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ENVIRONMENTAL IMPACT STATEMENT

GREENSTAR ENVIRONMENTAL SERVICES

DOCK ROAD

LIMERICK

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TABLE OF CONTENTS

PAGE

NON-TECHNICAL SUMMARY…….……..…… i

PREAMBLE ……..…….…. vii

1. INTRODUCTION..... 9

1.1 THE APPLICANT 9
1.2 FACILITY OVERVIEW 9
1.2.1 Site History..... 9
1.2.2 Waste Activities..... 10
1.3 PROPOSED CHANGES..... 11

2. WASTE MANAGEMENT & PLANNING POLICY..... 12

2.1 INTRODUCTION 12
2.2 WASTE MANAGEMENT & PLANNING POLICY 12
2.3 NEED FOR THE DEVELOPMENT..... 16

3. ALTERNATIVES EXAMINED..... 17

3.1 ALTERNATIVE SITES 17
3.2 ALTERNATIVE CONFIGURATIONS & TECHNOLOGIES..... 18
3.3 THE DO NOTHING ALTERNATIVE..... 18

4. FACILITY DESCRIPTION 19

4.1 INTRODUCTION 19
4.2 SITE LOCATION 19
4.3 SITE LAYOUT 19
4.4 SURROUNDING LAND USE..... 22
4.5 WATER AND ELECTRICITY SUPPLY 23
4.6 DRAINAGE 23
4.6.1 Surface Water..... 23
4.6.2 Foul Water 24
4.7 FACILITY MANAGEMENT & STAFFING 25
4.8 HOURS OF OPERATION 25
4.9 WASTE TYPES & QUANTITIES..... 25
4.10 WASTE ACCEPTANCE & HANDLING..... 26
4.11 PLANT & EQUIPMENT 27
4.12 OIL / CHEMICAL STORAGE 28
4.13 ENERGY EFFICIENCY AND RESOURCE CONSUMPTION..... 28
4.14 WASTE GENERATION 29
4.15 NUISANCE CONTROL..... 29

4.16 SAFETY AND HAZARD CONTROL 30
4.17 CHANGES TO THE PROJECT 30
4.18 ASSOCIATED DEVELOPMENTS 30

5. CLIMATE 31

5.1 INTRODUCTION 31
5.2 METHODOLOGY 31
5.3 EXISTING CONDITIONS 31
5.4 IMPACTS 31
5.5 MITIGATION MEASURES 32
5.6 ASSESSMENT OF IMPACTS 32

6. TRAFFIC 33

6.1 INTRODUCTION 33
6.2 METHODOLOGY 33
6.3 EXISTING CONDITIONS 33
6.3.1 Existing Road Network 33
6.3.2 Road Traffic Survey 34
6.3.3 Traffic Generation & Distribution 34
6.4 PREDICTED CONDITIONS 35
6.4.1 Forecast Traffic & Junction Analysis 37
6.4.2 Link Capacity 38
6.5 IMPACTS 39
6.6 MITIGATION MEASURES 39
6.7 IMPACT ASSESSMENT 39

7. SOILS AND GEOLOGY 41

7.1 INTRODUCTION 41
7.2 EXISTING CONDITIONS 41
7.2.1 Subsoils 41
7.2.2 Bedrock 42
7.3 IMPACTS 42
7.4 MITIGATION MEASURES 42
7.5 ASSESSMENT OF IMPACTS 43

8. WATER 46

8.1 METHODOLOGY 46
8.2 EXISTING CONDITIONS-SURFACE WATER 46
8.3 EXISTING CONDITIONS-GROUNDWATER 54
8.4 EXISTING CONDITIONS-FLOOD RISK 59
8.5 IMPACTS 60
8.6 MITIGATION MEASURES 60
8.7 ASSESSMENT OF IMPACTS 62

9. ECOLOGY 63

9.1 INTRODUCTION 63
9.2 METHODOLOGY 63
9.3 EXISTING CONDITIONS 63
9.3.1 Habitats within the site boundary 63
9.3.2 Habitats outside the site boundary 64
9.4 IMPACTS 65
9.5 MITIGATION MEASURES 67
9.6 ASSESSMENT OF IMPACTS 67

10. AIR 70

10.1 INTRODUCTION 70
10.2 METHODOLOGY 70
10.3 EXISTING CONDITIONS 70
10.4 IMPACTS 71
10.5 MITIGATION MEASURES 71
10.6 ASSESSMENT OF IMPACTS 72

11. NOISE 74

11.1 INTRODUCTION 74
11.2 METHODOLOGY 74
11.3 EXISTING CONDITIONS 74
11.4 IMPACTS 76
11.5 MITIGATION MEASURES 76
11.6 ASSESSMENT OF IMPACTS 76

12. LANDSCAPE & VISUAL IMPACT 77

12.1 INTRODUCTION 77
12.2 METHODOLOGY 77
12.3 EXISTING CONDITIONS 77
12.4 IMPACTS 79
12.5 MITIGATION MEASURES 79
12.6 ASSESSMENT OF IMPACTS 79

13. HUMAN BEINGS 80

13.1 INTRODUCTION 80
13.2 METHODOLOGY 80
13.3 EXISTING CONDITIONS 80
13.4 POPULATION 81
13.5 SOCIO-ECONOMIC ACTIVITY 81
13.6 HUMAN HEALTH 81
13.7 IMPACTS 82
13.8 MITIGATION MEASURES 83
13.9 IMPACT ASSESSMENT 83

14. ARCHAEOLOGY & ARCHITECTURE HERITAGE 84

14.1 INTRODUCTION 84
14.2 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND 84
14.3 ARCHITECTURAL HERITAGE – PROTECTED STRUCTURES 84
14.4 IMPACT ASSESSMENT 84
14.5 MITIGATION MEASURES 85

15. MATERIAL ASSETS / NATURAL RESOURCES 86

15.1 INTRODUCTION 86
15.2 AMENITIES 86
15.3 LOCAL INFRASTRUCTURE 86
15.4 ENERGY EFFICIENCY AND RESOURCE CONSUMPTION 86
15.5 MITIGATION 87
15.6 ASSESSMENT OF IMPACT 87

16. INTERACTION OF THE FOREGOING 88

16.1 INTRODUCTION 88
16.2 HUMAN BEINGS / AIR 88

16.3 HUMAN BEINGS/TRAFFIC 88
16.4 SURFACE WATER / ECOLOGY 89
16.5 CUMULATIVE IMPACTS 89

LIST OF FIGURES

FIGURE No	TITLE
4.1	Site Location
4.2	Waste Licence Area
4.3	Surrounding Landuse
7.1	Subsoils
7.2	Bedrock Geology
8.1	Monitoring Locations
8.2	Aquifer Classification
8.3	Aquifer Vulnerability

LIST OF DRAWINGS

DRAWING No.	TITLE
Drawing No 002	Site Layout & Drainage
Drawing No 003	Building Section & Elevations

LIST OF APPENDICES

Appendix 1 – Waste Licence

Appendix 2 – Wastewater Treatment Plant Monitoring Results 2012

Appendix 3 Traffic Impact Assessment

Appendix 4 – Flood Risk Assessment

Appendix 5 – Surface Water Quality

Appendix 6 – Groundwater Quality

Appendix 7 – Natura Impact Statement Screening Exercise

Appendix 8 – Noise Survey

Appendix 9 – Visual Impact

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.

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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.

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 Ballykeffe 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.

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 and 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.

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.

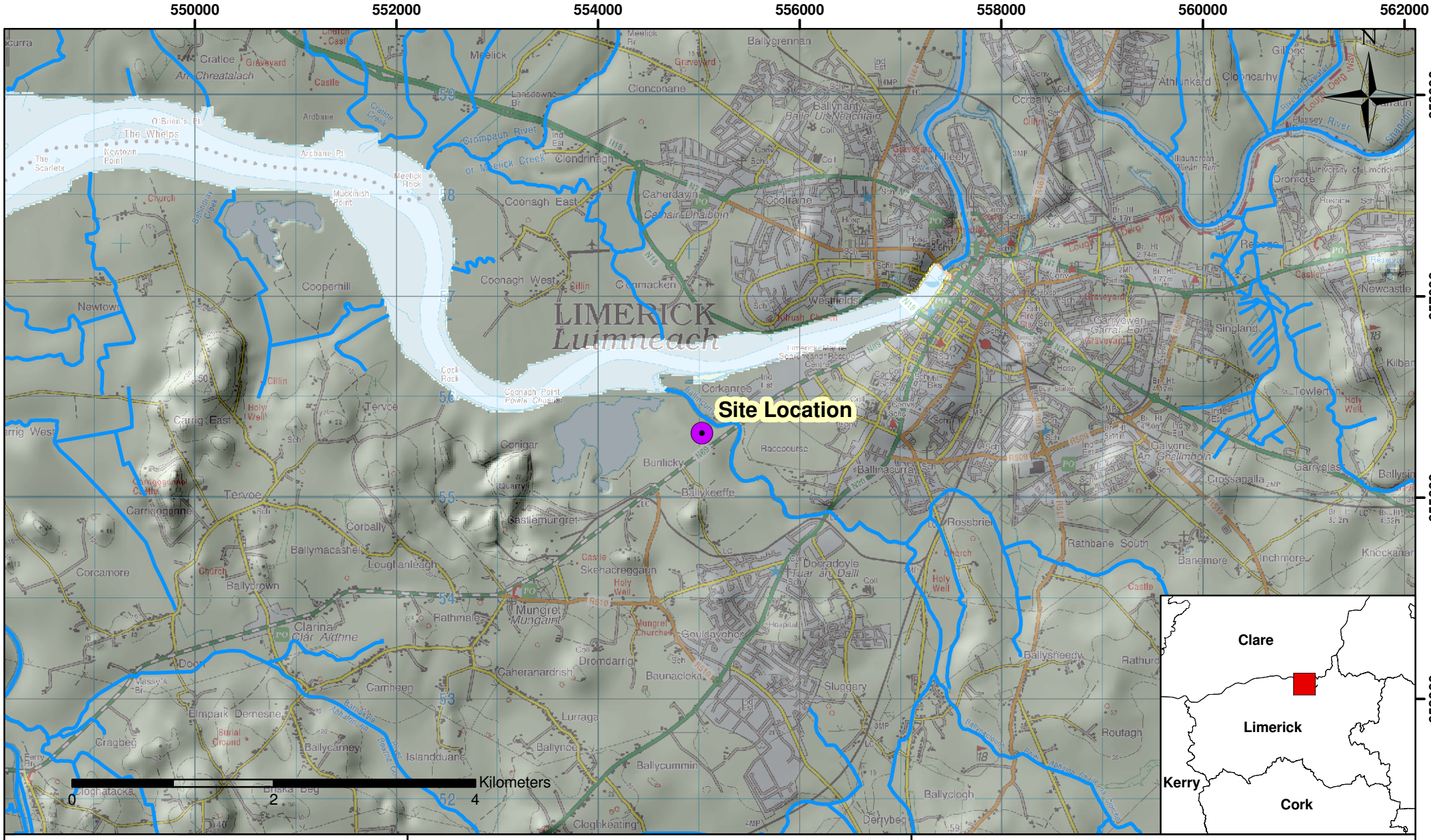
4.2 Site Location

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.



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CLIENT
Greenstar Environmental Services

TITLE
Site Location

Details
Site Location
Rivers

Figure 4.1

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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 3,265m^2, 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.

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 ($40m^3$ 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 $0.4m^3$/day. Taking into consideration rainfall on the percolation area, the total hydraulic loading is $0.483m^3$/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 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 metals, 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.	*Plant*	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 bunded 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 withGES 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 are 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 30,000m^2 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 100m^2**	**Total Arrivals**	**Departures per 100m^2**	**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 100m^2**	**Total Arrivals**	**Departures per 100m^2**	**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.

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

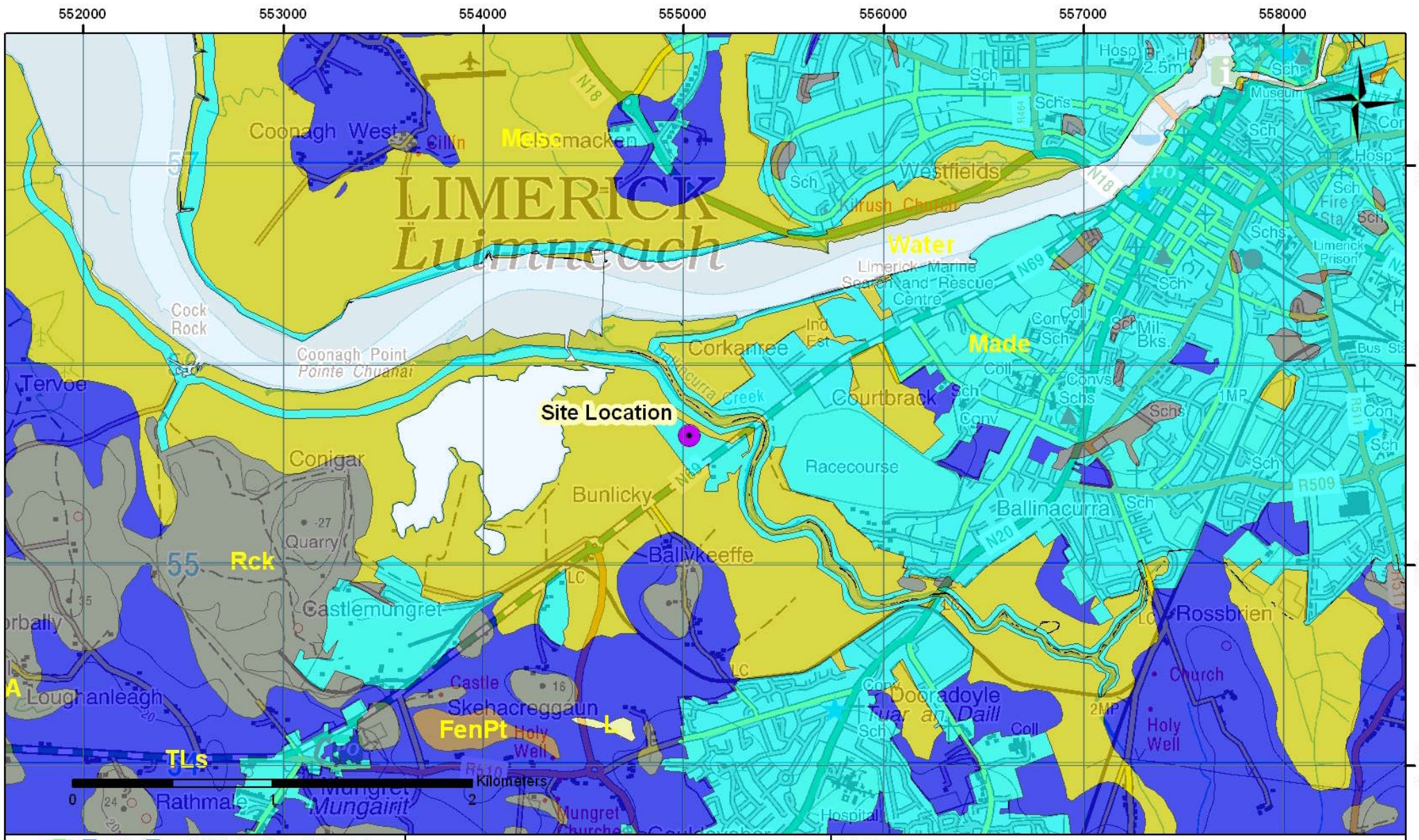
With the exception of the area around the wastewater treatment plant, the remainder of the site is either paved with concrete, or occupied by buildings that prevent infiltration to the subsoil.

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.



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CLIENT

Greenstar Environmental Services

TITLE

Subsoils

Details

- Site Location
- Alluvium
- Fen peat
- Bedrock outcrop or subcrop
- Lacustrine sediments
- Estuarine silts and clays
- Made ground
- Till derived from limestones
- Water

Figure 7.1

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 Ballinaclough 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 Ballincurra 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/Ballinaclough, 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*

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 -	FE1Ae	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	1.10	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.

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 monitoring 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 80m^3/day. The second in to the south and up-gradient of the site and has a reported yield of 22m^3/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 Ballinaclough River that confluences with the River Shannon via the Ballinacurra 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 18,000m^2. 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 Ballinacurra Creek/Ballinaclough 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-sit 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 Ballynaclough 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 *Nepthys 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 Maigue 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 cSAC 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.

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 website[1] 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/m^2/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 inlcude odours, particulates and exhaust gases from vehicle movements. The odours are associated with the types of wastes accpeted, 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 movemenets.

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

bales are then moved outside the building and stored on the paved yard pending transport to Limerick Docks. Typically, the bales are removed from the site weekly.

GES conducts weekly odour surveys at the site to confirm that the facility is not a source of odour nuisance and records of the surveys are maintained.

Following the cessation of timber shredding at the facility, the primary source of dust emissions are vehicle movements on the paved yards during dry periods. GES regularly damps down the yards during such dry periods to prevent windblown dust being generated.

The heavy goods vehicles accessing the facility are fitted with Selective Catalytic Reduction (SCR) systems. A diesel exhaust fuel (AdBlue) is used in the SCR to reduce the nitrous oxide levels in the exhaust gases. Site management ensure that truck idling is not permitted.

10.6 Assessment of Impacts

Facility activities are not a source of odour nuisance outside the site boundary and GES has never received a complaint about odour nuisance. The proposed additional wastes include mixed municipal wastes, however the existing buildings and plant and equipment have the capacity to accommodate the increase volumes and there will be no change to the time taken to process and consign these wastes.

Dust is not currently a significant issue at the facility. The routine monitoring has confirmed that the existing operations do not give rise to elevated dust emissions. The proposed changes will not give rise to any new or additional sources of dust emissions. The waste handling and processing procedures will also remain the same as recent years.

The additional emissions associated with the increase traffic movements will be minimal in the context of the facilities location within a busy commercial/industrial area. The traffic assessment described in Section 6 shows that the level of traffic associated with the proposal to increase the waste volumes is not particularly intensive and will not exceed the existing capacity of the local road network. In this context, the additional traffic associated with the proposed changes will not have any cumulative adverse impact on air quality in the area.

While the increased traffic movements will give rise to additional vehicle exhaust gases and potentially dust, the overall adverse impact on air quality will be negligible.

11. NOISE

11.1 Introduction

This Chapter describes the existing noise environment and assesses the impacts of the proposed increase in annual waste inputs.

11.2 Methodology

The assessment is based on the findings of a noise survey completed by Dixon Brosnan Ltd in 2012. A copy of the report, which includes details of the methodology applied is in Appendix 8.

11.3 Existing Conditions

The facility is accessed off the N69 Limerick to Tralee National Primary Route. It is located in the northern section of an area developed for commercial and industrial uses. The lots to the south of the site are occupied by warehousing units, oil distribution centres, truck sales and repair facilities and Cussen Crane Hire.

There are no Noise Sensitive Locations (NSLs), which are defined by the EPA as dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels within 250m of the facility

Facility activities involve the use of plant and equipment that are sources of noise emissions. These include the conveyors and balers located inside the buildings and front end loaders clamp trucks and tracked excavators with grabs that operate both inside and outside the

buildings. The heavy goods vehicles that access the facility and the manoeuvring of skips in the yards are also sources of noise emissions

The current Waste Licence sets daytime noise emission limits of 55 dB(A) LAeq(30 minutes) and requires annual noise surveys to be carried out. The surveys completed in 2010, 2011 and 2012 confirmed that noise levels from the facility complied with the licence requirements and were not a cause of off-site nuisance

The results of the 2012 survey, which was completed on the on the 24th May by Dixon Brosnan, are presented below. The survey involved noise measurement at the four locations specified in the Waste Licence, three of which (N11, N12 and N13) are within the site boundary and one (N14) at the access junction off the Dock Road. The locations are shown on Figure 8.1 and the results are presented in Table 11.1

Table 11.1 Noise Monitoring Results 2012

Station	Time	LAeq 30 min dB	LAF10 30 min dB	LAF90 30 min dB	Specific level dB	Audible Noise
N I1	0821-0851	57	58	48	55	Occasional loader and clamp truck movements audible at low level in main yard. Loader also slightly audible when in building. Loader dominant on sporadic occasions when entering N yard. Starlings on NW boundary continuously dominant. Road traffic to E continuously significant in background.
N I2	0827-0857	61	62	50	61	Loader and clamp truck operations dominant around yard and in building. Tracked excavator on construction activity near NE corner slightly audible continuously, significantly screened by intervening structures. Tracked excavator with grab operating at 40 m from 0853. Bird calls and offsite road traffic significant.
N I3	0854-0924	54	56	51	53	Clamp truck operating almost continuously in main yard audible at low level. Baler and conveyor in nearest corner of building also continuously audible at low level. Distant road traffic to SW continuously audible at low level. Bird song/calls and rustling vegetation.
N I4	0933-1003	70	73	61	<61	No site emissions audible, apart from sporadic trucks using access road. Dock Road traffic continuously intrusive. No other noise audible.

As would be expected, the three onsite locations are dominated by facility activities but there are no NSLs in the vicinity of these locations. The highest noise levels were recorded at the off-site location at the access junction and are associated with the traffic on the N69.

11.4 Impacts

The existing plant and equipment have the capacity to accommodate the increase in the amount of wastes accepted and there will be no changes to the manner in which the wastes will be handled and stored. The additional traffic will not have any cumulative effect on noise levels. Therefore, there will be no new sources of noise emissions at the facility.

11.5 Mitigation Measures

The annual noise surveys have confirmed that noise emissions from the facility are not a cause of nuisance or off-site impairment, mitigation measures are not required.

11.6 Assessment of Impacts

The proposed changes will not result in any changes to the noise emissions from the facility and therefore will not have any impact.

12. LANDSCAPE & VISUAL IMPACT

12.1 Introduction

This Chapter describes the landscape and provides an assessment of the potential impacts of the proposed increase in the volume of waste accepted on the landscape and visual amenity. It includes a landscape character assessment and a viewpoint analysis.

12.2 Methodology

The assessment was carried out in accordance with on guidelines in the document '*Landscape and Landscape Assessment, Consultation Draft of Guidelines for Planning Authorities'* published by the Department of the Environment and Local Government (June 2002).

12.3 Existing Conditions

Location

The facility is in the northern section of an area developed for commercial and industrial uses. The lots to the south of the facility are occupied by warehousing units, transport depots, oil depots, truck sales and repair facilities and a crane hire depot. To the east and northeast is the Ballinacurra Creek, which is a tributary of the Shannon. To the north and northwest are undeveloped lands.

Site Layout

The site is accessed by a private road off the N69 (Photographs 1 and 2 in Appendix 9). There are two adjoining waste handling buildings (Building 1 and 2) that are portal frame with metal cladding and concrete walls (Photograph 3). Both buildings occupy approximately 3,265m^2, with a ridge height of approximately 13m and are accessed by doors on the eastern side. The building elevations are shown on Drawing No. 003

There is a separate office building and adjoining vehicle and plant maintenance workshop (Photograph 4) 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, including MSW baled wastes in the north east of the site (Photograph 5), construction and demolition waste to the north of Building 2 (Photograph 6), .plastics and metals (Photograph 7) , truck parking and skip storage (Photograph 8) and a vehicle wash area

There is palisade security fence on the south, 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.

Landscape Character

The site and surrounding area is generally flat. The landscape character is predominantly industrial and commercial comprising warehouse type buildings, with open space to the north and the northwest.

Landscape Sensitivity

The facility is not in an area designated as of scenic or of special amenity importance and the sensitivity of the landscape to change is low.

Viewpoints

The facility is approximately 120m from the access off the N69 and is screened from public view from the road by other buildings on the lots between it and the road. (Photograph 1). There are no public view points of the site from the undeveloped lands to the north. There is a line of deciduous trees along the western boundary (Photograph 9), while the embankment along the western bank of the Ballinacurra Creek (Photograph 10) screens the site from the east.

12.4 Impacts

The proposed change to the facility relates solely to an increase in the amount of wastes that will be accepted at the site. The increase does not require the construction of new buildings, alteration to any existing structures or changes to the current arrangement for the external storage of materials.

12.5 Mitigation Measures

As it is not proposed to alter the visual appearance of the existing facility therefore mitigation measures are not necessary.

12.6 Assessment of Impacts

The proposed increase in the quantity of wastes accepted will not alter the appearance of the facility and therefore there will be no visual impact.

13. HUMAN BEINGS

13.1 Introduction

This Section describes the population, economic activity, social consideration and land uses in the vicinity of the site and assesses the impacts of the proposal to increase the amount of waste accepted at the facility on the local population.

13.2 Methodology

The assessment was based on the planning zoning status, the landuse in the vicinity of the facility, population density and employment sectors. This information was derived from databases maintained by the Central Statistics Office and the Southern Environs Local Area Plan 2011-2017 (June 2011) (SELAP) adopted by Limerick County Council.

13.3 Existing Conditions

The Southern Environs covers approximately 21km^2 and comprises the Ballycummin and Limerick South Rural Electoral Districts (ED). It is south of Limerick City and stretches east to Banemore, south to Ballycummin and west to Conigar in Mungret. It is a largely urban area that has experienced significant population growth over the years. Its importance to the county and the region is reflected in the range and scale of landuse, in particular the large scale infrastructural development.

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

The landuses in the immediate area surrounding the facility are commercial and industrial. The closest residences are more than 250m form the site. Neither the GES facility nor its immediate environs have a significant leisure or amenity potential.

13.4 Population

The Ballycummin and Limerick South Rural ED experienced some of the highest population growths in County Limerick between 1996 and 2006, ranging from 26% in Ballycummin to 45.3% in Limerick South Rural.

13.5 Socio-Economic Activity

Both the Ballycummin and Limerick South Rural ED have similar socio-economic patterns with 4% of the population either being unemployed or looking for their first job. However this is based on the 2006 census and there is likely to have been significant changes due to national economic downturn since then.

The major employment centres in the area include the Crescent Shopping Centre, the Regional Hospital, Raheen Business Park and Irish Cement. The SELAP recognises that the need to support economic activity in the area and it is a policy objective to encourage and facilitate optimal levels of sustainable economic development, promoting the growth of employment opportunities.

13.6 Human Health

The GES facility accepts wastes that are a potential source of odours and potentially attractive to vermin and pests. The waste activities are also a source of noise and dust emissions, while the heavy goods vehicles and mobile plant give off exhaust gases. While odours, noise, dust and vermin do not present a direct risk to health, they can be a significant nuisance and cause of discomfort, which can indirectly affect human health.

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 minimises the risk to groundwater use 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.

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 on 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.

14.5 Mitigation Measures

Since there are no infrastructural works planned for the facility, mitigation measures are not required.

15. MATERIAL ASSETS / NATURAL RESOURCES

15.1 Introduction

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

15.2 Amenities

The facility is in an area that is zoned for industrial development and neither the existing site nor its immediate environs have a significant leisure or amenity potential. The proposed change in the amount of waste accepted does not require any change to the method of operation or the opening hours and therefore will have no impact on the amenity value.

15.3 Local Infrastructure

The proposed increase in the amount of wastes accepted will result in an increase in traffic movements to and from the site. A traffic impact assessment (Chapter 6) has established that the existing road network has the capacity to accommodate the increased traffic. The overall impact of the increased traffic will be negligible.

15.4 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 15.1.

Table 15.1 Estimate of Resource Consumption 2011 & 2012 –

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

The proposed increase in the waste accepted and processed will result in an increase in energy and resource consumption.

15.5 Mitigation

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.

15.6 Assessment of Impact

The proposed change will have no impact on local amenity value and will have a negligible impact on the local road network. There will be an associated increase in energy use and natural resource consumption, but this will be kept to a minimum.

16. INTERACTION OF THE FOREGOING

16.1 Introduction

Earlier Chapters describe the impacts associated with the facility and the mitigation measures for individual sensitive receptors. This Chapter discusses the significance of the actual and potential direct, indirect and cumulative effects of the facility due to interaction between relevant receptors. Only those receptors between which there is an identifiable actual or potential relationship are addressed.

16.2 Human Beings / Air

Waste activities have the potential to impact on human beings arising from noise, dust, and vehicle exhaust emissions. The location, design and method of operations have taken account of these emissions and effective mitigation measures are incorporated into the facility design and operation.

The proposed change in the amount of waste accepted will not result in any new emissions. There will be an increase in the exhaust gases from the additional vehicle movements, but this will have an imperceptible impact on human beings.

16.3 Human Beings/Traffic

The proposal will cause an increase in the traffic volumes accessing the facility. The existing road infrastructure has the capacity to handle the increase in traffic and will have a negligible on members of the public using the local road network.

16.4 Surface Water / Ecology

Rainwater run-off from the site discharges to the drains that outfall to the Bunlickey Lake, which is part of the Shannon and Fergus Estuaries SPA. The proposed increase in the amount of waste accepted will not result in any new emission to surface water or any change to the volume and quality of the existing discharge.

16.5 Cumulative Impacts

The assessment of impacts took into consideration the existing facility operations, and the proposal to increase amounts of wastes accepted, and the current and approved future landuses in the environs. The only impact that associated with the proposed change that could contribute to cumulative pressures in the area is increased traffic movement. The traffic impact assessment has established that the additional vehicle movements will have a negligible impact on the existing road network.

ABBREVIATIONS

CSO – Central Statistics Office

EPA – Environmental Protection Agency

EIA – Environmental Impact Assessment

EIS – Environmental Impact Statement

EU – European Union

GES Greenstar Environmental Services Ltd

GHG – Greenhouse Gases

GSI Geological Survey of Ireland

HGV – Heavy Goods Vehicle

Kwh – Kilowatt Hour

OPW Office of Public Works

OSI – Ordnance Survey Ireland

SELAP – South Environs Local Area Plan 2007 - 2013

PCU Passenger Car Units

PM10 – Particulate Matter 10 micrometers or less

PPE – Personal Protective Equipment

WMU Water Management Unit

WWTP – Waste Water Treatment Plant

APPENDICES