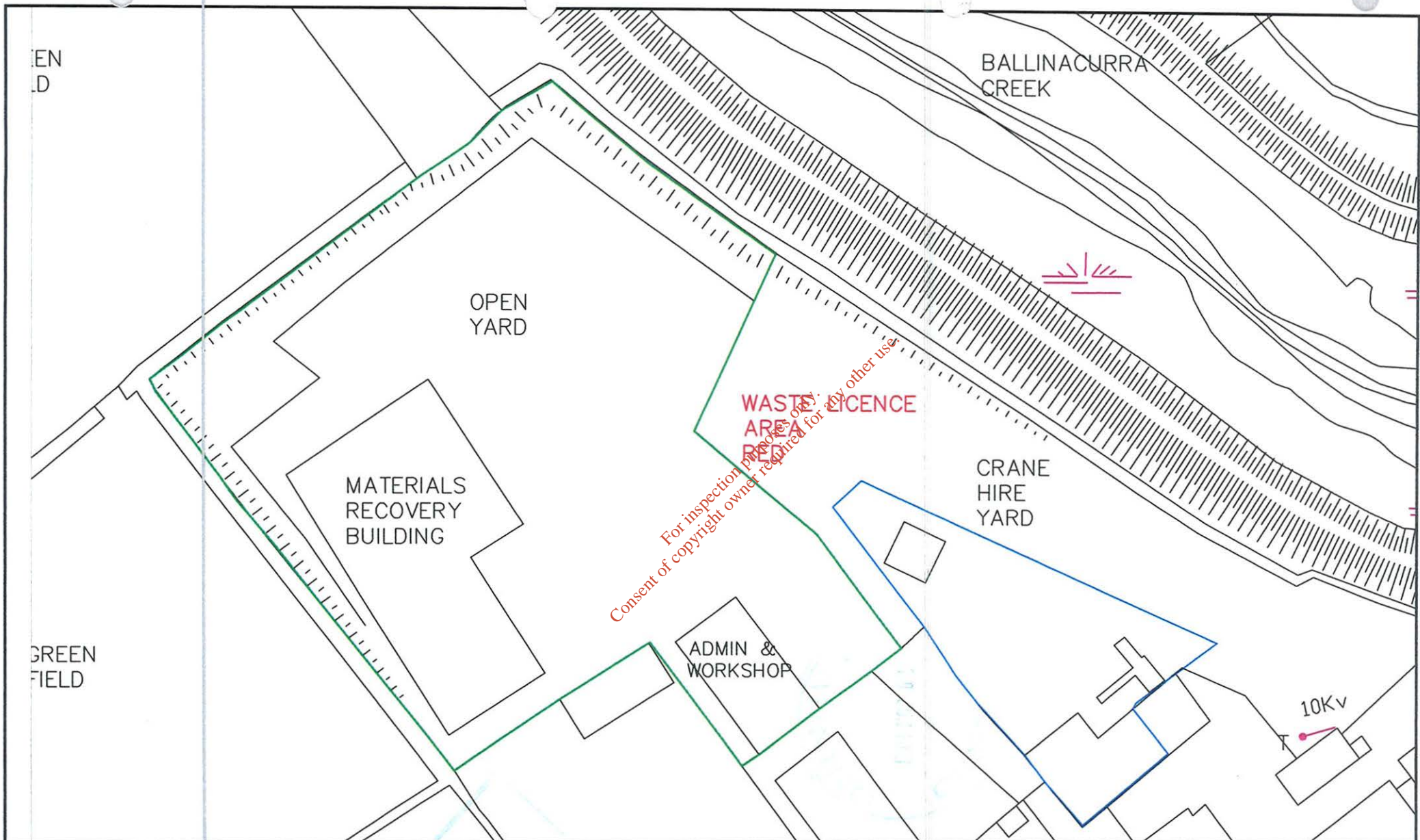
CLIENT
Greenstar Environmental Services

TITLE
Site Location

Details
 ● Site Location
 — Rivers

Figure 4.1

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 Cork, Ireland.
 Tel. (021) 4321521 Fax. (021) 4321522
 email : info@ocallaghanmoran.com

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TITLE

WASTE LICENCE AREA

details

Figure No.

4.2

SCALE

1:750 A4

REV.

A

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Cussen, who were the original licensee, sold their waste business but retained control of a portion of the licence area for use as part of their crane hire business. There is a fence between the GES and Cussen controlled areas.

There are two adjoining waste handling buildings (Building 1 and 2). Building 1 is currently used for sorting and compacting recyclables (paper, cardboard, plastics etc.) recovered from the incoming wastes. Building 2 is currently used for compacting and wrapping the mixed municipal solid wastes.

There is a separate office building and adjoining vehicle and plant maintenance workshop near the site entrance. An electrical substation along the south-western boundary wall is owned by Electric Ireland.

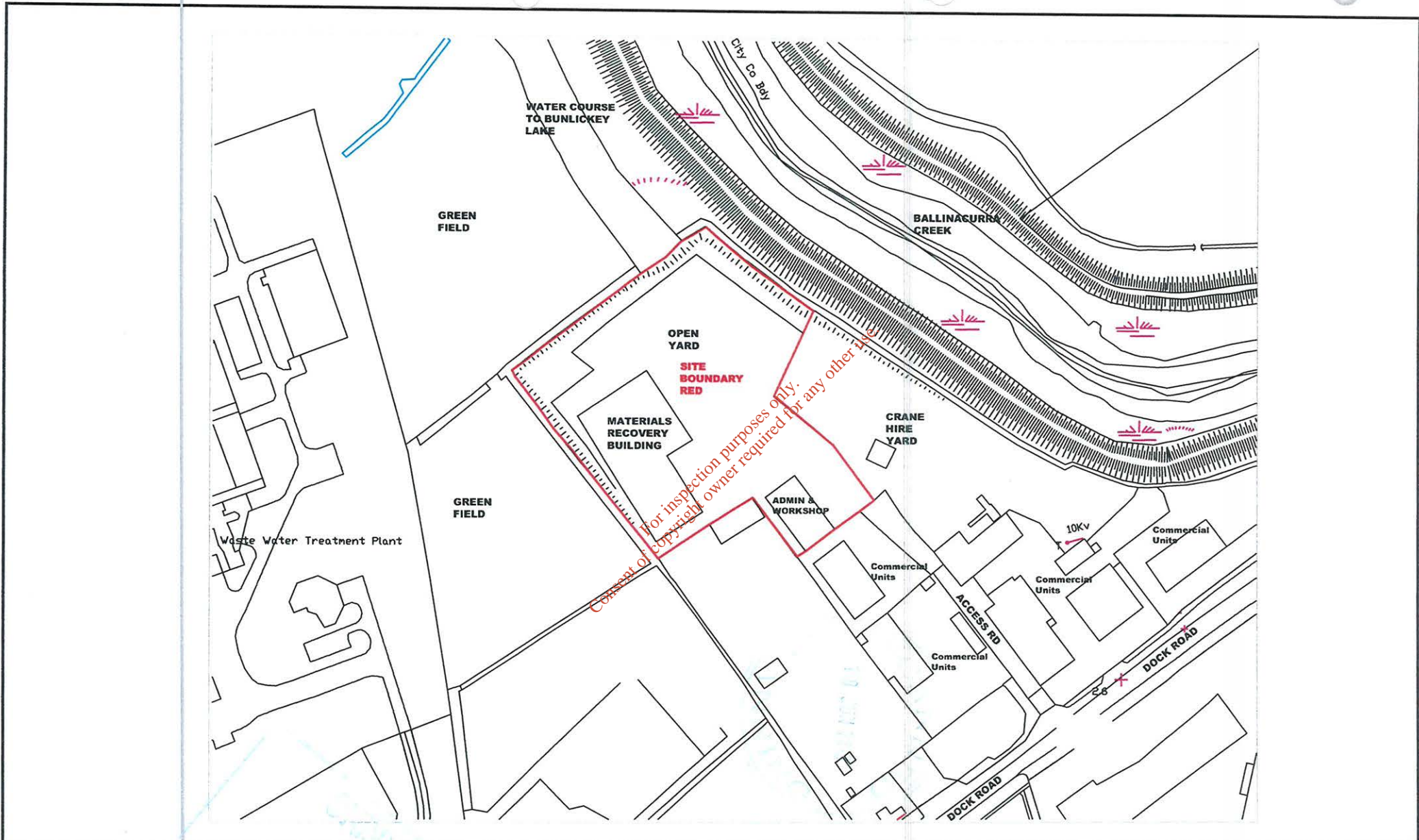
The open yards are paved and are used for external waste storage bays (C&D, glass, metals, timber and baled waste), skip storage, truck parking and a vehicle wash area.

Buildings 1 & 2 are portal frame with metal cladding and concrete walls. Both buildings are approximately 3,265m², with a ridge height of approximately 13m and are accessed by doors on the eastern side. The entrance to Building 2 is the largest, but both allow easy access for articulated trucks. The floors of both buildings are concrete and are in generally good condition. There are no floor drains in either building.

There is palisade security fence on the north, east and west boundaries, with block work walls along the south-western boundary south of Building 1 and west of the site offices and workshop.

4.4 Surrounding Land Use

The facility is located in the northern section of an industrial area (Figure 4.3). It is bounded to the south and south west by warehousing units, transport depot, oil distribution depot and truck sales and repair facilities. To the east and south east is Cussen Crane Hire.



O' Callaghan Moran & Associates.
 Granary House, Rutland Street,
 Cork, Ireland.
 Tel. (021) 4321521 Fax. (021) 4321522
 email : info@ocallaghanmoran.com

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Figure No.
 4.3

TITLE
 SITE SURROUNDS

SCALE 1: 2500 A4	REV. A
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Figure 4.3 Surrounding Landuse

The site is bounded to the east and northeast by a perimeter drain, with the Ballinacurra Creek further east. The lands adjoining the northern and western boundaries are undeveloped. Further north is the River Shannon, which is designated as a Special Area of Conservation along this stretch. Further west is the Limerick City Council municipal wastewater treatment plant, which is approximately 100m from the site boundary and further west is Bunlickey Lake, which is part of a Special Protection Area.

4.5 Water and Electricity Supply

The facility obtains water from the municipal water supply system provided by Limerick County Council. The electricity power supply is provided by Electric Ireland and there is an electrical substation at the rear of the office.

4.6 Drainage

4.6.1 Surface Water

Surface water run-off is generated by rainfall on the roof of the offices and workshop building, the waste handling buildings and the paved open yard areas. The run-off from the paved yards is collected and discharged to a man made drain at the north eastern site boundary via a three chamber oil interceptor (40m³ capacity) Run-off from the main buildings discharges to manmade perimeter drain along the western boundary. The drainage layout is shown on Drawing No 002.

The perimeter drains discharge to Bunlickey Lake. There is a shut off valve at the outlet from the interceptor that can be closed in the event of an incident that has the potential to impact on surface water quality and this can contain the surface water within the site boundary if required.

GES conducted an extensive CCTV survey of the surface water drainage system in 2012. The survey identified a number of defects in the surface water lines, some small

cracks in the first chamber of the interceptor and further cracks in the pipeline connecting the final chamber of the interceptors to the discharge point. These defects were repaired in May 2012.

4.6.2 Foul Water

Originally sanitary wastewater and wastewater from the vehicle wash area is treated in to the on-site Klargester Biodisc wastewater treatment plant. The washwater from the vehicle wash passed through a grit trap and oil interceptor before entering the unit. However the use of the vehicle wash has been suspended. Sanitary wastewater from the neighbouring Cussen Crane Hire Yard is also connected to the Klargester.

The treated effluent discharges to an onsite percolation area. The quality of the discharge is monitored in accordance with the requirements of the Waste Licence. The results of the monitoring carried out in 2012 are in Appendix 2.

In 2012 GES commissioned a detailed assessment of the operation of the treatment plant. The assessment established that the average daily discharge to the percolation area is 0.4m³/day. Taking into consideration rainfall on the percolation area, the total hydraulic loading is 0.483m³/day.

The effluent quality monitoring has established that the quality meets the recommended minimum performance standards set by the EPA Wastewater Treatment Manual and are within the manufacturer's design standards.

It is a condition of the Waste Licence that discharge foul water and sewage from the site must be to the Council's foul sewer, following the completion of the Limerick Main Drainage Scheme, subject to the approval of the Sanitary Authority-Limerick City Council.

In 2009, the City Council gave its approval in principle to the connection to the municipal wastewater treatment plant, however due to difficulties in obtaining way leaves to install the sewer line it was not possible to complete the connection.

The facility landlord is currently engaged with both the City and County Councils regarding the connection and the necessary wayleaves and it is expected that the connection will be completed in 2013. Following this GES will recommence the use of the vehicle wash area and the on-site wastewater treatment plant will be decommissioned.

4.7 Facility Management & Staffing

The Facility Manager, Ms Mary Dwane and the Facility Supervisor Mr Michael Whelan, have attended FÁS waste management training course and both have 12 years experience waste management experience.

GES have implemented an Integrated Management System (IMS) at the facility in accordance with the requirements of Occupational Health and Safety Assessment Series (OHSAS) 18001:2007 and International Standard Organisation (ISO) 14001:2004. Following successful accreditation to both standards in November 2011, two internal surveillance audits were performed during 2012 and found the IMS to be well maintained.

There are currently 20 full time employees based at the facility, including management, administration, general operatives and maintenance staff.

4.8 Hours of Operation

The facility is authorised to operate seven days per week twenty four hours per day. At present, there are two eight hour shifts operating from 06:00 – 14:00 and 14:00 to 22:00.

4.9 Waste Types & Quantities

The Waste Licence allows the acceptance of 90,000 tonnes of non hazardous waste annually.

These comprise:

- Commercial and Industrial Waste (10,500 tonnes),
- Municipal (75,000 tonnes),

- Construction & Demolition (4,500 tonnes).

The maximum amount of each waste type accepted may be altered with the prior agreement of the EPA, as long as the annual total of 90,000 tonne is not exceeded.

4.10 Waste Acceptance & Handling

The wastes are delivered by GES collection vehicles and by third party collectors. All waste deliveries are weighed on the weighbridge and then directed to either Building 1 or 2. The key processes carried out at the facility: -

- Segregation of recyclable materials (paper, cardboards, plastic, wood, metals, glass);
- Baling and wrapping of Municipal Solid Waste;
- Segregation and bulking of C&D waste;
- Transfer of recovered and residual materials to appropriately licensed recycling, recovery and disposal outlets; and
- Timber shredding (not currently carried out)

Commercial and Industrial (C&I) Waste

The C&I wastes comprises mixed and segregated recyclables (paper, cardboard, glass, metal, green waste and wood). The mixed packaging is processed inside Building 1 to separate out the plastic, card and paper, which are then baled and stored prior to transfer to a suitable permitted/licensed off-site recycling outlet. Biodegradable wastes that are suitable for composting are bulked and sent to an offsite composting facility. The remaining non-recyclable material is bulked up and sent to appropriate licensed disposal facilities.

Construction and Demolition (C & D) Waste

The C&D waste comprises mixed wastes (rubble, stone, timber, metal etc) and soil and stone. The material arrives in skips of varying sizes. The loads are inspected, with any plasterboard removed and placed in a dedicated skip located inside the building, and the remainder off loaded into an external C&D bay. The majority of the incoming waste is recovered and sent

off-site either for re-use or recycling. The non-recyclable materials are transferred to a licensed landfill.

Municipal Waste

The incoming waste is deposited on the floor of Building 2 and is then either bulked up for removal and disposal at an approved residual landfill facility or directed to the baler where it is compacted into bales and wrapped in plastic sheeting. The wrapped bales are then stored on the paved yard outside the building pending consignment to overseas waste to energy recovery plants.

Timber Shredding

Up until 2012, untreated timber pallets and untreated construction timbers were shredded in the northern area of the yard and stored in a dedicated shredded timber bay before being sent for use as a compost bulking/aeration agent, or as raw material in chipboard/MDF manufacturer. This activity has ceased.

External Storage

A large portion of the open yard to the east of Buildings 1 and 2 is used for empty skip storage. There are open metal, glass and timber storage bays at the northeast corner of the yard and along the northern boundary. Bales of compacted mixed municipal solid waste are stored externally in the north east of the site. The bales are wrapped in eight layers of plastic sheeting that protects the wastes from rainfall and prevents the infiltration that could generate a leachate.

The remaining wastes that are stored externally comprise inert construction and demolition wastes in the designated C& D Bay to the north of Building 2 and baled clean cardboard, paper and plastics and scrap metal.

4.11 Plant & Equipment

The type and numbers of fixed and mobile plant used to handle and process the waste is shown in Table 4.1. The proposed increase in the amount of wastes accepted does not require the

provision of any additional equipment. All key plant items have 100% duty and 50% standby capacity to handle 130,000 tonnes per annum.

Critical spares are maintained on-site and a preventative maintenance programme is implemented. In the event of a breakdown supporting plant items may be hired in for use for short periods.

Table 4.1 Current Plant List

No.	<i>Plant</i>	Operational Capacity tonnes/day	Standby Capacity Tonnes/day
1	360° Komatsu Excavator	100	70
1	Volvo Loading Shovel	500	350
2	Doppstadt shredders	200	150
1	Doppstadt trommel	200	140
1	Waste Baler	200	150

In addition to the larger plant items, there are welding units and a compressor in the maintenance workshop. The skip lorries and rear end loaders (REL) based at the facility are not refuelled or serviced on-site.

4.12 Oil / Chemical Storage

Operations involve the storage and handling of fuel, engine hydraulic and lubricating oils and anti-freeze. Lubricating and engine oil and waste oils generated in plant servicing are stored in the Maintenance Workshop. There is a 3,200 litre diesel oil self banded plastic storage tank adjacent to the electrical sub-station at south west boundary, which is used for fuelling the onsite plant items (forklifts, grabs etc). Road vehicles are not refuelled at the facility.

4.13 Energy Efficiency and Resource Consumption

Facility operations involve the consumption of water, oil and electricity. Energy consumption is a significant operational cost and GES is committed to improving energy efficiency. The estimated quantities used in 2011 and 2012 are given in Table 4.2.

Table 4.2 Estimate of Resource Consumption 2011 & 2012 –

Resources	Quantities 2012	Quantities 2011
Diesel (green)	60,000 litres	43,000 litres
Electricity	113,567 Kwh Units	65,000 Units
Hydraulic Oil	4500 litres	400 litres
Engine Oil	1500 litres	150 litres
Mains Water	8200 m ³	265 m ³

GES carries out quarterly reviews of energy and resource usage to monitor the consumption rate and minimise both the amounts consumed and the associated costs.

4.14 Waste Generation

Waste generated by facility administration and maintenance activities includes office and canteen waste and waste oils and spent batteries. GES implements waste prevention, minimisation and segregation procedures to minimise the amounts of wastes arising and ensure that as much as possible is recycled and recovered.

The fixed mobile plant and equipment is subject to on-site maintenance by a contract mechanic company. Waste oils and spent batteries are removed for disposal/recovery at licensed treatment/recovery facilities.

4.15 Nuisance Control

GES has contracted a vermin control company to carry out nuisance control at the facility. The contractor provides and maintains forty bait boxes at the facility and also carries out insect control measures as required. Weekly nuisance and litter inspections and daily litter picks are carried out.

4.16 Safety and Hazard Control

GES have prepared and implemented an Emergency Response Plan to minimise the risk of accidents or incidents that could result in adverse environmental impacts. All facility personnel and visitors are obliged to comply with GES safety guidelines regarding access to and from the facility and on-site traffic movement.

All site personnel are provided with, and are obliged to wear, personal protective equipment (PPE) appropriate for their particular functions. PPE includes facemasks, gloves, safety glasses, steel-toed footwear, overalls, reflective jackets and helmets.

The ERP ensures a rapid response to any incident by trained staff so as to minimise the impact on the environment of any associated emissions.

The facility is fully certified to ISO 14001:2004 and OHSAS 18001:2007 standards and has been accredited since 2011.

4.17 Changes to the Project

It is not proposed to alter either the waste types accepted or processes carried out. The facility has the capacity to accommodate the proposed increase in the amount of waste received. It is not envisaged that there will be any other significant changes to the facility operations in the near to medium term.

4.18 Associated Developments

The proposed increase in the amount of wastes accepted and processed at the facility does not require and will not involve any associated developments.

5. CLIMATE

5.1 Introduction

This Section describes the climate at the facility and assesses the impact the proposed increase in the amounts of waste will have on the climate and microclimate

5.2 Methodology

The assessment was based on meteorological data obtained from the Shannon Airport Meteorological Station.

5.3 Existing Conditions

Average rainfall, temperature, humidity and wind speed and direction for the Meteorological Station at Shannon Airport is presented in Table 5.1. The climate in the area can be described as mild and wet, with the prevailing wind direction from the south west. The average annual rainfall at the site is 926.7 mm. The winds are predominantly from the south west sector.

5.4 Impacts

Facility activities include the use of diesel fuelled plant and vehicles that produce exhaust emissions that contain greenhouse gases (GHG). The proposed increase in the amount of wastes accepted will result in an increase in the exhaust emissions.

Table 5.1 Meteorological Data: Shannon Airport 1981-2010

Rainfall	
Annual average	977.6 mm
Average maximum month (Dec)	104.0 mm
Average minimum month (April)	59.2 mm
Temperature	
Mean Daily	10.2°C
Mean Daily Maximum (July)	19.8°C
Mean Daily Minimum (Jan)	3.2°C
Relative Humidity	
Mean at 0900UTC	83.9%
Mean at 1500UTC	71.9%
Wind	
Prevailing direction	South West
Prevailing sector	South West

5.5 Mitigation Measures

The diesel powered plant engines are only turned on when wastes are being processed and GES has a policy of not allowing engine idling. This also applies to heavy goods vehicles accessing the facility.

5.6 Assessment of Impacts

The proposed increase in the amount of wastes accepted will result in an increase in GHG, however these will be at a scale that will not give rise to any discernible impacts on either the microclimate or climate.

6. TRAFFIC

6.1 Introduction

This Chapter describes existing road traffic conditions and includes an assessment of the impacts the increase in the amounts of waste accepted at the GES facility will have on the local road network.

6.2 Methodology

The assessment of impacts is based on a detailed Traffic Impact Assessment (TIA) conducted by Tobin Consulting Engineers, a full copy of which is in Appendix 3. The TIA provides a detailed assessment of existing and future traffic conditions on the local roads network surrounding the site and the capacity of the local road network and the entrance on Dock Road to facilitate increased traffic flows linked to the proposed increase in waste inputs.

The TIA also takes into consideration seasonal factors and the cumulative effects of other operations, including an Oil Depot to the south of the site, for which revised planning permission has been granted but has not yet been developed.

6.3 Existing Conditions

6.3.1 Existing Road Network

The Dock Road forms part of the N69 linking Limerick to Tralee and the site entrance is located in a 60km/h speed limit zone. The N69 has a carriageway width of approximately 11.3m at the site access junction, with a grass margin fronting the southern side of the carriageway.

There is a ghost island with dedicated right-turning lane for vehicles accessing the site from the east, however the road markings are not consistent with other access points off the Dock Road and have deteriorated. The visibility splays at the entrance comply with the requirement of the National Roads Authority (NRA) DMBR TD 41 Geometric Design for Priority Junctions. There is street lighting, but no pedestrian or cyclist facilities provided in the vicinity of the site. There are no planned major improvements in the immediate vicinity of the site that will have a significant impact on traffic movements

6.3.2 Road Traffic Survey

The existing traffic flows was determined by an Automated Classified Traffic Survey, at the existing site access priority junction on Dock Road on Wednesday 17th January 2013 between the hours 07:00 and 19:00. The results are in Appendix A of Tobin's TIA. The survey distinguished between cars, buses, light vehicles and heavy goods vehicles (HGVs) and established that the peak traffic levels through the junction occurred between the hours of 08:15 and 09:15 and between 16:45 and 17:45.

6.3.3 Traffic Generation & Distribution

Estimates of the current traffic movements associated with the facility during the peak periods were based on the results of a traffic count at the site access junction. Table 6.1 and 6.2 shows the trip rates at the morning and afternoon peak hours currently and an estimate for the maximum number of trips that will be generated at maximum capacity. The movements are expressed as passenger car units (PCU).

Table 6.1 Traffic Generation Morning Peak

Traffic Generation Morning Peak				
Waste Inputs Tonnes	Existing Arrivals	Arrivals per 1000 tonnes	Existing Departures	Departures per 1000 tonnes
90,000	21	0.256	21	0.233

Table 6.2 Traffic Generation Afternoon Peak

Traffic Generation Morning Peak				
Waste Inputs Tonnes	Existing Arrivals	Arrivals per 1000 tonnes	Existing Departures	Departures per 1000 tonnes
90,000	27	0.3	40	0.444

In the morning peak hour, 57% of the traffic arrives at the site from the west, with 43% from the east. 42% of the traffic leaving the site goes west, with 58% going east. In the afternoon peak hour 48% of the traffic arrives at the site from the west, with 53% from the east. 57% of the traffic leaving the site goes west, with 43% going east.

6.4 Predicted Conditions

Estimates of the additional vehicle movements at the peak hours associated with the increase in the amount of waste (40,000 tonnes/year) are presented in Tables 6.3 and 6.4.

Table 6.3 Additional Traffic Generation Morning Peak

Traffic Generation Morning Peak				
Waste Inputs Tonnes	Arrivals per 1000 tonnes	Total Arrivals	Departures per 1000 tonnes	Total Departures
40,000	0.256	10	0.233	9

Table 6.4 Additional Traffic Generation Afternoon Peak

Traffic Generation Afternoon Peak				
Waste Inputs Tonnes	Arrivals per 1000 tonnes	Total Arrivals	Departures per 1000 tonnes	Total Departures
40,000	0.300	12	0.444	18

Estimates of the peak hour traffic associated with the Oil Depot and Petrol Station and with future developments in the areas zoned for industrial developments are presented in Tables 6.5 and 6.6. The data for the Oil Depot and Petrol Station is derived from the respective planning applications. The estimates for the industrial development assume that 30,000m² will be built out.

Table 6.5 Traffic Generation from Committed Development Morning Peak

Traffic Generation for Committed Development Morning Peak					
Development Type	GFA	Arrivals per 100m²	Total Arrivals	Departures per 100m²	Total Departures
Oil Depot			8		2
Petrol Station			64		62
Industrial Zone Lands	30,000	0.45	135		53
Total			207		117

Table 6.6 Traffic Generation from Committed Development Afternoon Peak

Traffic Generation for Committed Development Afternoon Peak					
Development Type	GFA	Arrivals per 100m²	Total Arrivals	Departures per 100m²	Total Departures
Oil Depot			2		8
Petrol Station			65		65
Industrial Zone Lands	30,000	0.115	35	0.378	113
Total			37		121

A background traffic growth factor of 1.32 from 2013 to 2028 was applied derived from the National Roads Authority Project Appraisal Guidelines,

6.4.1 Forecast Traffic & Junction Analysis

Background traffic on the road network is expected to grow in future years and there is no defined lifetime for the GES facility. The traffic growth analysis is based a start year of 2012 and a design year of 2028. The background traffic growth factors used in the analysis are those published by the National Roads Authority (August 2003 for years 2002 – 2040).

The junction analysis was carried out on the entrance to the site on the N69 Dock Road using the Transport Research Laboratory (TRL) computer program PICADY, which is widely used for the analysis of priority junctions. The full outputs from PICADY are included in Appendix D of the TIA and the results of the analysis of the for the morning and evening peak hours are provided in Table 6.7.

The key parameters were the Ratio of Flow to Capacity Value (RFC value – desirable value should be no greater than 0.85 for PICADY, values over 1.00 indicate the approach arm is over capacity), the maximum queue length on any approach to the junction and the average delay for each vehicle passing through the junction during the modelled period.

The results indicate that the entrance can readily accommodate the additional traffic associated with the proposed increase in waste inputs.

Table 6.7 PICADY Results

Year & Time	Arm A- N69 to Askeaton		Arm B Site Entrance		Arm C-N69 to Limerick		Average Delay (min/veh)
	RFC Value	Max Queue Length	RFC Value	Max Queue Length	RFC Value	Max Queue Length	
Existing AM Peak			0.057	0.06	0.024	0.02	0.0
Existing PM			0.128	0.15	0.029	0.03	0.0
2013 AM +Dev			0.089	0.10	0.034	0.04	0.0
2013 PM +Dev			0.199	0.24	0.042	0.04	0.0
2028 AM			0.141	0.16	0.029	0.03	0.0
2028 PM			0.257	0.33	0.032	0.03	0.0
2028 AM +Dev			0.250	0.32	0.042	0.04	0.0
2028 PM+Dev			0.435	0.072	0.047	0.05	0.0

6.4.2 Link Capacity

A link capacity assessment of the N69 was undertaken using TA/ 79/99. For the purposes of Road Type, the N69 Dock Road is classified as UAP3 (variable standard road carrying mixed traffic with frontage access, side roads, bus stops and at grade pedestrian crossings).

The existing carriageway widths are approximately 11m and there are 2 to 3 lanes giving a capacity estimate of 1620 PCU/hr in one direction. The maximum one way flow expected occurs during the morning peak in 2008 with a flow of 1681 PCU expected. This indicates the road will operate just below capacity by the design year of 2028.

6.5 Impacts

The proposed increase in the amount of waste accepted at the facility will give rise to an increase in heavy goods vehicle traffic to and from the site.

6.6 Mitigation Measures

The visibility splays at the access junction are adequate, but need to be kept free of vegetation and other obstacles, such as signage that may cause a visual obstruction.

The existing right hand turn lane is used by vehicles accessing the site from Limerick City, however the road markings delineating the Ghost Island are not consistent with other access points along the Dock Road and have deteriorated. The markings will be modified and reinstated.

GES provides car parking space for site staff within the site boundary. As the proposed increase in waste inputs will not result in any changes in employee numbers, there is not need for additional parking spaces to be provided.

6.7 Impact Assessment

The existing access junction has the capacity to handle the estimated increase in traffic associated with the additional waste inputs, taking into consideration the cumulative effects of other developments in the vicinity of the site. The existing road network has the capacity to accommodate the traffic associated with the proposed increase in waste inputs. The overall impact of the increased traffic will be negligible.

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7. SOILS AND GEOLOGY

7.1 Introduction

This Chapter describes the soils and bedrock conditions at the facility and assesses the impacts of the proposed increase in the amounts of waste that will be accepted. It is based on a desk study of available information on the local geological conditions derived from a review of databases maintained by Teagasc and the Geological Survey of Ireland (GSI), and the results of intrusive site investigations carried out at the facility in 2001, 2002 and 2004.

7.2 Existing Conditions

7.2.1 *Subsoils*

The GSI information indicates that the site is underlain by Made Ground and this is likely underlain by Estuarine Sediments (silts/clays) (Ref Figure 7.1). The site investigations, which comprised the installation of fourteen shallow soil borings to a depth of 3m and two cable percussion boreholes that extended to 10.6m below ground level, confirmed these conditions.

In general the subsoil sequence beneath the site is 0.0-2.5m – Made Ground comprising gravely sand containing ash, wood, glass, metals, slates and plastics. This is underlain natural ground comprising approximately 1m of silty clay alluvium with sand and gravel lenses which in turn is underlain by up to 4m of Silts overlying a minimum of 1.5m of sandy Clay. Bedrock was encountered at between 9 and 10m below ground level.

7.2.2 *Bedrock*

The site is underlain by Visean Undifferentiated Limestone, which is a pure bedded limestone. The bedrock type is shown on Figure 7.2.

7.3 **Impacts**

The only direct emission to ground at the facility is the treated effluent from the on-site wastewater treatment plant, which discharges to a percolation area. The proposed increase in the amounts of waste accepted will not result in any new emission to ground or any changes to either the volume, or the quality of the existing emission.

There is the potential for leaks/spills to occur in the handling and storage of fuel and lubricating oils and a malfunction of the wastewater treatment plant. The potential pathways to the soil include direct infiltration and indirect via contaminated surface water leaks to ground.

7.4 **Mitigation Measures**

The mitigation measures implemented by GES include the provision of extensive essentially impermeable paving across the site; the maintenance of a suitable wastewater treatment plant; the provision and maintenance and integrity testing of spill containment infrastructure, and the routine inspection and survey of the surface water and foul water drainage systems.

The on-site wastewater treatment plant is a temporary measure pending the connection to the municipal wastewater treatment plant. Once this connection has been completed, the on-site treatment plant will be decommissioned and the discharge of treated effluent to ground will cease.

7.5 Assessment of Impacts

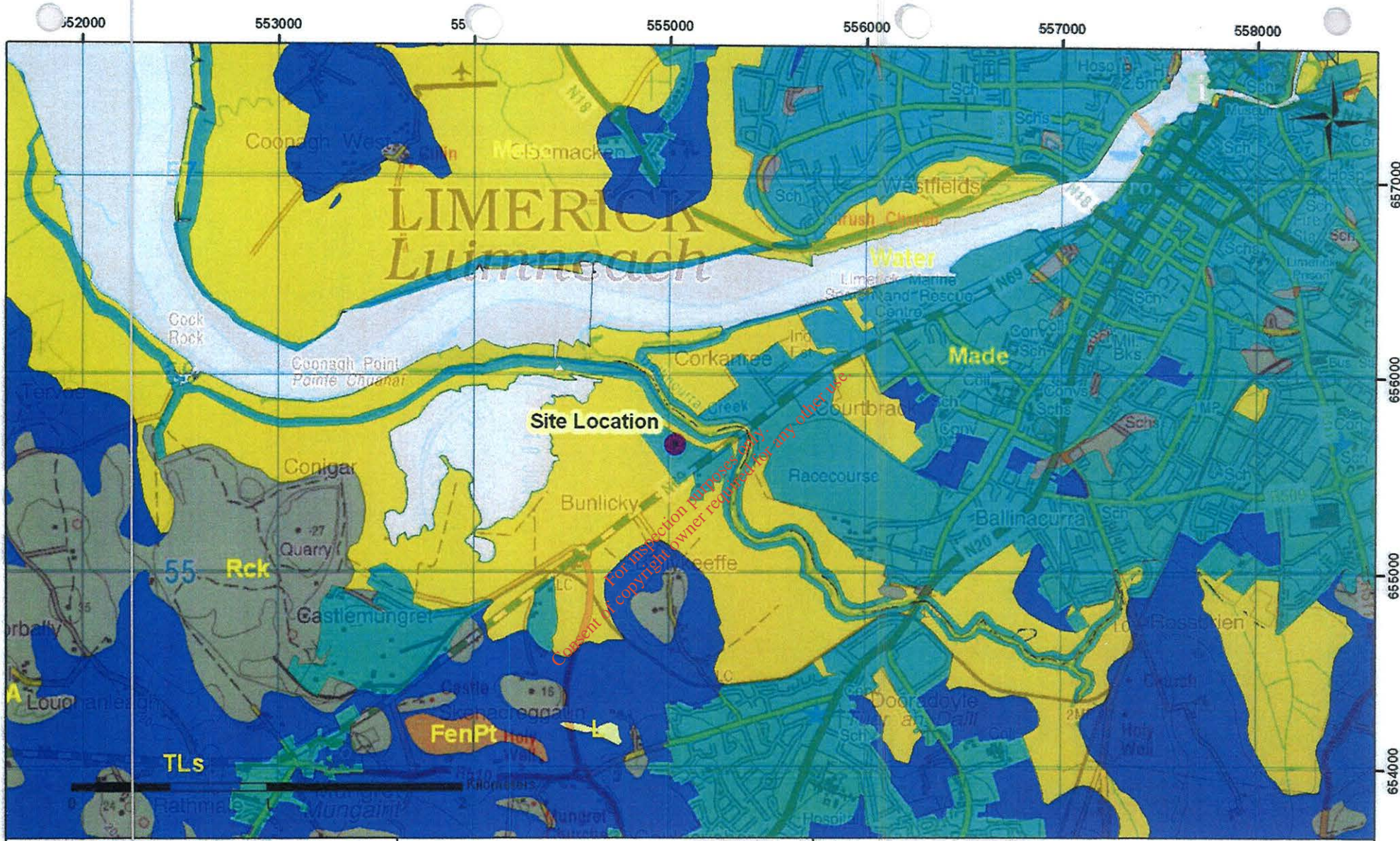
With the exception of the area around the wastewater treatment plant, the remainder of the site is either paved with concrete, or occupied by buildings that prevent infiltration to the subsoil.

An assessment of the on-site wastewater treatment plant carried out in the 2012 and the results of the routine monitoring of the effluent quality indicate the plant is functioning properly (ref Section 4.6.2). The decommissioning of the treatment plant, following the connection to the municipal wastewater treatment plant, will mean the discharge of treated effluent to ground will cease.

The provision of secondary containment for oils and chemicals that have the potential to adversely impact on soil quality, in conjunction with the extensive impermeable paving, minimises the risk of short term direct or indirect discharges to ground in the event of a spill or leak. The integrity of the containment bund around the oil storage tank was tested in November 2012 and the results confirmed the bund was fit for purpose.

An assessment of the surface water drainage system in 2012 identified a number of defects that could allow surface water to infiltrate to the soils. These defects were subsequently repaired.

The proposed increases in the amounts of waste accepted at the facility will have no impact on soils and geology.



O'Callaghan Moran & Associates.
 Granary House, Rutland Street,
 Cork, Ireland.
 Tel. (021) 4321521 Fax (022) 4321522
 email: info@ocallaghanmoran.com

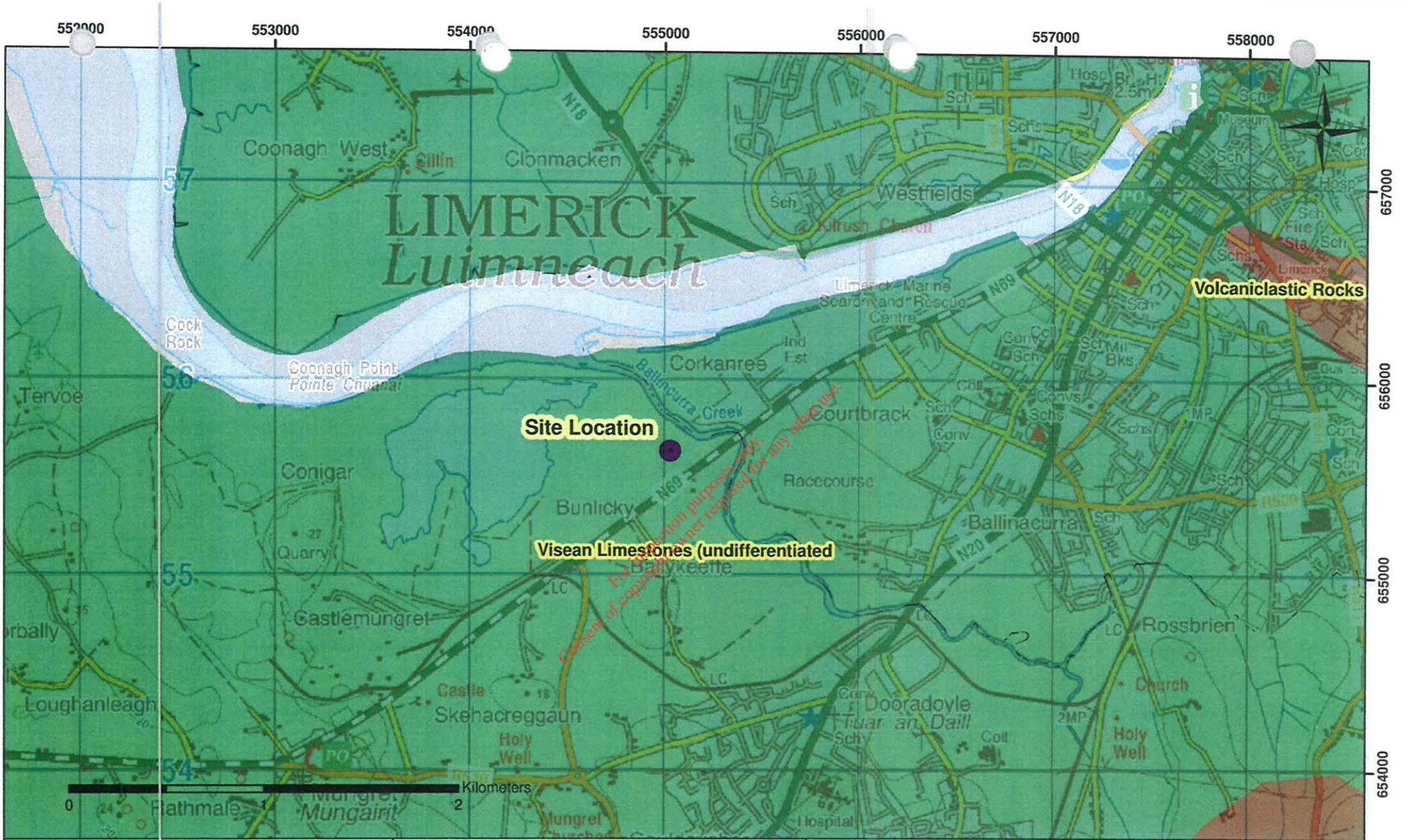
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TITLE
Subsoils

- Details
- Site Location
 - Fen peat
 - Alluvium
 - Lacustrine sediments
 - Water
 - Till derived from limestones
 - Made ground
 - Estuarine silts and clays

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Figure 7.1



O'Callaghan Moran & Associates.
 Granary House, Rutland Street,
 Cork, Ireland.
 Tel. (021) 4321521 Fax. (022) 4321522
 email: info@ocallaghanmoran.com

CLIENT
Greenstar Environmental Services

TITLE
Bedrock Geology

- Details
- Site Location
 - Visean Limestones (undifferentiated)
 - Volcaniclastic Rocks

Figure 7.2

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8. WATER

This Chapter describes the surface water and groundwater regimes at the facility and assesses the impacts the proposed increase in the amounts of waste will have on surface water and groundwater quality and also the flood risk.

8.1 Methodology

The assessment of surface waters is based on a review of databases maintained by the EPA the National Parks and Wildlife Service (NPWS), the Office of Public Works (OPW) and the results of surface water monitoring carried out by GES and Limerick County Council.

The assessment of groundwater is based on a review of databases maintained by the GSI, the EPA, the findings of the site investigations carried out at the site in 2001, 2002 and 2004 and the results of the groundwater quality monitoring carried out by GES

The assessment of the flood risk is based on Flood Risk Assessment Report prepared by OCM, which is in Appendix 4.

8.2 Existing Conditions-Surface Water

Surface Water Catchment

The facility is in the catchment of the Ballinacough River, which rises to the south east of the site and flows northwest to confluence with the River Shannon via the Ballinacurra Creek. Both the Ballinacurra Creek and the Shannon are tidally influenced. There are embankments along the southern bank of the Shannon and along western and eastern banks of the Ballinacurra Creek/Ballinacough, extending from Rosbrien to its confluence with the Shannon.

Surface water run-off at the facility discharges to Bunlickey Lake, which is a man made feature. The lake covers an area of approximately 50ha and has an estimated catchment of approximately 257ha.

The lake was originally a borrow pit for alluvial clays used in the manufacture of cement at the Irish Cement Ltd plant in Castlemungret and was formed by the discharge of groundwater pumped from the quarry at the cement plant and surface water run-off from the plant into the worked out areas. The water in the lake discharges to the Shannon River Estuary via valves and sluices that prevent tidal inflow.

The lower reaches of the Shannon are tidal and are part of the Shannon Transitional and Coastal Water Management Unit (WMU) designated in the Shannon River Basin District (ShIRBD) Management Plan prepared under the EU Water Framework Directive (WFD).

The WMU comprises twenty Water Bodies and the stretch of the river to the north of the site is in the Limerick Dock Water Body. Reports have been prepared on the 'Status' of each water body. Status means the condition of the water in a watercourse and is defined by its ecological status and chemical status, whichever is worse. Waters are ranked in one of five status classes, High, Good, Moderate, Poor and Bad

The WFD requires measures to ensure waters achieve at least 'Good Status' by 2015 and that their current status does not deteriorate. Where necessary, for example in heavily impacted or modified watercourses, extended deadlines (2021 and 2027) can be set for achieving the following objectives:-

- Prevent Deterioration
- Restore Good Status
- Reduce Chemical Pollution
- Achieve Protected Areas Objectives

The objectives for particular watercourses are based on Pressure and Impact Assessments of human activity, including point (wastewater treatment plants) and diffuse (e.g. land spreading of fertiliser and manure) emissions, landuse (e.g. peat harvesting, quarrying, industrial and residential use) and morphological conditions (e.g. river depth and width, structure and substrate of river bed) on surface waters to identify those water bodies that are 'At Risk' of failing to meet the WFD objectives.

'At Risk' does not necessarily mean that the water bodies have already been adversely impacted, but that there is a likelihood that a water body will fail to meet its objectives unless appropriate management action is taken.

Natura 2000 Sites

The main channel of the River Shannon as it flows through Limerick City is within the Lower Shannon Special Area of Conservation (SAC) (Site code: 002165). This includes the stretch up and downstream of the GES facility. The Shannon and Fergus Estuaries Special Protection Area (SPA) (Site Code 004077) is located to the north of the site. Detailed descriptions of the SAC and SPA and an assessment of the impacts of the proposed changes are presented in Chapter 9.

Surface Water Quality

There is no available chemical water quality data for the stretch of the Shannon to the north of the site. The Limerick Dock Water Body Status Report, a copy of which is in Appendix 5, states that the water overall status of is 'Good', with a High status for Biochemical Oxygen Demand, nutrients (phosphate and nitrogen) and dissolved oxygen. However, the overall chemical status is classified as 'Fail' and the water body is 'At Risk' of not achieving its restoration objective of reducing chemical pollution by 2021.

This assessment of the risk was prepared in 2008 and at that time the primary pressure on water quality identified in the Shannon Transitional and Coastal WMU Plan (Appendix 5) was combined sewer overflows and wastewater treatment plant overflows. Since then, the completion of the Limerick Main Drainage Scheme has significantly reduced the pressures on the Limerick Dock Water Body

Surface water run-off is generated by rainfall on the roof of the offices and workshop building, the waste handling buildings and the paved open yard areas. The run-off from the paved yards is collected and discharged to a man made drain at the north eastern boundary of the site via a three chamber oil interceptor. Run-off from the main buildings discharges to manmade perimeter drain along the western boundary. The drains also take run-off from

other occupants in the industrial estate and in 2012 there was a pollution incident where oil from a leaking tank on a nearby lot entered the drain at a point up stream of the GES facility.

The Waste Licence requires GES to monitor the quality of the surface water at specified locations monthly. These include the outlet from the interceptors (FE 1A) and in the receiving drain up (WS-9) and downstream (WS-10) of the discharge point. The locations are shown on Figure 8.1. As the discharge is dependant on rainfall it is not always possible to collect samples at monthly intervals.

The monitoring parameters include pH, electrical conductivity, total suspended solids (TSS), ammonia, biochemical oxygen demand (BOD), Fats Oils and Grease (FOG), Mineral Oil, Total Organic Carbon (TOC) and dissolved metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc).

The Waste Licence specifies Mineral Oil and TSS emission limit values (ELVs) for the discharge, but following a request from the EPA GES developed proposed trigger levels for ammonia, TOC and TSS, however these have not yet been agreed by the EPA. The monitoring results for 2012 and 2013 are included on Tables 8.1 to 8. 6.

Table 8.1 February 2012

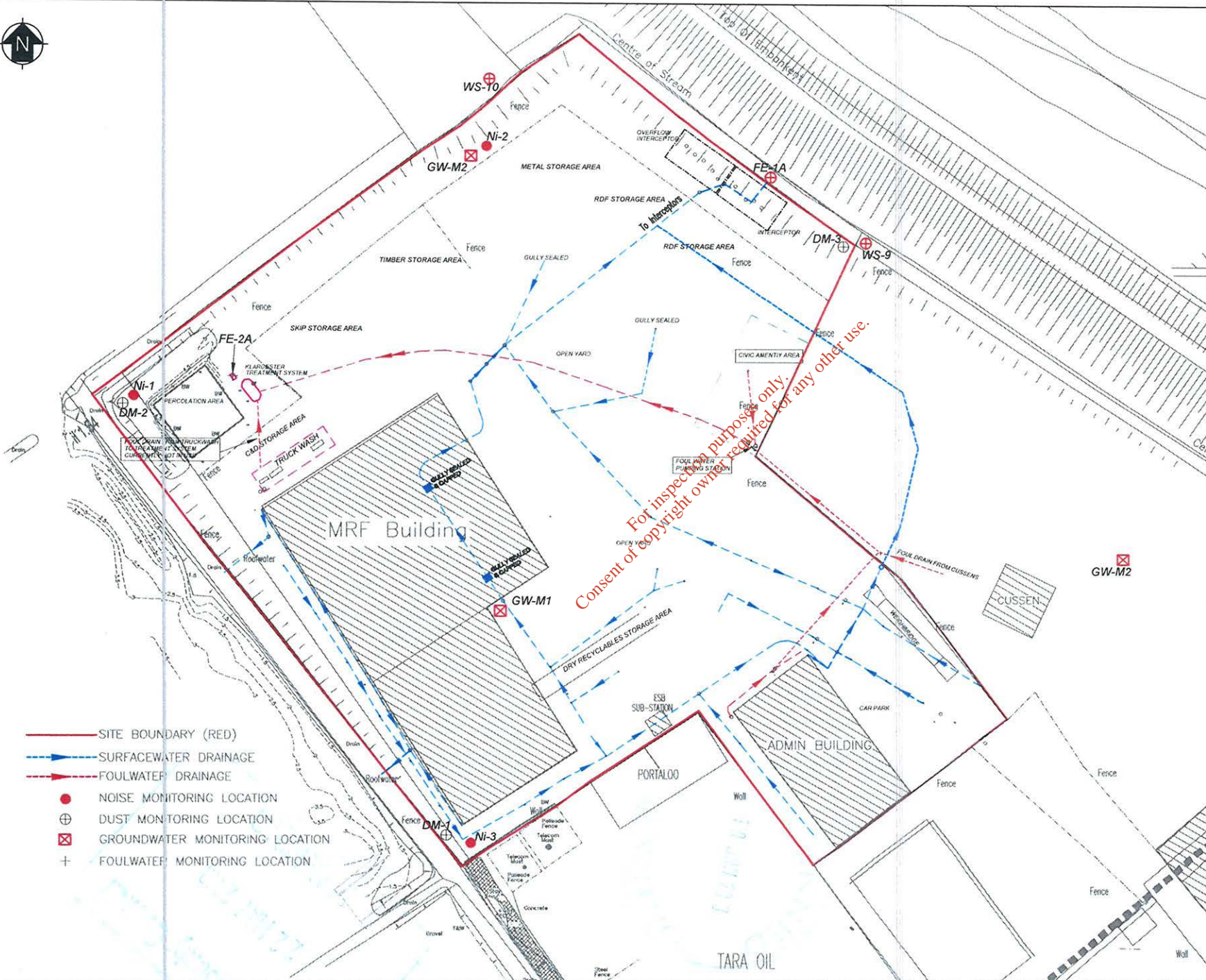
Parameter	Units	WS9	FE1A	WS10	ELV	EQS
pH	pH units	8.28	7.76	8.21	-	
BOD	mg/l	1	44	2	25	1.5
TSS	mg/l	12	86	<10	60	
Ammonia	mg/l	0.45	3.64	0.93	4	0.065
FOG	mg/l	<0.01	0.52	<0.01	-	-
Mineral Oils	mg/l	<0.01	<0.01	<0.01	5	
TOC	mg/l	6	48	15	-	-
Arsenic	ug/l	<0.9	<0.9	2		25
Cadmium	ug/l	<0.03	<0.03	<0.03	-	5
Chromium	ug/l	<0.2	0.5	<0.2	-	30
Copper	ug/l	3	<3	<3	-	30
Mercury	ug/l	<0.5	<0.5	<0.5	-	1
Nickel	ug/l	1.2	14.1	<0.2	-	20
Lead	ug/l	1.9	1.2	0.7	-	10
Zinc	ug/l	1.7	47.5	<1.5	-	100



NOTES

Monitoring locations
Grid references
Eastings Northings

DM-1	- 154913, 155617
DM-2	- 154842, 155714
DM-3	- 155003, 155750
Ni-1	- 154840, 155712
Ni-2	- 154920, 155745
Ni-3	- 154910, 155618
FE-1A	- 154974, 155769
WS-9	- 155003, 155750
WS-10	- 154922, 155776
FE-2A	- 154858, 155720
GW-M1	- 154923, 155667
GW-M2	- 154920, 155770
GW-M3	- 155049, 155684



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REV	DATE	DESCRIPTION	DRN	CHKD	APP
A	02/05/13	PRELIMINARY ISSUE			

O'Callaghan Moran & Associates
 Company House, Rutland Street,
 Cork, Ireland.
 Tel: (021) 4321521 Fax: (021) 4321522
 email: ocam@oag.ie

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GES Ltd		
TITLE		
GES Limerick Monitoring Locations W0082-02		
SCALE	DRAWING No.	REV.
NTS	A3	8.1 A

Table 8.2 April 2012

Parameter	Units	WS-9	FE1A	WS10	ELV	EQS
pH	pH units	8.16	7.79	8.24	-	
BOD	mg/l	1	37	4	25	1.5
TSS	mg/l	40	12	<10	60	
Ammonia	mg/l	0.20	1.99	0.27	4	0.065
FOG	mg/l	<0.01	<0.01	<0.01	-	-
Mineral Oils	mg/l	<0.01	<0.01	<0.01	5	
TOC	mg/l	18	40	20	-	-
Arsenic	ug/l	<2.5	<2.5	<2.5		25
Cadmium	ug/l	<0.5	<0.5	<0.5	-	5
Chromium	ug/l	<1.5	2.4	<1.5	-	30
Copper	ug/l	<7	<7	<7	-	30
Mercury	ug/l	<1	<1	<1	-	1
Nickel	ug/l	<2	6	<2	-	20
Lead	ug/l	<5	5	<5	-	10
Zinc	ug/l	8	24	5	-	100

Table 8.3 July 2012

Parameter	Units	WS9 -	FE1Ac	WS10	ELV	EQS
pH	pH units	7.44	7.15	7.50	-	
BOD	mg/l	2	72	2	25	1.5
TSS	mg/l	<2	130	2	60	
Ammonia	mg/l	<1	<1	<1	4	0.065
FOG	mg/l	<1	17.2	<1	-	-
Mineral Oils	mg/l	<0.001	0.013	<0.001	5	
TOC	mg/l	<7	33	<7	-	-
Arsenic	mg/l	3	5	3		25
Cadmium	mg/l	<0.2	<0.2	<0.2	-	5
Chromium	mg/kg	<1	<1	<1	-	30
Copper	mg/l	<0.2	<0.2	<0.2	-	30
Mercury	mg/l	0.1	0.2	<0.01	-	1
Nickel	mg/l	<0.2	<0.2	<0.2	-	20
Lead	mg/l	<0.2	<0.2	<0.2	-	10
Zinc	mg/l	<0.2	<0.2	<0.2	-	100

Table 8.4 October 2012

Parameter	Units	WS9	FE1A	WS10	ELV	EQS
pH	pH units	7.24	6.41	6.82	-	
BOD	mg/l	7	176	89	25	1.5
TSS	mg/l	9	70	51	60	
Ammonia	mg/l	0.51	0.29	0.04	4	0.065
FOG	mg/l	<1	11.1	3.3	-	-
Mineral Oils	ug/l	<1	2.03	<1	5	
TOC	mg/l	4	39.3	19.3	-	-
Arsenic	ug/l	1	1	1		25
Cadmium	ug/l	0.2	0.2	0.2	-	5
Chromium	ug/l	<0.6	2	1	-	30
Copper	ug/l	13	16	13	-	30
Mercury	ug/l	0.1	0.1	0.1	-	1
Nickel	ug/l	<2	4.4	2.4	-	20
Lead	ug/l	<0.8	1.1	1.4	-	10
Zinc	ug/l	11	22	13	-	100

Table 8.5 November 2012

Parameter	Units	WS9	FE1A	WS10	ELV	EQS
pH	pH units	7.36	6.77	7.27	-	
BOD	mg/l	2	50	8	25	1.5
TSS	mg/l	8	50	15	60	
Ammonia	mg/l	0.27	0.14	0.19	4	0.065
FOG	mg/l	<1	1.2	<1	-	-
Mineral Oils	ug/l	<1	<1	<1	5	0.01
TOC	mg/l	3.57	22.63	4.25	-	-
Arsenic	ug/l	0.001	0.002	0.001		25
Cadmium	ug/l	0.2	0.2		-	5
Chromium	ug/l	2	1	<0.6	-	30
Copper	ug/l	3	4	3	-	30
Mercury	ug/l	0.0001	0.0001	<0.0001	-	1
Nickel	ug/l	<2	2.6	<2	-	20
Lead	ug/l	<0.8	0.8	<0.8	-	10
Zinc	ug/l	8	20	15	-	100

Table 8.6 March 2013

Parameter	Units	WS9	FE1A	WS10	ELV	EQS
pH	pH units	7.39	6.93	7.26	-	
BOD	mg/l	11	12	29	25	1.5
TSS	mg/l	13	80	60	60	
Ammonia	mg/l	0.16	2.40	1.55	4	0.065
FOG	mg/l	<1	<1	<1	-	-
Mineral Oils	ug/l	<1	<1	<1	5	0.01
TOC	mg/l	7.48	35.78	14.02	-	-
Arsenic	ug/l	0.002	0.002	0.002		25
Cadmium	ug/l	0.7	0.6	0.6	-	5
Chromium	ug/l	1	2	1	-	30
Copper	ug/l	2	2	<2	-	30
Mercury	ug/l	<0.015	<0.015	<0.015	-	1
Nickel	ug/l	<2	4.8	3.0	-	20
Lead	ug/l	<0.8	<0.8	<0.8	-	10
Zinc	ug/l	32	14	4	-	100

The Tables include for comparative purposes the proposed trigger levels and ELVs. For those parameters for which ELVs have not been established the Environmental Quality Standards (EQS) specified for 'Good Status' in the Environmental Objectives (Surface Water) Regulations 2009 (S.I. No.272 of 2009) are provided. The EQS are not emission limit values, but are the concentrations that must be achieved in a water body if it is to meet the objectives set for the water body.

The monitoring data indicates that, with the exception of BOD and TSS, all of the parameters are below the proposed ELV and significantly below the EQS. The elevated BOD and TSS levels are considered to be associated with run-off from the paved open yards that are accessed by the heavy goods vehicles. It is noted that the BOD and ammonia levels upstream of the discharge point exceed the EQS.

GES committed significant resources to improving the quality of the surface water discharge. The drainage system was cleaned out by an external contractor in December 2012 and further maintenance works, including jetting of the drainage lines and clean out of the interceptor and silt trap sludge was completed in February 2013.

In December 2012, Limerick County Council monitored the water quality in the drain, approximately 2m downstream of the GES surface water discharge point as part of a wider surface water assessment being completed by the Council in this area of Dock Road. At the time there was no discharge from the GES facility. The results are presented in Table 8.7 and confirm that the elevated BOD and ammonia levels in the drain are not associated with the discharge from the facility.

Table 8.7 December 2012

Parameter	Units		ELV	EQS
COD	pH units	25	-	
BOD	mg/l	6	25	1.5
TSS	mg/l	23	60	
Ammonia	mg/l	0.99	4	0.65
Nitrate	mg/l	<2	-	
Ortophosphate	mg/l	<0.025	-	0.035
Hydrocarbons	mg/l	<0.01	-	

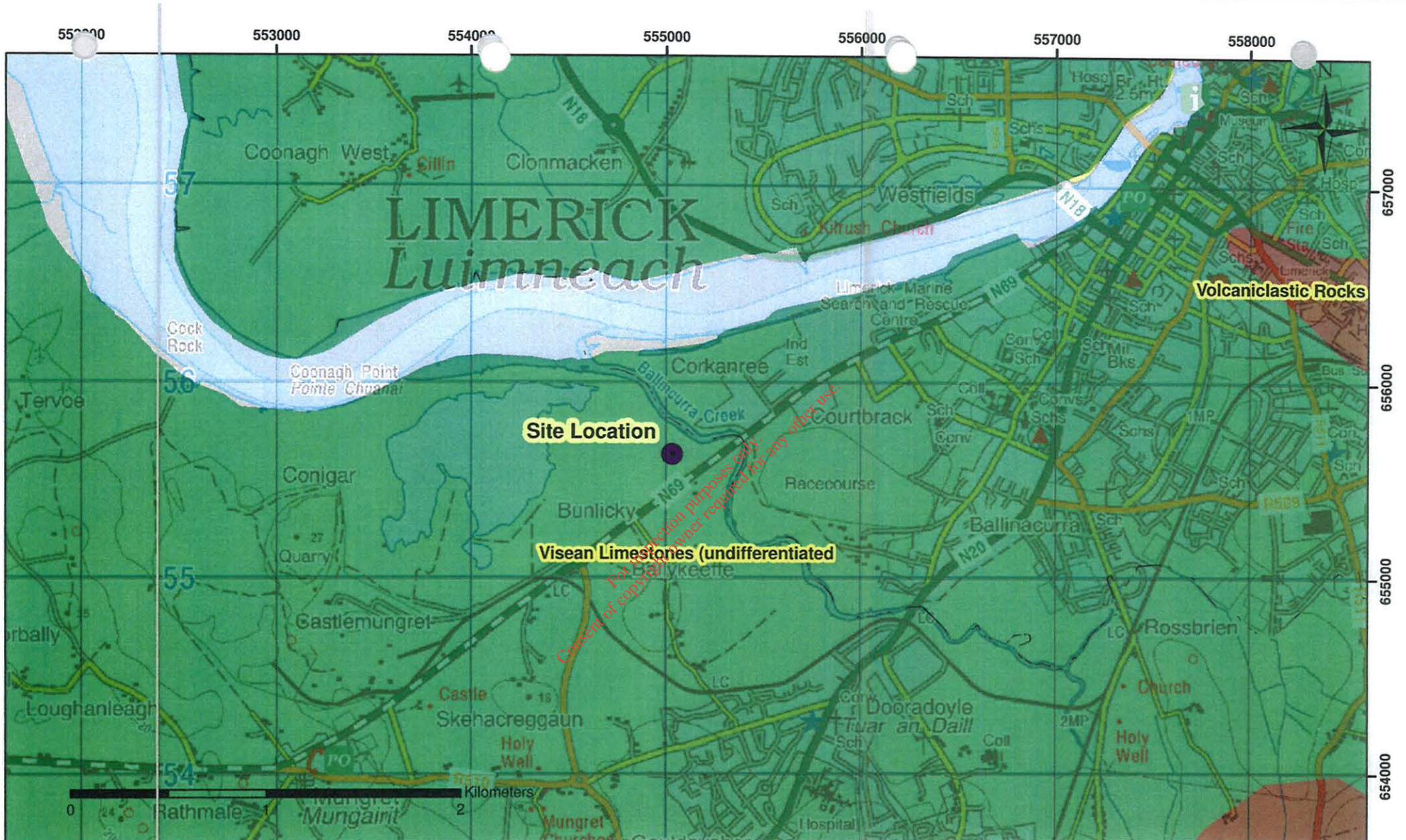
8.3 Existing Conditions-Groundwater

Aquifer Classification

The available information indicates that the subsoils at the site are not significantly water bearing. The underlying bedrock the site is classified by the GSI as being Locally Important Aquifer Generally Moderately Productive (**Lm**) (Figure 8.2).

Aquifer Vulnerability

The GSI assigned aquifer vulnerability rating for the site, based on the information it has on the type and depth of the subsoils, indicates the potential susceptibility of the aquifer to contamination from pollution sources at the ground surface, is Low (Figure 8.3). The site investigations proved approximately 9 to 10m of primarily low permeability subsoils in the vicinity of Building 2.



O'Callaghan Moran & Associates.
 Granary House, Rutland Street,
 Cork, Ireland.
 Tel. (021) 4321521 Fax. (022) 4321522
 email: info@ocallaghanmoran.com

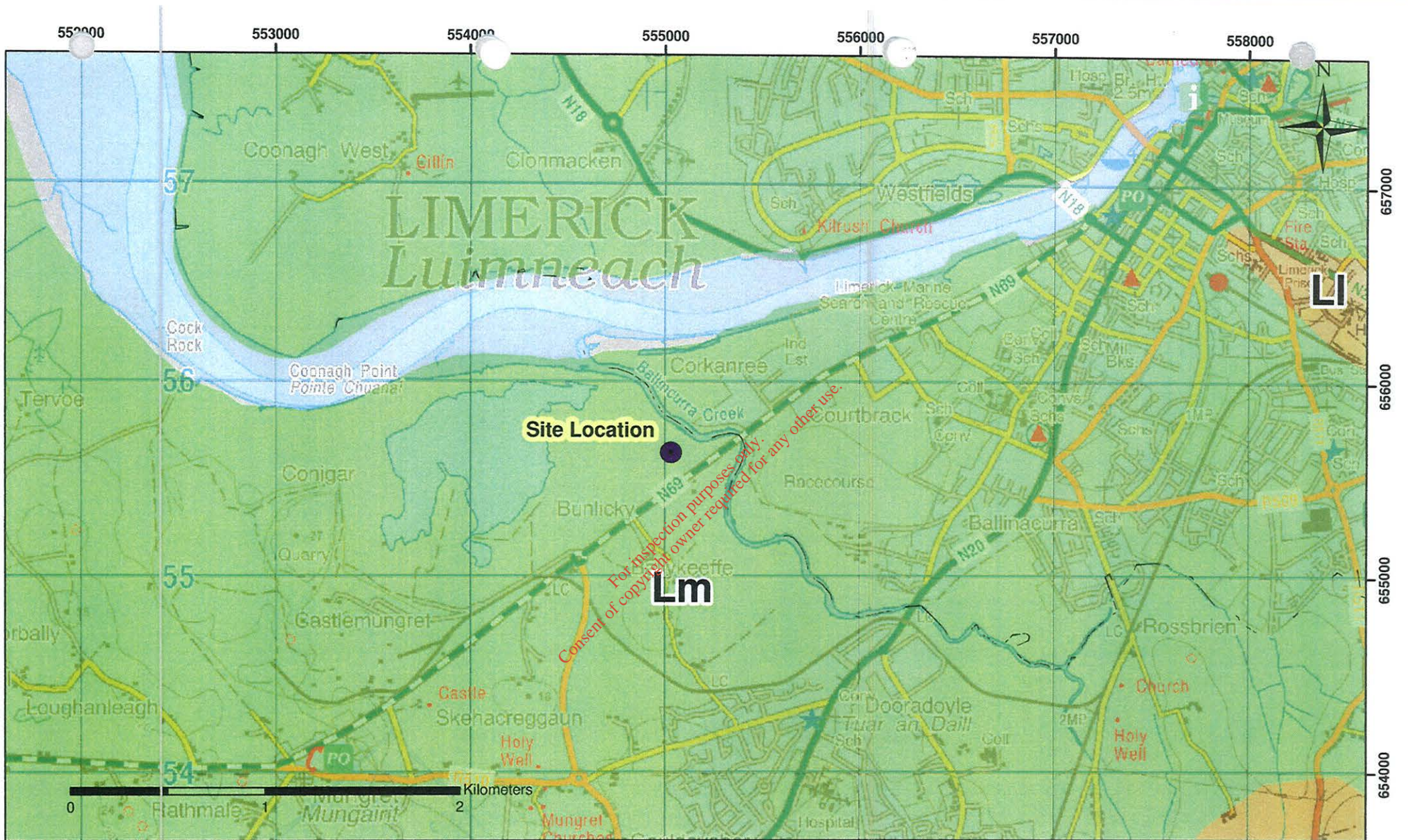
CLIENT
Greenstar Environmental Services

TITLE
Bedrock Geology

- Details
- Site Location
 - Visean Limestones (undifferentiated)
 - Volcaniclastic Rocks

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Figure 8.2





O'Callaghan Moran & Associates
 Granary House, Rutland Street,
 Cork, Ireland.
 Tel. (021) 4321521 Fax. (022) 4321522
 email: info@ocallaghanmoran.com
File No: 021-4321521 Fax: 022-4321522

CLIENT
 Greenstar Environmental Services

TITLE
 Bedrock Aquifer

- Details**
-  Site Location
 -  LI
 -  Lm

Figure 8.3

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Groundwater Flow Direction

Based on the topography, the local direction of groundwater flow is considered to be from south east to north-north west towards Ballinacurra Creek and the River Shannon.

Groundwater Quality

The aquifer beneath the site is part of the Limerick Urban Area Water Body as defined in the ShIRBD Plan. A copy of the water body status report is in Appendix 6.

The condition of a water body is defined by its chemical and quantitative status, whichever is worse, and groundwater quality is ranked in one of two status classes: Good or Poor. The Limerick Urban Water Body is categorised as being of 'Poor' status and is ~At Risk of not achieving its restoration objectives by 2021.

The Waste Licence requires GES to monitor groundwater quality bi-annually at three wells, GWM1, GWM2 and GWM3. GWM1 is close to the entrance to Building 1. GWM2 is at the northern site boundary and is down-gradient of site activities, while GWM3 is outside the operational area and is up-gradient of site activities. The EPA also carries out groundwater monitoring at unspecified frequencies

The monitoring parameters specified in the Licence are electrical conductivity, dissolved oxygen (DO) TSS, ammonia, BOD, FOG, total phosphorous, Diesel Range Organics (DRO) Aliphatic Hydrocarbons and Undecane.

The results of the monitoring carried out by the EPA and GES in 2012 are presented in Tables 8.7, 8.8 and 8.9. The Tables include, for comparative purposes, the Interim Guideline Values (IGV) for groundwater published by the EPA and the Threshold Values for groundwater (TV) quality introduced by the European Communities Environmental Objectives (Groundwater) Regulations 2010 S.I. No 9 of 2010.

The IGV levels represent typical background or unpolluted conditions, however higher concentrations than IGV can occur naturally, depending on the local geological and hydrogeological conditions. While the TVs are more appropriate for large scale abstraction

wells used for potable supply, they can be used to assess the significance of contamination where present in groundwater. Because not all parameters monitored have been assigned a TV, the relevant IGV is used for comparative purposes.

Table 8.7 EPA Monitoring – January 2012

Parameter	Units	GWM1	GWM2	GWM3	TV	IGV
pH	-	6.8	7.2	7.3	6-9	6-9
BOD	mg/l	28	11	3.5	-	-
COD	mg/l	380	67	71	-	-
TSS	mg/l	3617	1046	2556	-	-
Oils, Fats & Greases	mg/l	NA	NA	NA	-	-
Mineral Oils	mg/l	0.332	0.459	<0.01	-	0.01
DRO	mg/l	0.755	0.660	<0.046	-	0.01

NA- Not Analysed

Table 8.8 GES Monitoring Results – February 2012

Parameter	Units	GWM1	GWM2	GWM3	TV	IGV
BOD	mg/l	6	1	<1	-	-
TSS	mg/l	6316	310	94	-	-
Dissolved Oxygen	mg/l	7	10	8	-	NAC
Oils, Fats & Greases	mg/l	<0.01	<0.01	<0.01	-	-
Total Phosphorus	mg/l	4.643	0.635	0.100	-	-
Ammoniac	mg/l	10.51	2.66	0.68	0.175	0.12
Conductivity	mS/cm	0.955	0.882	0.696	1.875	1.000
DRO	mg/l	<0.01	<0.01	<0.01	-	0.01
Aliphatic Hydrocarbons	mg/l	<0.01	<0.01	<0.01	-	0.01
Undecane	mg/l	<0.01	<0.01	<0.01	-	-

Table 8.9 - GES Monitoring Results – August 2012

Parameter	Units	GWM1	GWM2	GWM3	TV	IGV
BOD	mg/l	<1	2	<1	-	-
TSS	mg/l	6066	2188	345	-	-
Dissolved Oxygen	mg/l	5	7	7	-	NAC
Oils, Fats & Greases	mg/l	<0.01	<0.01	<0.01	-	-
Total Phosphorus	mg/l	1.755	0.705	0.184	-	-
Ammoniacal Nitrogen	mg/l	9.77	3.90	1.11	0.175	0.12
Conductivity	mS/cm	0.747	0.965	0.855	1.875	1.000
DRO	mg/l	<0.01	<0.01	<0.01	-	0.01
Aliphatic Hydrocarbons	mg/l	<0.01	<0.01	<0.01	-	0.01
Undecane	mg/l	<0.01	<0.01	<0.01	-	-

The results confirm that the hydrocarbon levels have declined over time, however elevated ammonia levels persist.

Nearby Wells

A search of the GSI well database identified the presence of two wells within 2km of the site. The first is in Mungret to the south west and side gradient of the site and has a reported yield of 80m³/day. The second is to the south and up-gradient of the site and has a reported yield of 22m³/day.

8.4 Existing Conditions-Flood Risk

The assessment of flood risk is based on the Flood Risk Assessment Report that is in Appendix 4. The facility is in the sub-catchment of the Ballinacloy River that confluences with the River Shannon via the Ballinacloy Creek which is to the east and north of the site. Surface water run-off at the facility discharges to Bunlickey Lake, which is a man made feature covering approximately 50ha. The water in the lake discharges to the Shannon River Estuary via valves and sluices that prevent tidal inflow.

The buildings and paved areas of the site occupy an area of approximately 18,000m². In a rainfall event of 50mm/hr (one in 100 year return), the maximum discharge to the drain is 250 litres/second (l/sec).

The OSI historic 6 inch map shows the embankments along the western and eastern banks of the Ballinacloy Creek/Ballinacloy River, stretching from Rosbrien to the confluence with the Shannon. The lands occupied by the facility are not identified on the map as being liable to flooding.

The OPW Flood Zone Map shows that the site is not in an area designated as benefiting lands, i.e. lands that are subject to either flooding or poor drainage, which would benefit from drainage works. There is no record of any flooding either within the site boundary, or on the lands immediately adjoining the site.

The GES facility is located in an area designated as Flood Zone A, where the probability of flooding is greater than 1% for river flooding or 0.5% for coastal flooding.

8.5 Impacts

Surface water run-off from the building roofs and paved yards discharges to perimeter drains that connect to the Bunlickey Lake. This is the only direct or indirect emission to surface waters from the facility. The drains also receive run-off from other occupants of the industrial estate up stream of the GES facility.

There are no direct emissions to groundwater. Treated effluent from the on-site wastewater treatment plant discharges to a percolation area and is a potential direct emission to groundwater.

The proposed increase in the amount of waste accepted does not require any extension to the impervious area of the site and therefore there will be no change in the volume of surface water run-off from the site.

Similarly the proposed changes will not result in any new emission to surface water, will not be a new source of wastewater and does not involve any alterations to the surface water and foul water drainage systems. Therefore there will be no change in the quality of the run-off from the site.

Activities with the potential to impact on surface water and groundwater quality include:

- Run-off from open yard areas, that may be contaminated with silt and small amounts of oil from leaks from road vehicles and mobile site plant,
- Spills and leaks of oil, and
- Firewater run-off.

8.6 Mitigation Measures

The mitigation measures implemented by GES include:

- The provision of a surface water drainage system that collects run-off from the paved open yards and directs it to an oil interceptor upstream of the discharge point from the site;
- The design, installation and maintenance of a suitable wastewater treatment plant;
- The provision and maintenance and integrity testing of spill containment infrastructure;
- The routine inspection of the surface water and foul water drainage systems;
- The regular cleaning of the paved open yards and emptying of the silt traps and interceptors, and
- The discharge of surface water run-off to the Bunlickey Lake, which is a recognised receptor for flood water.

Bales of compacted mixed municipal solid waste are stored externally in the north east of the site as agreed with the EPA. The bales are wrapped in eight layers of plastic sheeting that protects the wastes from rainfall and prevents the infiltration that could generate a leachate. The bales are subject to routine inspection by facility staff to ensure the plastic sheeting is intact. Where damage to the sheeting is noted, the bale is brought back into the building and rewrapped.

The remaining wastes that are stored externally comprise inert construction and demolition wastes in the designated C& D Bay and baled clean cardboard, paper and plastics and scrap metal.

In the event of an incident or accident at the facility, including a fire, which could give rise to the risk of surface water pollution, the shut off valve on the interceptor will be closed to contain the contaminated surface water within the drainage system. Following any such incident, the water that accumulates in the drainage system will be tested to identify the appropriate management option.

The on-site wastewater treatment plant is a temporary measure pending the connection to the municipal wastewater treatment plant. Once this connection has been completed, the on-site treatment plant will be decommissioned and the discharge of treated effluent to ground will cease.

8.7 Assessment of Impacts

The proposed increase in the amount of waste accepted will not result in any changes to either the volume or quality of the surface water run-off from the site nor will it give rise to any new emissions to groundwater water. It does not involve the abstraction of surface water or groundwater for use in site operations.

The decommissioning of the on-site wastewater treatment plant, following the connection to the municipal wastewater treatment plant will mean the discharge of treated effluent to ground will cease, thereby eliminating the potential indirect discharge to groundwater.

The proposed increases in the amounts of waste accepted at the facility will have no impact on water and ground water quality.

The proposed change does not involve the provision of any additional hard surfaces that would increase the volume of rainfall run-off from the site and therefore does not present an increased flood risk either within or outside the site boundaries.

9. ECOLOGY

9.1 Introduction

This Chapter describes the ecological significance of the site and assesses the impacts of the proposed increase in the amounts of waste accepted on both the on-site and off-site habitats.

9.2 Methodology

The site is almost completely covered by concrete paving and building and the habitat value is low. This, in combination with the fact that the proposed changes do involve any works that could give rise to any impacts on habitats within the site boundary, meant that an ecological survey of the site was not required.

OCM carried out a screening of the significance of the effects, if any, of the proposed changes on Natura 2000 sites within 15km of the site to inform a decision on the need for an Appropriate Assessment. The report on the Screening is in Appendix 7 and the findings are outlined below.

9.3 Existing Conditions

9.3.1 Habitats within the site boundary

The site encompasses approximately 1.8 ha. There are two adjoining waste handling buildings, a separate office building, a vehicle and plant maintenance workshop, a disused vehicle wash area, an electrical substation and an on-site wastewater treatment plant.

With the exception of a small area surrounding the wastewater treatment plant, the remainder of the site is paved with concrete and used for external waste storage bays (C&D, glass, metals, timber and baled waste), skip storage and vehicle parking. There are no significant landscaped areas or any streams, wetlands or ponds within the facility boundary.

9.3.2 Habitats outside the site boundary

The GES facility is at the northern end of a developed industrial area and is bounded to the south, southeast and southwest by warehousing units, oil distribution centres and truck sales and repair facilities and plant hire company. The ecological sensitivity of the developed lots is low.

To the east and north is the Ballinacurra Creek, which is where the Ballynacloough River joins the Shannon. The lands north of the Ballinacurra and between it and the Shannon are undeveloped. The Limerick City Council wastewater treatment plant is to the west of the site and separated from it by an open field. Further west is Bunlickey Lake.

There are seven Natura 2000 Sites within 15km of the GES facility. There is a surface water connection between the site and the two closest Sites- The Lower River Shannon Special Area of Conservation (SAC) (Site Code 002165) and the River Shannon and River Fergus Estuaries Special Protection Area (SPA) (Site Code 004077).

Lower River Shannon SAC

The main channel of the River Shannon estuary as it flows through Limerick City is designated within the Lower Shannon SAC. The status is based on lagoons and alluvial wet woodlands, floating river vegetation, *Molinia* meadows, estuaries, tidal mudflats, Atlantic salt meadows, Mediterranean salt meadows, *Salicornia* mudflats, sand banks, perennial vegetation of stony banks, sea cliffs, reefs and large shallow inlets and bays all habitats listed on Annex I of the EU Habitats Directive.

The site is also selected for the following species listed on Annex II of the same directive – Bottle-nosed Dolphin, Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Atlantic salmon and Otter.

Shannon and Fergus Estuaries SPA

The Shannon and Fergus Estuaries SPA is located north of the GES facility and includes Bunlickey Lake. The SPA comprises the entire estuarine habitat west from Limerick City and south from Ennis, extending west as far as Killadysert and Foynes on the north and south shores respectively of the River Shannon (a distance of some 25 km from east to west).

The SPA is the most important coastal wetland site in the country and regularly supports in excess of 50,000 wintering waterfowl. Other species occurring include Common Cockle (*Cerastoderma edule*), Lugworm (*Arenicola marina*), the polychaete *Nephtys hombergii*, the gastropod *Hydrobia ulvae* and the crustacean *Corophium volutator*. Eelgrass (*Zostera* spp.) is present in places, along with green algae (e.g. *Ulva* spp. and *Enteromorpha* spp.) It has expanses of intertidal flats, an Annex 1 habitat on the EU Habitats Directive.

9.4 Impacts

Direct

The proposed increase in the annual waste throughput will not require the expansion of the site, the construction/provision of any new buildings/structures, or any alteration to the existing site layout and operations that could directly impact on habitats inside and outside the site boundary.

Indirect

There will be no change to the waste acceptance and operational hours and it will not require the use of any new raw materials that have the potential to cause contamination. It will not

result in any new or additional abstraction from groundwater or surface water. It will not give rise to any new emissions to surface water or sewer, nor will it contribute to increased noise, dust and odour emissions or illumination

There is the potential for indirect impacts on the Natura 2000 Sites as surface water run-off from the yards and roofs discharges to the Bunlickey Lake, which is part of the River Shannon & Fergus SPA and hydraulically connected to the River Shannon via sluices.

Surface water run-off is generated by rainfall on the roof of the offices and workshop building, the waste handling buildings and the paved open yard areas. The run-off from the paved yards is collected and discharged to a man made drain at the north-eastern site boundary. Run-off from the main buildings discharges to manmade perimeter drain along the western boundary.

The perimeter drains, which also take run-off from other occupants in the industrial estate, discharge to Bunlickey Lake. The water in the lake discharges to the Shannon River Estuary via valves and sluices that prevent tidal inflow.

Cumulative

Recent projects completed within the Lower Shannon SAC include the River Fergus Lower (Ennis) Drainage Scheme and maintenance works carried out by the OPW on upstream of Limerick City and on the River Mague at Adare in 2010. Maintenance works are being undertaken in the Abbey River corridor which will include dredging from the Park Canal confluence to the confluence with the Shannon.

Point and diffuse sources of water pollution in the urban area comprise a cumulative pressure on the conservation interests of the SAC, where Annex II aquatic species are considered to be under stress due to poor background water quality.

9.5 Mitigation Measures

The mitigation measures implemented by GES to prevent contamination of surface water runoff include:

- The provision of a surface water drainage system that collects run-off from the paved open yards and directs it to an oil interceptor upstream of the discharge point from the site;
- The provision of a shut off valve at the inlet to the oil interceptor that can be closed in the event of an incident that has the potential to impact on surface water quality and contain the surface water within the site boundary.
- The design, installation and maintenance of a suitable wastewater treatment plant;
- The provision and maintenance and integrity testing of spill containment infrastructure;
- The routine inspection of the surface water and foul water drainage systems and
- The regular cleaning of the paved open yards and emptying of the silt traps and interceptors

The run-off from the paved yards is collected and directed through a three chamber oil interceptor before being discharged to a man made drain at the north-eastern site boundary.

9.6 Assessment of Impacts

Direct Impacts

The GES facility is not located within any designated Natura 2000 Site and therefore the proposed changes will not result in any direct habitat loss or fragmentation of either the Lower River Shannon SAC or the River Shannon and River Fergus Estuaries SPA.

These Natura 2000 Sites are approximately 400m to the north and west of the GES facility. The facility is extensively developed and almost entirely covered with paving and buildings, which means it does not support the species for which the Natura 2000 sites were selected.

Therefore the proposed change does not present any risk of a direct adverse affect on either the habitats or species for which the Natura 2000 Sites were selected.

Indirect Impacts

The proposed changes will not result in any changes to either the volume or quality of the surface water run-off from the facility and therefore will have no impact of the Natura 2000 Sites.

Disturbance impacts are considered with regard to the potential for effects on the Annex II species for which the Lower River Shannon SAC is designated and the bird species listed as special conservation interests of the River Shannon and River Fergus Estuaries SPA.

The GES facility is located within an industrial estate and is 2km west of Limerick Docks. There are extensive and ongoing traffic movements, artificial lighting and noise emissions associated with both areas. It must be noted that the presence of the listed species of conservation interest within the environs of Limerick City indicates they have become acclimatised to the background levels of disturbance.

The project does not require the provision of any new plant and equipment or changes to the operational hours therefore there will be no additional sources of disturbance to the listed species present in both the SAC and SPA.

Cumulative Impacts

The proposed increase in the amount of waste accepted will not result in any changes to either the volume or quality of the surface water run-off that therefore and will not contribute to any significant cumulative impact on the Natura 2000 Sites

The proposed changes does not involve the construction of new buildings, the introduction of new plant an equipment or the changes to the operational hours, and therefore will not add to the cumulative disturbance effects on the Natura 2000 Sites.

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10. AIR

10.1 Introduction

This Chapter describes the ambient air quality and assesses impacts of the proposal to increase the amount of waste accepted at the facility.

10.2 Methodology

The assessment is based on data derived from air quality databases maintained by the EPA and monitoring carried out by GES in accordance with the Waste Licence.

10.3 Existing Conditions

The facility is located in an industrial area occupied by commercial and industrial operations. The principle atmospheric pollutants associated with industrial and commercial areas are nitrous and sulphur oxides, particulates and dust. These are primarily associated with road traffic, however emissions from industrial activities are also a source of other pollutants.

The EPA implements an air quality monitoring programme at a number of monitoring stations across the city in Limerick. The station that was considered representative of air quality at Dock Road is Park Road. The monitoring for ozone and nitrous oxides was conducted between 2005 and March 2012 and the results from the EPA's website¹ indicate the air quality is good.

¹ www.epa.ie

The Waste Licence requires GES to carry out dust deposition monitoring at three monitoring locations within the site boundary. The monitoring points are shown on Figure 8.1. The measurements were carried out using Bergerhoff gauges specified in the German Engineering Institute VDI 2119 document entitled 'Measurement of Dustfall Using the Bergerhoff Instrument' (Standard Method).

The results of the monitoring carried out in 2012 and January 2013 are presented in Table 10.1, which also includes the dust deposition limit (350 mg/m²/day) specified in the Waste Licence. The results for all of the monitoring events were all well below the deposition limit.

Table 10.1 Dust Monitoring Results 2012/2013

Dust Emission (mg/m ² /day)	July 2012	Jul-Aug 2012	Jan 2013	Emission Limit
Sample Location	30 Days	30 Days	30 days	(mg/m ² /day)
DM1	24.3	62.6	17.0	350
DM2	20.6	47.9	11.6	350
DM3	42.5	60.1	4.03	350

10.4 Impacts

The impacts on air quality are associated with the potential emissions to air from the waste activities, which include odours, particulates and exhaust gases from vehicle movements. The odours are associated with the types of wastes accepted, the type of processing carried out and the time the wastes are retained on site. Particulates are associated primarily with the location and nature of the waste processing and vehicle movements.

10.5 Mitigation Measures

All potentially odorous wastes, primarily the mixed municipal solid waste, are off loaded inside Building 1 and immediately loaded into the baler. The doors of the Building are kept shut as far as is practicable. The processing is limited to compaction of the wastes, which minimises the potential for the release of odours. The bales are wrapped in eight layers of polyethylene sheeting, which effectively control any fugitive odours from the waste. The

GES has not received any complaints of malodours from either occupants of the adjoining lots, or members of the general public. All wastes that have the potential to be a source of odours are and will be stored and processed inside the buildings thereby mitigating any potential health impacts on occupants of the nearest residences and farms.

Groundwater is not abstracted locally for use as drinking water. The proposed changes will not result in any new emission to either ground or groundwater. Following the connection to the municipal foul sewer, the use of the on-site sanitary wastewater treatment system and percolation area will stop, which will minimise the risk to groundwater use as a drinking water supply either at present or in the future.

The results of the routine noise and dust monitoring carried out at the facility, which are described in Chapters 10 and 11, has demonstrated that noise and dust emissions comply with the emission limit values set in the Licence and are not a cause of nuisance either within, or outside the facility boundary.

While the proposed changes will result in additional traffic movement, with an associated increase in vehicle exhaust emissions, the overall impact on air quality will be negligible.

13.7 Impacts

There are a number of positive environmental and socio economic benefits associated with the development

- **Waste Recovery:** The increase in the amount of waste accepted and processed is in keeping with national and local waste management policy on waste recovery.
- **Employment:** The proposed increase in the amount of wastes accepted at the facility will assist in sustaining current employment levels. It will not adversely influence the existing economic activities in the surrounding area nor will it reduce the potential for the expansion of other economic activities.

13.8 Mitigation Measures

The mitigation measures incorporated into the design and method of operation of the existing facility, which have proven effective on mitigating any adverse impacts on human beings, have been described in the previous Chapters.

13.9 Impact Assessment

It is considered that the proposed increase in the amount of waste accepted will have positive socio-economic impact and will have a neutral impact with imperceptible consequences for human health.

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14. ARCHAEOLOGY & ARCHITECTURE HERITAGE

14.1 Introduction

This Chapter describes the archaeological significance of the site occupied by the facility. Given the available information on site history and the nature of the proposed changes, the archaeological assessment was confined to a desk study. The study was based on information derived from the Records of Monuments and Places published by the Department of Arts, Heritage & Gaeltacht and the Limerick County Development Plan 2010-2016

14.2 Archaeological and Historical Background

There are no records of archaeologically significant monuments or places at or within the vicinity of the site.

14.3 Architectural Heritage – Protected Structures

A Protected Structure is one that is considered to be of special interest from an architectural, historical, archaeological, artistic, cultural, scientific, social or technical point of view. The Record of Protected Structures (RPS) is a list of the buildings developed by Limerick County and City Councils that lists buildings considered to be of special interest in its operational area. There are no protected structures on the site.

14.4 Impact Assessment

The proposal to increase the volume of waste accepted will have no impact on the archaeology or architectural heritage in the vicinity of the facility.

PART II CONDITIONS

CONDITION 1 SCOPE OF THE LICENCE

- 1.1. Waste activities at the facility shall be restricted to those listed and described in Part I: Activities Licensed and authorised by this licence.
- 1.2. For the purposes of this licence, the facility is the area of land outlined in orange on Drawing No. C98-101-B2-01 Rev 2 of the application and the area outlined in green in Drawing No C98-101-B2-01, until decontaminated as agreed by the Agency. Any reference in this licence to "facility" shall mean the area thus outlined unless otherwise agreed with the Agency.
- 1.3. This licence is for the purposes of waste licensing under the Waste Management Act 1996 only and nothing in this licence shall be construed as negating the licensee's statutory obligations or requirements under any other enactments or regulations.
- 1.4. Only those waste categories and quantities listed in *Schedule A: Waste Acceptance* of this licence, shall be accepted at the facility.
- 1.5. No hazardous wastes or liquid wastes shall be accepted at the facility.
- 1.6. Waste Acceptance Hours and Hours of Operation
The facility may operate and accept waste on a twenty-four hour basis, seven days per week.
- 1.7. Where the Agency considers that a non-compliance with any condition of this licence has occurred, it may serve a notice on the licensee specifying.
 - 1.7.1 That only those wastes as specified, if any, in the notice are to be accepted at the facility after the date set down in the notice.
 - 1.7.2 That the licensee shall undertake the works stipulated in the notice, and/or otherwise comply with the requirements of the notice as set down therein, within the time-scale contained in the notice.
 - 1.7.3 That the licensee shall carry out any other requirement specified in the notice.When the notice has been complied with, the licensee shall provide written confirmation that the requirements of the notice have been carried out. No waste, other than that which is stipulated in the notice, shall be accepted at the facility until written permission is received from the Agency.
- 1.8. Every plan, programme or proposal submitted to the Agency for its agreement pursuant to any condition of this licence shall include a proposed timescale for its implementation. The Agency may modify or alter any such plan, programme or proposal in so far as it considers such modification or alteration to be necessary and shall notify the licensee in writing of any such modification or alteration. Every such plan, programme or proposal shall be carried out within the timescale fixed by the Agency but shall not be undertaken without the agreement of the Agency. Every such plan, programme or proposal agreed by the Agency shall be covered by the conditions of this licence.
- 1.9. This licence is being granted in substitution for the waste licence granted to the licensee on the 19th of May 2000 and bears Waste Licence Register No: 82-2. The previous waste licence (Register No: 82-1) is superseded by this licence.

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 facility manager with experience commensurate with the expertise required 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.
- 2.1.2 Both the facility manager and deputy, and any replacement manager or deputy, shall successfully complete both the FAS waste management training programme (or equivalent agreed by the Agency) and associated on site assessment appraisal within twelve months of appointment.
- 2.1.3 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.

2.2 Management Structure

- 2.2.1 Within three months from the date of grant of this licence, the licensee shall submit written updated details of the management structure of the facility to the Agency. Any proposed replacement in the management structure shall be notified in advance in writing to the Agency. Written details of the management structure shall include the following information.
- a) the names of all persons who are to provide the management and supervision of the waste activities authorised by the licence, in particular the name of the facility manager and any nominated deputies;
 - b) details of the responsibilities for each individual named under a) above; and
 - c) details of the relevant education, training and experience held by each of the persons nominated under a) above.

2.3 Environmental Management System (EMS)

- 2.3.1 The licensee shall maintain an EMS. The EMS shall be updated on an annual basis with amendments being submitted to the Agency for its agreement.
- 2.3.2 The EMS shall include as a minimum the following elements:

2.3.2.1 Schedule of Environmental Objectives and Targets

The objectives should be specific and the targets measurable. The Schedule shall address a five-year period as a minimum. The Schedule shall include a time-scale for achieving the objectives and targets and shall comply with any other written guidance issued by the Agency.

2.3.2.2 Environmental Management Plan (EMP)

The EMP shall include, as a minimum, the following:

- (i) methods by which the objectives and targets will be achieved in the coming year and the designation of responsibility for targets; and
- (ii) any other items required by written guidance issued by the Agency.

2.3.2.3 Corrective Action Procedures

The Corrective Action Procedures shall detail the corrective actions to be taken should any of the procedures detailed in the EMS not be followed.

2.3.2.4 Awareness and Training Programme

The Awareness and Training Programme shall identify training needs, for personnel who work in or have responsibility for the licensed facility.

2.4 Communications Programme

- 2.4.1 The licensee shall maintain a Communications Programme to inform and involve the local community and ensure that members of the public can obtain information at the facility, at all reasonable times, concerning the environmental performance of the facility. This shall be established within six months of the date of grant of this licence.

REASON: *To make provision for the proper 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 FACILITY INFRASTRUCTURE

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

3.2 Specified Engineering Works

- 3.2.1 The licensee shall submit proposals for all Specified Engineering Works, as defined in *Schedule B: Specified Engineering Works* of this licence, to the Agency for its agreement at least two months prior to the intended date of commencement of any such works. No such works shall be carried out without the prior agreement of the Agency.
- 3.2.2 All specified engineering works shall be supervised by a competent person(s) and that person, or persons, shall be present at all times during which relevant works are being undertaken.
- 3.2.3 Following the completion of all specified engineering works, the licensee shall complete a construction quality assurance validation. The validation report shall be made available to the Agency on request. The report shall include the following information:-
- a description of the works;
 - as-built drawings of the works;
 - records and results of all tests carried out (including failures);
 - drawings and sections showing the location of all samples and tests carried out;
 - daily record sheets/diary;
 - name(s) of contractor(s)/individual(s) responsible for undertaking the specified engineering works;
 - name(s) of individual(s) responsible for supervision of works and for quality assurance validation of works;

- h) records of any problems and the remedial works carried out to resolve those problems; and
- i) any other information requested in writing by the Agency.

3.3 Facility Notice Board

3.3.1 The licensee shall provide and maintain a Facility Notice Board at the entrance leading to the facility from the main road 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.

3.3.2 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.

3.4 Facility Security

3.4.1 Security fencing and gates shall be installed and maintained around the boundary of the facility, except where the existing boundary walls are in place. The gates shall be at the locations shown on Drawing No. C98-101-SB2-01 Rev.2. The base of the fencing shall be set in the ground.

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

- a) a temporary repair shall be made by the end of the working day; and
- b) a repair to the standard of the original gates and/or fencing shall be undertaken within three working days.

3.5 Facility Roads and Site Surfaces

3.5.1 Site roads shall be provided and maintained to ensure the safe movement of vehicles within the facility.

3.5.2 The licensee shall provide, and maintain an impermeable hardstanding surface in all areas of the facility. In addition, the floor of the building extensions shall be concreted and constructed to British Standard 8110 or an alternative as agreed by the Agency.

3.6 Facility Office

3.6.1 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.

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

3.7 Waste Inspection and Quarantine Areas

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

3.7.2 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.

3.8 Weighbridge and Wheel Cleaning

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

3.9 Waste handling, ventilation and processing plant

3.9.1 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) 50% 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.

3.9.2 Within six months from the date of grant of this licence, the licensee shall provide a report for the agreement of the Agency 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: Waste Acceptance*, of this licence.

3.9.3 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.

3.10 Waste Water Treatment System / Surface Water Management

3.10.1 The licensee shall, subject to Condition 4.7 provide and maintain a Waste Water Treatment System at the facility. The specification of the treatment system shall be agreed in advance with the Agency. Any proposed treatment system including percolation area shall satisfy the criteria set out in the Wastewater Treatment Manual, *Treatment Systems for Single Houses*, published by the Environmental Protection Agency.

3.10.2 Runoff from all areas used for the handling and storage of waste, and vehicle wash water shall discharge to the treatment system or other collection system, subject to Condition 4.7 via a silt trap and Class 1 oil interceptor.

3.10.3 Runoff from all areas not used for the handling and storage of waste shall be discharged to surface water via a silt trap and Class 1 oil interceptor.

3.11 Tank and Drum Storage Areas

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

3.11.2 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:-

- a) 110% of the capacity of the largest tank or drum within the bunded area; or
- b) 25% of the total volume of substance which could be stored within the bunded area.

- 3.11.3 All drainage from bunded areas shall be diverted for collection and safe disposal.
- 3.11.4 All inlets, outlets, vent pipes, valves and gauges must be within the bunded area.
- 3.11.5 The integrity and water tightness of all the bunds and their resistance to penetration by water or other materials stored therein shall be confirmed by the licensee and shall be reported to the Agency within 12 months of the date of grant of this licence.

This confirmation shall be repeated at least once every three years thereafter and reported to the Agency on each occasion.

- 3.11.6 The licensee shall install and maintain oil interceptor(s) at the facility to ensure that all surface water discharges from the facility pass through a grit trap and an oil interceptor prior to discharge. The interceptors shall be Class I full retention interceptors and shall be in accordance with European Standard prEN 858 (installations for the separation of light liquids).
- 3.11.7 All wastewater gullies, drainage grids and manhole covers shall be painted with red squares whilst all surface water discharge gullies, drainage grids and manhole covers shall be painted with blue triangles. These colour codes shall be maintained so as to be visible at all times during facility operation, and any identification designated in this licence (e.g. SW1) shall be inscribed on these manholes.
- 3.11.8 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. A written record shall be kept of the inspections, desludging, cleaning, disposal of associated waste products, maintenance and performance of the interceptors, bunds and drains.

3.12 Construction and Demolition Waste Recovery Area

- 3.12.1 Within six months of the date of grant of this licence, the licensee shall provide and maintain a construction and demolition waste recovery area at the location indicated in Drawing no. C98-101-D2-9. This infrastructure shall at a minimum comprise the following:-
- an impermeable concrete slab;
 - collection and disposal infrastructure for all run-off;
 - appropriate screening to provide visual and noise screening;
 - All stockpiles shall be adequately contained to minimise dust generation; and
 - Within eight months of the date of grant of this licence, the licensee shall review the measures in place to minimise dust generation at this facility and shall provide a report to the Agency for its agreement, making recommendations for the control of dust nuisance from the facility. Any remedial works recommended in this report must be implemented within a time-scale to be agreed by the Agency.

3.13 Monitoring Infrastructure

Replacement of Infrastructure

- Monitoring infrastructure which is damaged or proves to be unsuitable for its purpose shall be replaced within three months of it being damaged or recognised as being unsuitable.

REASON: To provide appropriate infrastructure for the protection of the environment.

CONDITION 4 FACILITY OPERATIONS

- 4.1 All waste processing shall be carried out inside the waste transfer building.
- 4.2 Waste Acceptance and Characterisation Procedures
- 4.2.1 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.
- 4.2.2 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.
- 4.2.3 Waste shall only be accepted at the facility, from customers who are holders of a waste permit, unless exempted, under the Waste Management (Collection Permit) Regulations 2001 or from other licensed/permitted facilities.
- 4.3 Operational Controls
- 4.3.1 The floor of the waste transfer building shall be washed down and cleared of all waste on a daily basis. The floor of the storage bays for recovered wastes shall be washed down and cleaned as required.
- 4.3.2 The overnight storage of any waste loads which remain on any working day shall be in designated, secure areas within the transfer building.
- 4.3.3 Any waste stored overnight in the transfer building shall be processed at the commencement of operations on the following working day.
- 4.3.4 Wastes for recovery may be stored outside the transfer building in designated, secure storage areas, subject to the agreement of the Agency provided the storage area is rendered impervious to the materials stored therein.
- 4.3.5 Scavenging shall not be permitted at the facility.
- 4.3.6 Gates shall be locked shut when the facility is unsupervised.
- 4.3.7 The licensee shall provide and use adequate lighting during the operation of the facility in hours of darkness.
- 4.3.8 Fuels shall be stored only at appropriately bunded locations on the facility.
- 4.3.9 All tanks and drums shall be labelled to clearly indicate their contents.
- 4.3.10 No smoking shall be allowed on the facility (other than in the facility office, as shown on Drawing No. C98-101-B2-01 Rev. 2).
- 4.4 Waste sent off-site for recovery or disposal shall be conveyed only by a waste carrier agreed in advance by the Agency. Any request for such agreement of a waste carrier shall include the following:
- i) Copies of the waste carrier's permit(s) under the Waste Management (Collection Permit) Regulations 2001.

- ii) Details of the waste types it is proposed the carrier will transfer from the facility.
- 4.5 All waste transferred from the facility shall be transferred 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.
- 4.6 Construction and Demolition Waste Recovery Area
- 4.6.1 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.
- 4.6.2 All stockpiles shall be maintained so as to minimise dust generation.
- 4.7 Foul Water, Surface Water and Sewage Management
- 4.7.1 Upon completion of the Limerick Main Drainage Scheme and subject to the agreement of the Sanitary Authority, sewage and foul water arising on site shall be discharged to the sanitary authority sewer.
- 4.7.2 Prior to the completion of the Limerick Main Drainage Scheme and treatment plant works the following shall apply, either
- (a) an on-site treatment plant shall be installed subject to the requirements of Condition 3.10, or
 - (b) sewage and wastewater arising on site shall be stored in on-site storage tanks and tankered off-site in fully enclosed road tankers to an appropriate Wastewater Treatment Plant, agreed in advance with the Agency.
- 4.8 Maintenance
- 4.8.1 All processing, treatment, abatement and emission control equipment shall be calibrated and maintained, in accordance with the instructions issued by the manufacturer/supplier or installer. Written records of the calibrations and maintenance shall be made and kept by the licensee.
- 4.8.2 The licensee shall maintain and clearly label and name all sampling and monitoring locations.
- 4.8.3 The wheel cleaner shall be inspected on a daily basis and drained as required. Silt, stones and other accumulated material shall be removed as required from the wheel cleaner and disposed of appropriately.

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

CONDITION 5 EMISSIONS

- 5.1 No specified emission from the facility shall exceed the emission limit values set out in *Schedule C: 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 do not result in significant impairment of, or significant interference with the environment beyond the facility boundary.
- 5.3 Emission limits for emissions to atmosphere in this licence shall be interpreted in the following way.
- 5.3.1 Non-Continuous Monitoring
- (i) For any parameter where, due to sampling/analytical limitations, a 30 minute samples is inappropriate, a suitable sampling period should be employed and the value obtained therein shall not exceed the emission limit value.
 - (ii) For all other parameters, no 30 minute mean value shall exceed the emission limit value.
 - (iii) For flow, no hourly or daily mean value shall exceed the emission limit value.
- 5.4 Emissions to Surface Water
- 5.4.1 The trigger levels for surface water discharges from the facility measured at monitoring point(s) Fe1 and Fe2 are:-
- a) BOD 25mg/l
 - b) Suspended Solids 60mg/l.
- 5.4.2 No substance shall be discharged in a manner, or at a concentration which, following initial dilution causes tainting of fish or shellfish.
- 5.5 There shall be no direct emissions to groundwater.
- 5.6 There shall be no clearly audible tonal component or impulsive component in the noise emissions from the activity at the noise sensitive locations.
- 5.7 Disposal of Wastewater
- No waste water shall be discharged to surface water.

REASON: *To control emissions from the facility and provide for the protection of the environment.*

CONDITION 6 NUISANCE CONTROL

- 6.1 The licensee shall ensure that vermin, birds, flies, mud, dust, noise, 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.
- 6.2 The road network in the vicinity of the facility shall be kept free from any debris caused by vehicles entering or leaving the facility. Any such debris or deposited materials shall be removed without delay.

6.3 Litter Control

6.3.1 All loose litter or other waste, placed 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 10.00am of the next working day after such waste is discovered.

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

6.4 Dust/Odour Control

6.4.1 All waste for disposal stored overnight at the facility, shall be stored in a secure area within the Waste Transfer Building, and shall be removed from the facility within forty eight hours. In the case where waste delivered to the facility after midday on Friday cannot be transferred due to inaccessibility (e.g. closure) of offsite disposal or recovery facilities, then the waste may be stored for a maximum of 72 hours. These loads of waste shall, in each case be recorded, including the time the waste was held on site and the reasons for inaccessibility (e.g. closure) of a facility for disposal or recovery.

6.4.2 The licensee shall review the measures in place to control dust at the facility and submit a report to Agency within six months of the date of grant of the licence including proposals for additional measures.

6.5 Prior to exiting the facility, all waste vehicles shall use the wheelwash.

REASON: To provide for the control of nuisances

CONDITION 7 MONITORING

- 7.1 The licensee shall carry out such monitoring and at such locations and frequencies as set out in *Schedule D: Monitoring* of this licence. Unless otherwise specified by this licence, all environmental monitoring shall commence no later than two months after the date of grant of this licence.
- 7.2 The licensee shall amend the frequency, locations, methods and scope of monitoring as required by this licence only upon the written instruction of the Agency and shall provide such information concerning such amendments as may be requested in writing by the Agency. Such alterations shall be carried out within any timescale nominated by the Agency.
- 7.3 Monitoring and analysis equipment shall be operated and maintained in accordance with the manufacturers' instructions (if any) so that all monitoring results accurately reflect any emission, discharge or environmental parameter.
- 7.4 The licensee shall provide safe and permanent access to all on-site sampling and monitoring points and to off-site points as required by the Agency.
- 7.5 The licensee shall maintain all sampling and monitoring points, and clearly label and name all sampling and monitoring locations, so that they may be used for representative sampling and monitoring.
- 7.6 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.

7.7 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. Prior written agreement for the use of alternative equipment, other than in emergency situations, shall be obtained from the Agency.

7.8 Nuisance Monitoring

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.

REASON: To ensure compliance with the conditions of this licence by provision of a satisfactory system of monitoring of emissions.

CONDITION 8 CONTINGENCY ARRANGEMENTS

- 8.1 In the event of an incident the licensee shall immediately:-
- a) identify the date, time and place of the incident;
 - b) carry out an immediate investigation to identify the nature, source and cause of the incident and any emission arising therefrom;
 - c) isolate the source of any such emission;
 - d) evaluate the environmental pollution, if any, caused by the incident;
 - e) identify and execute measures to minimise the emissions/malfunction and the effects thereof; and
 - f) provide a proposal to the Agency for its agreement within one month of the incident occurring to:-
 - i) identify and put in place measures to avoid reoccurrence of the incident; and
 - ii) identify and put in place any other appropriate remedial action.
- 8.2 The licensee shall, within nine months of the date of grant of this licence, submit a written Emergency Response Procedure (ERP) to the Agency for its agreement. The ERP shall address any emergency situations which may originate on the facility and shall include provision for minimising the effects of any emergency on the environment.
- 8.3 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.
- 8.4 Emergencies
- 8.4.1 In the event of a complete breakdown of equipment or any other occurrence which results in the closure of the transfer station building, any waste arriving at or already collected at the facility shall be transferred directly to appropriate landfill sites or any other appropriate facility until such time as the transfer station building is returned to a



fully operational status. Such a breakdown event will be treated as an emergency and rectified as soon as possible.

8.4.2 All significant spillages occurring at the facility shall be treated as an emergency and immediately cleaned up and dealt with so as to alleviate their effects.

8.4.3 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 ensure compliance with the conditions of this licence by provision of a satisfactory system of monitoring of emissions.

CONDITION 9 RECORDS

9.1 The licensee shall keep the following documents at the facility office:-

- a) the current waste licence relating to the facility;
- b) the current EMS for the facility;
- c) the previous year's AER for the facility;
- d) application(s) for a licence; and,
- e) all written procedures produced by the licensee which relate to the licensed activities

9.2 The licensee shall maintain a written record for each load of waste arriving at and departing from the facility. The licensee shall record the following:-

- a) the date;
- b) the name of the carrier (including if appropriate, the waste collection permit details);
- c) the vehicle registration number;
- d) the name of the producer(s)/collector(s) of the waste as appropriate;
- e) the name of the waste facility (if appropriate) from which the load originated including the waste licence or waste permit register number;
- f) a description of the waste including the associated EWC codes;
- g) the quantity of the waste, recorded in tonnes;
- h) the name of the person checking the load;
- i) where loads or wastes are removed or rejected, details of the date of occurrence, the types of waste and the facility to which they were removed including the waste licence and waste permit register number of these facilities as appropriate; and
- j) where applicable a consignment note number (including transfrontier shipment notification and movement/tracking form numbers, as appropriate).

9.3 Written Records

The following written records shall be maintained by the licensee:-

- a) the types and quantities of waste recovered at the facility each year. These records shall include the relevant EWC Codes and any details required to complete national reports on waste statistics;
- b) all training undertaken by facility staff;

- c) results from all integrity tests of bunds and other structures and any maintenance or remedial work arising from them;
- d) details of all nuisance inspections;
- e) the names and qualifications of all persons who carry out all sampling and monitoring as required by this licence and who carry out the interpretation of the results of such sampling and monitoring; and
- f) details of daily floor washing and cleaning.

9.4 The licensee shall maintain a written record of all complaints relating to the operation of the activity. Each such record shall give details of the following:-

- a) date and time of the complaint;
- b) the name of the complainant;
- c) details of the nature of the complaint;
- d) actions taken on foot of the complaint and the results of such actions; and,
- e) the response made to each complainant.



9.5 A written record shall be kept of each consignment of waste water removed from the facility. The record shall include the following:-

- a) the name of the carrier;
- b) the date and time of removal of waste water from the facility;
- c) the volume of waste water, in cubic metres, removed from the facility on each occasion;
- d) the name and address of the Waste Water Treatment Plant to which the waste water was transported; and
- e) any incidents or spillages of waste water during its removal or transportation.

9.6 A written record shall be kept at the facility of the programme for the control and eradication of vermin and fly infestations at the facility. These records shall include as a minimum the following:-

- a) the date and time during which spraying of insecticide is carried out;
- b) contractor details;
- c) contractor logs and site inspection reports;
- d) details of the rodenticide(s) and insecticide(s) used;
- e) operator training details;
- f) details of any infestations;
- g) mode, frequency, location and quantity of application; and,
- h) measures to contain sprays within the facility boundary.

REASON: To provide for the keeping of proper records of the operation of the facility.

CONDITION 10 REPORTS AND NOTIFICATIONS

10.1 Unless otherwise agreed by the Agency, all reports and notifications submitted to the Agency shall:-

- a) be sent to the Agency's Regional Inspectorate, Inniscarra, Cork;
- b) comprise one original and three copies unless additional copies are required;
- c) be formatted in accordance with any written instruction or guidance issued by the Agency;
- d) include whatever information as is specified in writing by the Agency;
- e) be identified by a unique code, indicate any modification or amendment, and be correctly dated to reflect any such modification or amendment;
- f) be submitted in accordance to the relevant reporting frequencies specified by this licence, such as in *Schedule E: Recording and Reporting to the Agency* of this licence;
- g) be accompanied by a written interpretation setting out their significance in the case of all monitoring data; and
- h) be transferred electronically to the Agency's computer system if required by the Agency.

10.2 In the event of an incident occurring on the facility, the licensee shall:-

- a) notify the Agency as soon as practicable and in any case not later than 10.00 on the following working day after the occurrence of any incident;
- b) submit a written record of the incident, including all aspects described in Condition 9.1(a-e), to the Agency as soon as practicable and in any case within five working days after the occurrence of any incident;
- c) in the event of any incident which relates to discharges to surface/sewer water, notify Limerick County Council as soon as practicable and in any case not later than 10:00am on the following working day after such an incident; and
- d) Should any further actions be taken as a result of an incident occurring, the licensee shall forward a written report of those actions to the Agency as soon as practicable and no later than ten days after the initiation of those actions.

10.3 A proposal for a Decommissioning and Aftercare Plan for the facility shall be submitted to the Agency within 18 months of the date of grant of this licence. The licensee shall update these schemes when required by the Agency.

10.4 Waste Recovery Reports

Within six months of the date of grant of this licence, a report examining waste recovery options shall be submitted to the Agency for its agreement. This report shall address methods to contribute to the achievement of the recovery targets stated in national and European Union waste policies and shall include the following:-

- a) 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;
- b) the separation of recyclable materials from the waste;

- c) the recovery of Construction and Demolition Waste;
- d) the recovery of metal waste and white goods;
- e) the recovery of commercial waste, including cardboard; and
- f) other wastes.

10.5 Monitoring Locations

Within three months of the date of grant of this licence, the licensee shall submit to the Agency an appropriately scaled drawing(s) showing all the monitoring locations that are stipulated in this licence. The drawing(s) shall include the reference code of each monitoring point.

10.6 Annual Environmental Report

10.6.1 The licensee shall submit to the Agency for its agreement, by 31st of January 2004 and one month after the end of each calendar year thereafter, an Annual Environmental Report (AER).

10.6.2 The AER shall include as a minimum the information specified in *Schedule F: Content of the Annual Environmental Report*, of this licence and shall be prepared in accordance with any relevant written guidance issued by the Agency.

REASON: To provide for proper reporting and notification of the Agency.

CONDITION 11 CHARGES AND FINANCIAL PROVISIONS

11.1 Agency Charges

11.1.1 The licensee shall pay to the Agency an annual contribution of €17,401.84 or such sum as the Agency from time to time determines, towards the cost of monitoring the activity or otherwise in performing any functions in relation to the activity, as the Agency considers necessary for the performance of its functions under the Waste Management Act, 1996. The licensee shall in 2004 and subsequent years, not later than January 31 of each year, pay to the Agency this amount updated in accordance with changes in the Public Sector Average Earnings Index from the date of the licence to the renewal date. The updated amount shall be notified to the licensee by the Agency. For 2003, the licensee shall pay a pro rata amount from the date of this licence to 31st December. This amount shall be paid to the Agency within one month of the date of grant of this licence.

11.1.2 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.

11.2 Financial Provision for Closure, Restoration and Aftercare

11.2.1 The licensee shall arrange for an independent third party risk assessment of the facility to be carried out. The risk assessment shall have particular regard to any accidents, emergencies, or other incidents, which might occur at the facility and their effect on the environment. The risk assessment shall include a comprehensive and fully costed Environmental Liabilities Risk Assessment for the facility together with a proposal for

Financial Provision arising from the carrying on of the activities to which this licence relates including the restoration of the facility. The risk assessment shall be submitted to the Agency for its agreement within six months of the date of grant of this licence.

11.2.2 The licensee shall within six months establish and maintain a fund, or provide a written guarantee for the costs determined under Condition 11.2.1. The type of fund established and means of its release/recovery shall be agreed by the Agency prior to its establishment.

11.2.3 The licensee shall within two weeks of purchase, renewal or revision of the financial provision required under Condition 11.2.1, forward to the Agency written proof of such indemnity.

11.2.4 Unless otherwise agreed any revision to the fund shall be computed using the following formula:

$$\text{Cost} = (\text{ECOST} \times \text{WPI}) + \text{CiCC}$$

Where:

Cost = Revised decommissioning and aftercare cost.

ECOST = Existing decommissioning and aftercare cost.

WPI = Appropriate Wholesale Price Index [Capital Goods, Building & Construction (i.e. Materials & Wages) Index], as published by the Central Statistics Office, for the year since last closure calculation/revision.

CiCC = Change in compliance costs as a result of change in site conditions, changes in law, regulations, regulatory authority charges, or other significant changes.

11.3 Sanitary Authority Charges

11.3.1 Upon connection to the sewer the licensee shall pay to the Sanitary Authority a charge per cubic meter of trade effluent discharged to the foul sewer or such sum as may be determined by the Agency, having regard to the variations in the cost of providing drainage and the variation in effluent reception and treatment costs. This amount shall be paid to the Sanitary Authority within one month of connection to the sewer and annually thereafter within one month of the date of notification by the Sanitary Authority of the updated annual amount.

11.3.2 The licensee shall pay to the Sanitary Authority a charge or such sum as may be determined by the Agency towards the cost of monitoring the discharge of trade effluent. This amount shall be paid to the Sanitary Authority within one month of connection to the sewer and annually thereafter within one month of the date of notification by the Sanitary Authority of the updated annual amount.

REASON: To provide for adequate financing for monitoring and financial provisions for measures to protect the environment.

SCHEDULE A : Waste Acceptance

A.1 Waste Acceptance

Table A.1 Waste Categories and Quantities

WASTE TYPE	MAXIMUM (TONNES PER ANNUM) ^{Note 1}
Construction and Demolition Waste	4,500
Commercial and Industrial	70,000
Municipal	15,500
TOTAL	90,000

Note 1: The quantities of the individual waste types may be adjusted, only with the agreement of the Agency, subject to the total waste quantity remaining the same.



SCHEDULE B : Specified Engineering Works

Specified Engineering Works

Installation of any new silt traps and oil interceptors.

Installation of waste handling, processing, recycling/recovery infrastructure and installation of increased waste processing capacity.

Construction of a designated secure storage area for overnight storage of waste within the Waste Transfer Building.

Any other works notified in writing by the Agency.

SCHEDULE C : Emission Limits

C.1 **Noise Emissions:** (Measured at the monitoring points indicated in Table D.1.1).

Day dB(A) L_{Aeq} (30 minutes)	Night dB(A) L_{Aeq} (30 minutes)
55	45

C.2 **Dust Deposition Limits:** (Measured at the monitoring points indicated in Table D.1.2).

Level (mg/m ² /day) ^{Note 1}
350

Note 1: 30 day composite sample with the results expressed as mg/m² /day.

C.3 Surface Water Discharge Limits (i.e. discharges from oil interceptor):
 Measured at the monitoring point FE1.

Parameter	Emission Limit Value
Mineral oils	5mg/l for discharges from Class I interceptor to receiving water
Suspended Solids	60 mg/l

C.4 Sewer Emission Limits

Emission Point Reference No. FE2

Volume to be emitted: ^{Note 1}

Maximum in any one day: m³ ^{Note 1}

Parameter ^{Note 2}	Emission Limit Value ^{Note 1}
	Daily Mean Concentration (mg/l) ^{Note 1}
BOD	10,000
COD	30,000
Ammoniacal Nitrogen	50
Suspended solids	2,000
Sulphate	500
PH	6-9
Temperature (degrees Celcius)	42
Other parameters	

Note 1: To be agreed with the Sanitary Authority and the Agency and may be amended subject to the agreement of the Sanitary Authority and the Agency.

Note 2: Additional parameters may be included by the Sanitary Authority and agreed by the Agency.



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SCHEDULE D : Monitoring

Monitoring to be carried out as specified below.

D.1 Monitoring Locations

Monitoring locations shall be those as set out in Table D.1.1 and/or Drawing No. C98-101-02-Rev.2.

Table D.1.1 Noise, surface water and wastewater Monitoring Locations

GROUND-WATER STATIONS	SURFACE WATER STATIONS		WASTE WATER STATIONS
GMB1	WS0	WS9	FE1 (Outlet from oil interceptors ^{Note 1})
GMB2	WS10	WS11	FE2 (Outlet from wastewater treatment plant ^{Note 2})
GMB3	WS12		

Note 1: Outlet from oil interceptors, prior to discharge to percolation area

Note 2: Outlet from wastewater treatment plant, if one is installed

Table D.1.2 Emissions to Atmosphere Monitoring Locations

DUST STATIONS	NOISE STATIONS
DM1	NI1
DM2	NI2
DM3	NI3
	NI4

D.2 Dust

Table D.2.1 Dust Monitoring Frequency and Technique

Parameter (mg/m ² /day)	Monitoring Frequency	Analysis Method/Technique
Dust	Three times a year ^{Note 2}	Standard Method ^{Note 1}

Note 1: Standard method VD12119 (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.

D.3 Noise

Table D.3.1 Noise Monitoring Frequency and Technique

Parameter	Monitoring Frequency	Analysis Method/Technique
L(A) _{EQ} [30 minutes]	Annual	Standard ^{Note 1}
L(A) ₁₀ [30 minutes]	Annual	Standard ^{Note 1}
L(A) ₉₀ [30 minutes]	Annual	Standard ^{Note 1}
Frequency Analysis(1/3 Octave band analysis)	Annual	Standard ^{Note 1}

Note 1: "International Standards Organisation. ISO 1996. Acoustics - description and Measurement of Environmental noise. Parts 1, 2 and 3."

D.4 Surface Water Emissions

Table D.4.1 Surface water/Groundwater Monitoring Frequency and Techniques

Parameter	Surface Water Monitoring Frequency	Groundwater Monitoring Frequency	Analysis Method/Technique
PH	Bi-annually	Bi-annually	Electrometry
Biological Oxygen Demand	Bi-annually	Bi-annually	Standard Methods ^{Note 1}
Suspended Solids	Bi-annually	Bi-annually	Standard Methods ^{Note 1}
Mineral Oils	Bi-annually	Bi-annually	Standard Methods ^{Note 1}
Fats, Oils, Grease	Bi-annually	Bi-annually	Standard Methods ^{Note 1}
Diesel Range Hydrocarbons	Not applicable	Bi-annually	Standard Methods ^{Note 1}
Aliphatic Hydrocarbons	Not applicable	Bi-annually	Standard Methods ^{Note 1}
Undecane	Not applicable	Bi-annually	Standard Methods ^{Note 1}

Note 1: "Standards Methods for the Examination of Water and Wastewater", (prepared and published jointly by A.P.H.A., A.W.W.A & W.E.F) 20th Ed., American Public Health Association, 1015 Fifteenth Street, Washington DC 20005, USA.

D.5 Wastewater Emissions

Table D.5.1 Waste water Monitoring Frequency and Techniques

Parameter ^{Note 3}	Monitoring Frequency ^{Note 2}	Analysis Method/Technique
PH	Bi-annually	Electrometry
Biological Oxygen Demand	Bi-annually	Standard Methods ^{Note 1}
Suspended Solids	Bi-annually	Standard Methods ^{Note 1}
Fats, Oils, Grease	Bi-annually	Standard Methods ^{Note 1}
Temperature	Bi-annually	Temperature probe
Sulphate	Bi-annually	Standard Methods ^{Note 1}
Ammoniacal nitrogen	Bi-annually	Standard Methods ^{Note 1}
Total Phosphorus	Bi-annually	Standard Methods ^{Note 1}
Total Nitrogen	Bi-annually	Standard Methods ^{Note 1}
Other parameters		

Note 1: "Standards Methods for the Examination of Water and Wastewater", (prepared and published jointly by A.P.H.A., A.W.W.A & W.E.F) 20th Ed., American Public Health Association, 1015 Fifteenth Street, Washington DC 20005, USA.

Note 2: May be amended by agreement with the Sanitary Authority and the Agency.

Note 3: Additional parameters may be included by the sanitary authority and agreed by the Agency.

SCHEDULE E : Recording and Reporting to the Agency

Report	Reporting Frequency ^{Note 1}	Report Submission Date
Environmental Management System Updates	Annually	One month after the end of the year reported on.
Annual Environment Report (AER)	Annually	Thirteen months from the date of grant of licence and one month after the end of each calendar year thereafter.
Record of incidents	As they occur	Within five days of the incident.
Bund, tank and container integrity assessment	Every three years	Six months from the date of grant of licence and one month after end of the three year period being reported on.
Specified Engineering Works reports	As they arise	Prior to the works commencing.
Monitoring of Surface Water Quality	Bi-annually	Ten days after end of the quarter being reported on.
Monitoring of Groundwater Quality	Bi-annually	Ten days after end of the quarter being reported on.
Monitoring of Wastewater	Bi-annually	Ten days after end of the quarter being reported on.
Dust Monitoring	Three times a year	Ten days after the period being reported on.
Noise Monitoring	Annually	One month after end of the year being reported on.
Any other monitoring	As they occur	Within ten days of obtaining results.

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

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SCHEDULE F : Content of the Annual Environmental Report

Annual Environmental Report Content ^{Note 1}

Reporting Period.

Waste activities carried out at 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).

Summary report on emissions.

Summary of results and interpretations of environmental monitoring, including a location plan of all monitoring locations.

Resource and energy consumption summary.

Development / Infrastructural works in place and planned, to process waste quantities projected for the following year (including plant operating capacity, provision of adequate standby capacity and provision of contingency, backup and spares in the case of breakdown).

Schedule of Environmental Objectives and Targets for the forthcoming year.

Report on biodegradable waste targets, as per Condition 11.3.

Report on the progress towards achievement of the Environmental Objectives and Targets contained in previous year's report.

Full title and a written summary of any procedures developed by the licensee in the year which relates to the facility operation.

Tank, drum, pipeline and bund testing and inspection report.

Reported Incidents and Complaints summaries.

Review of Nuisance Controls.

Reports on financial provision made under this licence, management and staffing structure of the facility and a programme for public information.

Volume of foul water produced and volume of foul water transported off-site.

Any other items specified by the Agency.

Note 1 Content to be revised subject to the agreement of the Agency after cessation of waste acceptance at the facility.



Sealed by the seal of the Agency on this the 6th day of November 2003

**PRESENT when the seal of the Agency
was affixed hereto:**

Dr Padraic Larkin, Director/Authorised Person

5.2 LINK CAPACITY

A link capacity assessment for the Dock Road was undertaken using TA/ 79/99. TA 79/99 gives a means of estimating the link capacity of existing urban roads and this document was used for calculating the capacities of this road.

For the purposes of classification of Road Type, the Dock Road has been classified as UAP3 (Variable standard road carrying mixed traffic with frontage access, side roads, bus stops and at-grade pedestrian crossings). Existing carriageway widths are approximately 11m and there are 2-3 lanes giving a capacity estimate of 1620 PCU/hr in one direction. Of the scenarios analysed, the maximum one way flow expected occurs during the PM peak in 2028 with a flow of 1618 PCU expected. This suggests the road will operate just below capacity by the design year of 2028.

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6 OTHER ROAD ISSUES

6.1 ROAD SAFETY

Visibility splays of 3.0 x 120 metres in accordance with the NRA DMRB TD 41-42 are required at the site access junction, and are achievable in both directions. It is recommended that the required sightlines at the site access junction be provided, maintained and kept free of all vegetation and other obstacles, such as signage, which may cause a visual obstruction.

It is further recommended that the existing right-turn lane along Dock Road be utilised for vehicles wishing to access the site from Limerick City. It is recommended that road markings be consistent with other access points along Dock Road. It is further recommended that all road markings in the vicinity of the site be reinstatement where marking deterioration is evident.

Accident data made available by the Road Safety Authority on www.rsa.ie has been reviewed and no accident cluster is recorded along the N69 in the vicinity of the entrance.

6.2 PARKING PROVISION

Due to the nature of the application, no additional car parking is required.

6.3 PEDESTRIANS & CYCLISTS

Due to the nature and rural location of the development, no pedestrian or cyclist facilities are currently provided fronting the site, nor are the provision of such facilities considered appropriate at this stage.

6.4 PUBLIC TRANSPORT

Due to the nature of the development, it is considered that the development will have no impact on public transport in the area, no limited modal shift anticipated from private car to public transport.

6.5 ACCESS FOR PEOPLE WITH DISABILITIES

It is recommended that dished kerbing and tactile paving slabs be installed at all internal crossing points, in accordance with "Guidance On The Use of Tactile Paving Slabs".



7 CONCLUSIONS AND RECOMMENDATIONS

7.1 CONCLUSIONS

The conclusions to this report are as follows:

- The proposed site access junction will operate below the desired 0.85 RFC up to and including the design year of 2028, with the inclusion of committed and proposed development-generated traffic.
- The proposed development can be accommodated by the existing road network.
- 3.0 x 120 metre visibility splays are available in both directions at the site access junction.
- Due to the rural location, no pedestrian or cyclist facilities are considered appropriate fronting the development.

7.2 RECOMMENDATIONS

This report recommends that:

- Site access junction visibility splays be kept free of all restrictions including signage.
- The existing right-turn lane along Dock Road be modified, reinstated and utilised for vehicles wishing to access the site from Limerick City.
- Drop kerbing and tactile paving be provided at all internal pedestrian crossing points

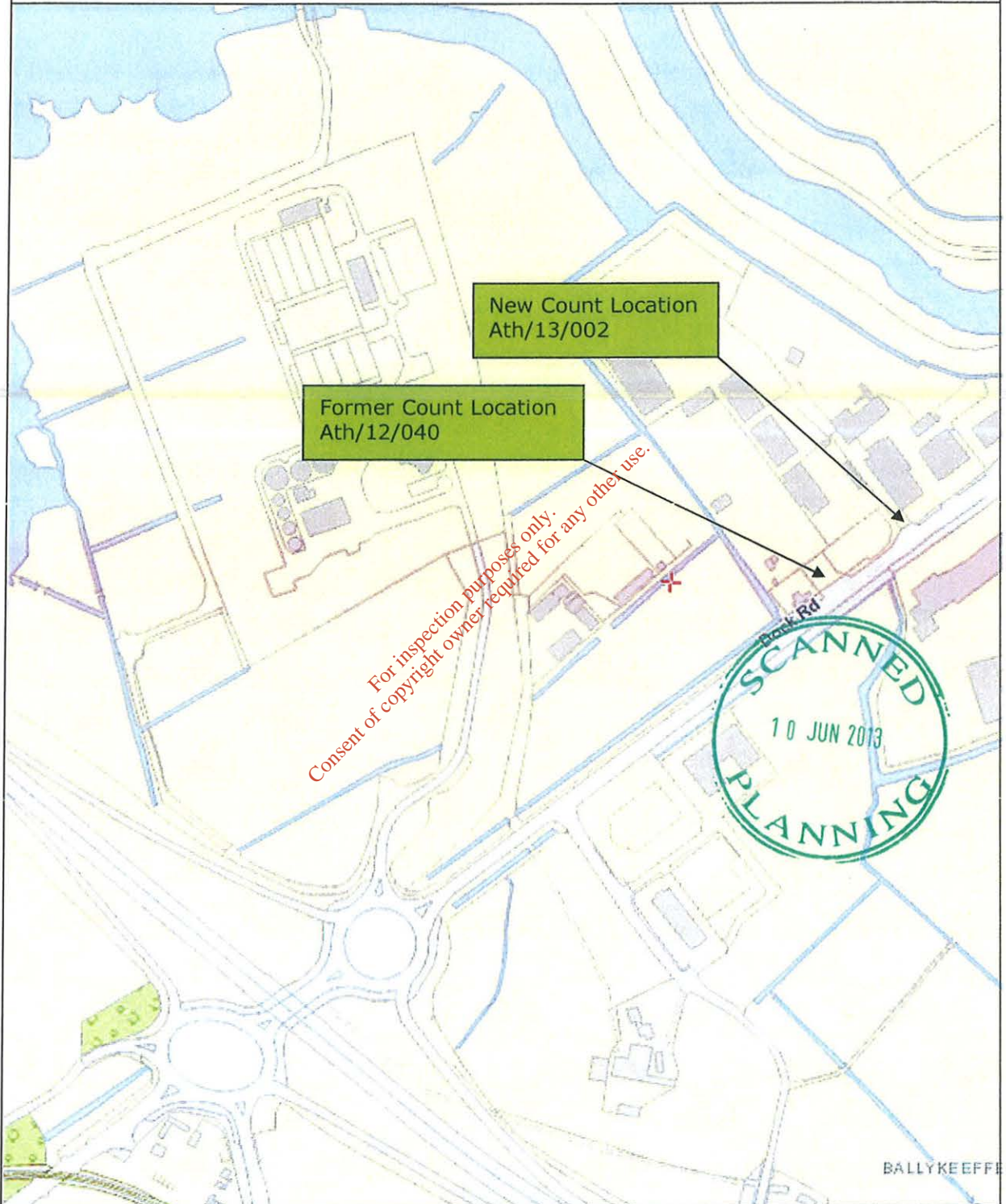




APPENDIX A

Traffic Survey Results



Site Location

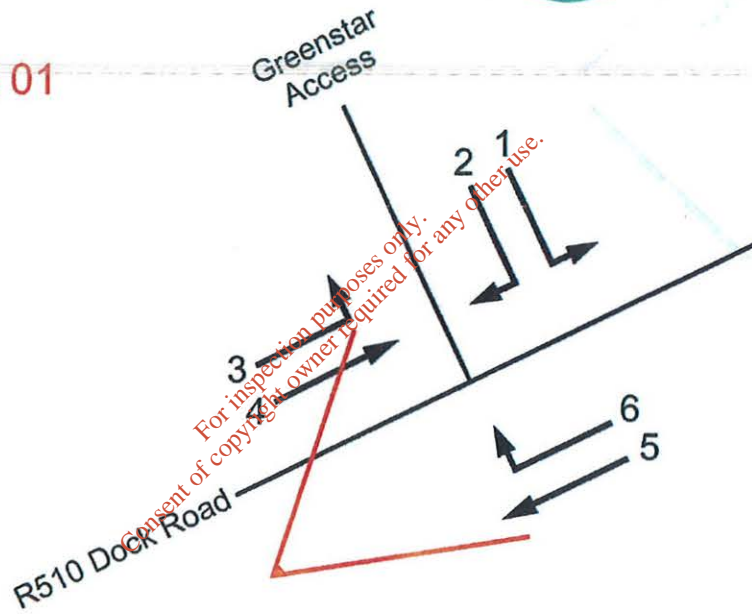


	Job number: ATH/13/002	Job date: 17 th January 2013	Drawing No: ATH/13/002-1	
	Client: Tobin	Job day: Thursday	Author: SPW	

Movement Numbers & Directions



SITE 01



	Job number: ATH/13/002	Job date: 17 th January 2013	Drawing No: ATH/13/002-2	
	Client: Tobin	Job day: Thursday	Author: SPW	

ABACUS TRANSPORTATION SURVEYS

**DOCK ROAD TRAFFIC COUNT
MANUAL CLASSIFIED JUNCTION COUNT**

**JANUARY 2013
ATH/13/002**

SITE: 01

DATE: 17th January 2013

LOCATION: Dock Road/Greenstar Works

DAY: Thursday



TIME	MOVEMENT 1						MOVEMENT 2						MOVEMENT 3								
	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	0	0	2	0	0	2	3	1	1	4	1	0	7	10	3	2	0	0	0	5	5
07:15	0	0	3	1	0	4	7	0	0	4	0	0	4	6	0	0	0	0	0	0	0
07:30	0	0	0	1	0	1	2	0	0	0	0	0	0	0	1	0	1	1	0	3	5
07:45	1	0	2	0	0	3	4	0	0	2	0	0	2	3	0	0	0	0	0	0	0
H/TOT	1	0	7	2	0	10	16	1	1	10	1	0	13	19	4	2	1	1	0	8	10
08:00	1	0	0	0	0	1	1	0	0	1	0	0	2	4	1	1	0	2	0	4	7
08:15	0	1	2	0	0	3	4	0	0	0	0	0	1	2	1	0	0	0	0	1	1
08:30	0	1	1	0	0	2	3	0	0	0	0	0	1	2	3	0	0	0	0	3	3
08:45	1	0	0	0	0	1	1	0	0	0	0	0	0	0	2	0	1	2	0	5	8
H/TOT	2	2	3	0	0	7	9	0	0	2	2	0	4	8	7	1	1	4	0	13	19
09:00	1	0	0	1	0	2	3	0	0	1	1	0	2	4	0	0	0	0	0	0	0
09:15	0	2	2	0	0	4	5	0	0	0	0	0	0	0	1	1	1	2	0	5	8
09:30	1	0	0	0	0	1	1	0	0	0	1	0	1	2	0	1	0	0	0	1	1
09:45	1	0	0	0	0	1	1	1	0	1	0	0	2	3	0	0	0	2	0	2	5
H/TOT	3	2	2	1	0	8	10	1	0	2	2	0	5	9	1	2	1	4	0	8	14
10:00	0	0	0	1	0	1	2	1	0	0	0	0	1	1	0	1	1	0	0	2	3
10:15	1	1	0	0	0	2	2	1	0	1	0	0	2	3	1	2	2	0	0	5	6
10:30	0	0	0	0	0	0	0	0	0	1	1	0	2	4	0	0	0	0	0	0	0
10:45	2	1	1	0	0	4	5	1	2	0	1	0	4	5	2	0	0	1	0	3	4
H/TOT	3	2	1	1	0	7	9	3	2	2	2	0	9	13	3	3	3	1	0	10	13
11:00	1	1	1	0	0	3	4	0	0	1	0	0	1	2	0	2	0	0	0	2	2
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	3
11:30	0	1	1	0	0	2	3	0	2	0	0	0	2	2	1	3	2	1	1	8	11
11:45	1	3	4	1	0	9	12	0	1	0	2	0	3	6	0	0	3	1	0	4	7
H/TOT	2	5	6	1	0	14	18	0	3	1	2	0	6	9	1	6	6	2	1	16	23
12:00	0	0	2	0	0	2	3	1	0	3	0	0	4	6	2	0	1	0	0	3	4
12:15	1	1	0	0	0	2	2	0	0	1	0	0	1	2	1	0	0	0	0	1	1
12:30	2	0	1	0	0	3	4	1	1	0	1	0	3	4	0	0	0	0	0	0	0
12:45	0	2	1	0	0	3	4	0	1	1	0	0	2	3	0	1	1	0	0	2	3
H/TOT	3	3	4	0	0	10	12	2	2	5	1	0	10	14	3	1	2	0	0	6	7

ABACUS TRANSPORTATION SURVEYS

**DOCK ROAD TRAFFIC COUNT
MANUAL CLASSIFIED JUNCTION COUNT**

**JANUARY 2013
ATH/13/002**

SITE: 01

DATE: 17th January 2013

LOCATION: Dock Road/Greenstar Works

DAY: 10 JUN 2013 Thursday



TIME	MOVEMENT 1						MOVEMENT 2						MOVEMENT 3									
	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	
13:00	3	2	0	1	0	6	7	0	0	0	0	0	0	0	0	0	0	1	1	0	2	4
13:15	0	2	1	0	0	3	4	0	0	2	0	0	2	3	1	0	0	0	0	0	1	1
13:30	0	0	0	0	0	0	0	0	0	0	2	0	2	5	1	0	1	0	0	2	3	
13:45	0	0	0	0	0	0	0	1	0	1	0	0	2	3	0	0	0	1	0	1	2	
H/TOT	3	4	1	1	0	9	11	1	0	3	2	0	6	10	2	0	2	2	0	6	10	
14:00	1	1	1	1	0	4	6	0	0	0	0	0	1	2	1	0	3	0	0	4	6	
14:15	1	2	1	0	0	4	5	0	1	1	0	0	3	5	0	2	0	0	0	2	2	
14:30	0	2	1	1	0	4	6	1	0	0	0	0	1	1	0	0	2	0	2	5		
14:45	0	0	0	0	0	0	0	1	0	0	0	0	2	2	0	1	1	0	0	2	3	
H/TOT	2	5	3	2	0	12	16	2	1	1	2	0	7	10	1	3	4	2	0	10	15	
15:00	0	2	0	0	0	2	2	1	0	2	0	0	3	4	0	0	0	1	0	1	2	
15:15	2	0	2	0	0	4	5	3	1	1	1	0	6	8	1	1	2	1	0	5	7	
15:30	4	0	0	2	0	6	6	2	2	1	0	0	5	6	0	1	2	0	0	3	4	
15:45	2	1	0	0	0	3	3	2	0	0	0	0	2	2	0	0	2	0	2	5		
H/TOT	8	3	2	2	0	15	19	8	3	4	1	0	16	19	1	2	4	4	0	11	18	
16:00	0	0	0	0	0	0	0	3	0	2	0	0	5	6	0	0	1	0	0	1	2	
16:15	1	0	1	0	0	2	3	2	0	0	0	0	2	2	0	0	1	0	0	1	2	
16:30	1	0	0	0	0	1	1	0	0	0	2	0	2	5	1	0	0	0	0	1	1	
16:45	1	1	1	0	0	3	4	2	0	0	1	0	3	4	0	1	0	0	0	1	1	
H/TOT	3	1	2	0	0	6	7	7	0	2	3	0	12	17	1	1	2	0	0	4	5	
17:00	2	1	2	0	0	5	6	2	2	0	0	0	4	4	0	0	2	0	0	2	3	
17:15	1	0	0	0	0	1	1	2	2	1	1	0	6	8	0	0	2	2	0	4	8	
17:30	4	1	0	0	0	5	5	2	1	1	0	0	4	5	0	0	0	0	0	0	0	
17:45	1	0	1	0	0	2	3	4	0	1	0	0	5	6	0	0	1	0	0	1	2	
H/TOT	8	2	3	0	0	13	15	10	5	3	1	0	19	22	0	0	5	2	0	7	12	
18:00	3	0	0	0	0	3	3	1	1	0	0	0	2	2	0	0	0	0	0	0	0	
18:15	0	0	0	0	0	0	0	1	0	0	0	0	1	1	1	0	0	0	0	1	1	
18:30	1	0	0	0	0	1	1	2	0	1	0	0	3	4	0	0	1	1	0	2	4	
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
H/TOT	4	0	0	0	0	4	4	4	1	1	0	0	6	7	1	0	1	1	0	3	5	
P/TOT	42	29	34	10	0	115	145	39	19	36	19	0	113	156	25	21	32	23	1	102	149	

ABACUS TRANSPORTATION SURVEYS

**DOCK ROAD TRAFFIC COUNT
MANUAL CLASSIFIED JUNCTION COUNT**

**JANUARY 2013
ATH/13/002**

SITE: 01

DATE: 17th January 2013

LOCATION: Dock Road/Greenstar Works

DAY: Thursday



TIME	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	41	5	6	2	1	55	62	48	15	1	1	0	65	67	1	0	0	0	0	1	1
07:15	63	11	10	3	1	88	98	66	11	1	5	0	83	90	2	1	0	0	0	3	3
07:30	86	15	3	6	2	112	123	78	17	5	5	0	105	114	0	0	0	0	0	0	0
07:45	111	24	14	8	0	157	174	102	25	6	9	1	143	159	2	1	1	0	0	4	5
H/TOT	301	55	33	19	4	412	457	294	68	13	20	1	396	430	5	2	1	0	0	8	9
08:00	194	30	5	8	0	237	250	95	20	6	0	0	126	136	1	0	3	0	0	4	6
08:15	249	27	2	5	0	283	291	117	14	7	2	2	145	157	0	1	1	0	0	2	3
08:30	159	22	5	1	0	187	191	160	16	9	7	2	194	210	1	1	0	0	0	2	2
08:45	231	21	9	4	1	266	277	128	23	8	6	5	170	187	0	0	0	0	0	0	0
H/TOT	833	100	21	18	1	973	1008	500	73	30	23	9	635	689	2	2	4	0	0	8	10
09:00	184	44	5	15	3	251	276	138	32	6	12	7	195	221	2	2	0	0	0	4	4
09:15	160	31	4	5	1	201	211	109	26	8	4	3	150	162	0	0	1	0	0	1	2
09:30	149	31	12	8	0	200	216	89	27	7	6	2	131	144	1	1	0	1	0	3	4
09:45	122	26	8	1	1	158	164	101	25	7	9	1	143	159	1	1	0	0	0	2	2
H/TOT	615	132	29	29	5	810	867	437	110	28	31	13	619	686	4	4	1	1	0	10	12
10:00	107	32	12	7	0	158	173	78	26	7	6	0	117	128	1	0	0	0	0	1	1
10:15	117	31	6	5	0	159	169	84	20	12	7	0	123	138	0	1	0	0	0	1	1
10:30	93	26	5	3	0	127	133	90	32	4	9	1	136	151	1	1	2	0	0	4	5
10:45	106	27	8	6	2	149	163	94	25	7	6	2	134	147	0	2	1	0	0	3	4
H/TOT	423	116	31	21	2	593	638	346	103	30	28	3	510	564	2	4	3	0	0	9	11
11:00	102	25	5	11	2	145	164	97	21	9	11	2	140	161	0	0	0	1	0	1	2
11:15	88	32	6	7	0	133	145	99	32	9	6	0	146	158	0	0	1	1	0	2	4
11:30	96	18	6	13	0	133	153	90	25	5	10	1	131	148	0	1	1	0	0	2	3
11:45	95	32	3	6	0	136	145	99	30	10	7	3	149	166	1	1	2	0	0	4	5
H/TOT	381	107	20	37	2	547	607	385	108	33	34	6	566	633	1	2	4	2	0	9	14
12:00	105	25	6	10	1	147	164	93	24	5	6	2	130	142	0	0	0	0	0	0	0
12:15	85	19	8	8	0	120	134	106	29	4	8	0	147	159	1	1	1	0	0	3	4
12:30	103	34	2	11	0	150	165	147	24	9	11	0	191	210	1	3	0	0	0	4	4
12:45	109	22	4	2	1	138	144	140	23	7	9	3	182	200	1	0	1	1	0	3	5
H/TOT	402	100	20	31	2	555	607	486	100	25	34	5	650	712	3	4	2	1	0	10	12

ABACUS TRANSPORTATION SURVEYS

**DOCK ROAD TRAFFIC COUNT
MANUAL CLASSIFIED JUNCTION COUNT**

**JANUARY 2013
ATH/13/002**

SITE: 01

DATE: 17th January 2013

LOCATION: Dock Road/Greenstar Works

DAY: Thursday



TIME	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	113	28	7	3	0	151	158	140	29	6	3	0	178	185	0	0	1	0	0	1	2
13:15	94	22	3	6	3	128	140	159	26	8	4	0	197	206	1	1	0	0	0	2	2
13:30	97	25	7	6	0	135	146	149	16	9	6	0	180	192	0	1	0	0	0	1	1
13:45	13	32	3	6	2	56	67	122	16	7	6	2	153	166	5	1	1	0	0	7	8
H/TOT	317	107	20	21	5	470	512	570	87	30	19	2	708	750	6	3	2	0	0	11	12
14:00	101	22	9	7	2	141	157	125	19	4	5	4	157	170	1	2	0	0	0	3	3
14:15	121	17	8	8	1	155	170	156	28	4	5	2	196	208	0	1	2	0	0	3	4
14:30	115	29	8	4	1	157	167	132	24	6	6	0	168	179	0	0	1	2	0	3	6
14:45	107	17	7	5	0	136	146	114	22	7	6	3	152	166	1	1	4	0	0	6	8
H/TOT	444	85	32	24	4	589	640	527	93	21	23	9	673	722	2	4	7	2	0	15	21
15:00	103	22	7	5	3	140	153	157	25	7	7	6	202	221	0	1	4	1	0	6	9
15:15	133	16	10	9	1	169	187	182	24	5	5	1	217	227	1	2	0	0	0	3	3
15:30	105	24	6	5	1	141	152	165	31	11	6	2	215	230	0	0	0	0	0	0	0
15:45	112	31	10	1	2	156	164	182	26	9	5	2	224	237	0	0	1	2	0	3	6
H/TOT	453	93	33	20	7	606	656	686	106	32	23	11	858	915	1	3	5	3	0	12	18
16:00	134	22	9	4	1	170	181	153	27	12	3	0	195	205	0	0	2	0	0	2	3
16:15	118	26	5	1	1	151	156	143	32	4	4	1	184	192	0	0	0	1	0	1	2
16:30	147	23	8	8	1	187	202	177	27	9	2	2	217	226	1	0	2	0	0	3	4
16:45	138	25	7	6	0	176	187	196	23	7	3	2	231	240	1	0	2	0	0	3	4
H/TOT	537	96	29	19	3	684	726	669	109	32	12	5	827	864	2	0	6	1	0	9	13
17:00	155	23	7	3	1	189	197	232	30	5	3	1	271	278	1	1	0	0	0	2	2
17:15	147	16	5	5	0	173	182	233	28	5	1	1	268	273	0	0	0	1	0	1	2
17:30	138	15	6	6	0	165	176	253	26	3	0	2	284	288	1	2	1	0	0	4	5
17:45	124	17	3	4	0	148	155	206	17	4	2	0	229	234	0	0	0	0	0	0	0
H/TOT	564	71	21	18	1	675	710	924	101	17	6	4	1052	1072	2	3	1	1	0	7	9
18:00	117	16	1	0	1	135	137	214	27	2	3	0	246	251	0	0	1	0	0	1	2
18:15	120	23	1	4	0	148	154	202	26	3	2	0	233	237	0	0	0	0	0	0	0
18:30	113	10	3	1	0	127	130	154	11	0	3	1	169	174	0	0	0	0	0	0	0
18:45	113	12	0	2	0	127	130	118	14	2	3	1	138	144	0	0	0	0	0	0	0
H/TOT	463	61	5	7	1	537	550	688	78	7	11	2	786	806	0	0	1	0	0	1	2
P/TOT	5733	1123	294	264	37	7451	7978	6512	1136	298	264	70	8280	8842	30	31	37	11	0	109	142

APPENDIX B



Traffic Calculations

*For inspection purposes only.
Consent of copyright owner required for any other use.*



Existing Traffic Count - January 2013 AM

Vehicle Numbers converted to PCU ~ 1 lv = 1pcu, 1hgv = 2.3pcu

Site Access

Route	A	B	C
A		12	1034
B	8		11
C	774	9	

Seasonally Adjusted Factor
 NRA Counter N18
 AADT 2011 higher than Jan 2011 figures

18783
 20494
 1.09



Seasonally adjusted Factor = 1.09

Oil Depot Junction

Route	A	B	C
A		13	1127
B	9		12
C	844	10	

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Existing Traffic Count - June 2012 PM

Vehicle Numbers converted to PCU ~ 1 lv = 1pcu, 1hgv = 2.3pcu

N84 Junction

Route	A	B	C
A		12	742
B	21		16
C	1079	13	

Seasonally Adjusted Factor

NRA Counter N18

AADT 2011 higher than Jan 2011 figures

18783

20494

1.09

Seasonally adjusted Factor = 1.09

N84 Junction

Route	A	B	C
A		13	809
B	23		17
C	1176	14	

For inspection purposes only.
Consent of copyright owner required for any other use.

Traffic Calculations for Waste Management Facility, Dock Road, Co. Limerick
Site Access Priority Junction
At Present AM Peak (08:15 - 09:15)

Seasonally Adjusted 2013

National Traffic Growth Forecasts
Region 7 (High Growth)

2013 - Year of Opening

Yearly Growth Factor $\frac{LV}{}$ 2.20%
 No Years 0

2028 - Design Year

Yearly Growth Factor $\frac{LV}{}$ 2.20%
 No Years 12
 Yearly Growth Factor 1.70%
 No Years 3

2012 - 2013 Growth Factor 100.00%

2013 - 2028 Growth Factor 131.50%

Route	A	B	C
A		13	1127
B	9		12
C	844	10	

Route	A	B	C
A		13	1127
B	9		12
C	844	10	

Route	A	B	C
A		13	1482
B	9		12
C	1109	10	

With Other Proposed Committed Developments AM Peak (08:15 - 09:15)

Other Committed Development Only

Route	A	B	C
A		0	45
B	0		0
C	19	0	

2013 With other Committed Development

Route	A	B	C
A		13	1172
B	9		12
C	863	10	

2028 With other Committed Development

Route	A	B	C
A		13	1527
B	9		12
C	1128	10	

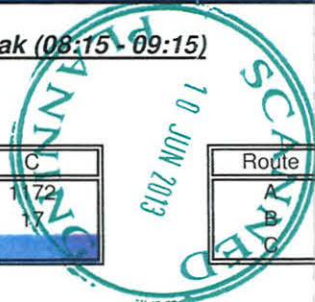
With Proposed Development AM Peak (08:15 - 09:15)

2028 With Development

Route	A	B	C
A		19	172
B	13		17
C	863	14	

2028 With Development

Route	A	B	C
A		19	1527
B	13		17
C	1128	14	



For inspection purposes only. Copyright owner required for any reuse.

Traffic Calculations for Waste Management Facility, Dock Road, Co. Limerick
Site Access Priority Junction
At Present PM Peak (16:45 - 17:45)

Seasonally Adjusted 2013

National Traffic Growth Forecasts
Region 7 (High Growth)

2013 - Year of Opening

Yearly Growth Factor LV 2.20%
 No Years 0

2028 - Design Year

Yearly Growth Factor LV 2.20%
 No Years 12
 Yearly Growth Factor 1.70%
 No Years 3

2012 - 2013 Growth Factor 100.00%

2013 - 2028 Growth Factor 131.50%

Route	A	B	C
A		13	809
B	23		17
C	1176	14	

Route	A	B	C
A		13	809
B	23		17
C	1176	14	

Route	A	B	C
A		13	1064
B	23		17
C	1547	14	

With Other Proposed Committed Developments PM Peak (16:45 - 17:45)

Other Committed Development Only

Route	A	B	C
A		0	47
B	0		0
C	26	0	

2013 With other Committed Development

Route	A	B	C
A		13	856
B	23		17
C	1202	14	

2028 With other Committed Development

Route	A	B	C
A		13	1111
B	23		17
C	1573	14	

With Proposed Development PM Peak (16:45 - 17:45)

2028 With Development

Route	A	B	C
A		19	856
B	33		25
C	1202	20	

2028 With Development

Route	A	B	C
A		19	1111
B	33		25
C	1573	20	

