SECTION 1

1. INTRODUCTION

1.1 OVERVIEW OF THE PROPOSED DEVELOPMENT

1.1.1 Introduction

Buchpa Ltd. intend to carry out a land restoration programme at their lands at Kilmartin, Coynes Cross, Newcastle, County Wicklow. The Norse family who own the land are also directors of Buchpa Ltd. The area consists of four to five fields measuring some 22.6 ha and occupies a relatively deep valley running north to south with steep sides to the east and west. At present Buchpa Ltd. is operating under Waste Permit No. ESS/15/8/12 (Reg. No. 249) from Wicklow County which is for land recovery of the base of the valley using clean clays and soils. This operation is ongoing and is being carried out efficiently and in full compliance with the requirements of the Waste Permit and Wicklow County Council. It is proposed to fill in the remainder of the valley to a level with the high ground at the eastern and western sides of the site. The northern and southern sides will consist of grades with a maximum fall of 1 in three from the top level of the fill material to the base of the valley. The surface will be constructed with a slight dome shape to promote the shedding of rainwater. The material used to restore the void space will consist of clean clays, soils and stone. No contaminated materials will be accepted. Some segregated construction and demolition (C&D) wastes consisting of concrete, bricks and blocks will be used for the construction of haul roads and hardstand at the development.

The void space has been estimated at approximately 2.35 million m^3 and this would represent approximately 4,230,000 tonnes at an estimated rate of 1.8 tonnes per $1m^3$ of clays and soils. The existing recovery project operating under waste permit (No. 249) will utilise some 58,000 m^3 (max. tonnage allowed is 130,000 tonnes) of the void space if it runs its full course. While this will have the effect of reducing the overall lifespan of the proposed development it will be a relatively small reduction and the overall void space figures of 2.35 million m^3 (4,230,000 tonnes) are used in all calculations in the EIS to provide a conservative worst case scenario in terms of potential impacts to the environment.

It is proposed to supply a site office, storage container, oil storage tank and bund, weighbridge, waste inspection bays, waste quarantine bay, wheel cleaning system, access road, road drainage system with silt trap, interceptor and soak pit, a septic tank and percolation area at the facility. Site drainage including cut-off drains and settlement ponds will be incorporated into the design and will be constructed at the outset. The site will be secured with fencing and a lockable steel gate.

The site will be open for the reception of trucks from 8:00am to 6:30pm Monday to Friday and from 8am to 2pm Saturday. Preparation works prior to daily opening will be carried out from 7:30am to 8:00am Monday to Friday and from 7:30am to 8:00am Saturday. Processing and handling of received materials will be completed on a daily basis from 6:30pm to 7:30pm Monday to Friday and 2pm to 3pm Saturday

It is proposed that the facility be permitted to accept up to 250 loads per day from September to June and 200 loads a day in July and August (to provide a reduction in any potential impacts during the traditional holiday months). Based on a maximum 20 tonnes per load this indicates that the site will

receive a maximum of 1,380,500 tonnes per year giving a site life of 3.06 years (assuming 5.5 days per week and 52 weeks per year (9 weeks in July and August assumed)). However, it is likely that there will only be a requirement for the importation of 250 loads a day during busy periods in the construction industry and that this amount of material will not be imported on a regular basis. If the actual importation of materials averages out at say 200 loads per day then the total amount imported per year will amount to 1,144,000 t/a and give a site life of 3.7 years. If the actual importation of materials averages out at say 100 loads per day then the total amount imported per year will amount to 572,000 t/a and give a site life of 7.4 years.

The bulk of the materials to be imported to the site will be sourced in Co. Wicklow, South Dublin and North Wexford. All trucks will access the site via the N11 dual carriageway and the Cullenmore interchange which is adjacent to the site.

1.1.2 Site Facilities

The facility will be laid out and landscaped to present a high quality environment for employees and visitors alike.

A site office will be constructed near to the site entrance. This will include an office, gate/weighbridge control room, canteen, washrooms, file store and toilets.

A gate entrance and registration area will be installed near the site entrance and adjacent to the site offices. The entrance road from the gate to the office will be constructed of asphalt and will be long enough to allow for the entrance and queuing of in excess of 10 trucks. A weighbridge will be installed at the entrance of the site adjacent to the site office.

A wheel cleaning system will be installed to the north of the site office. All trucks exiting the site will be required to pass through the wheel cleaning system.

A septic tank and percolation area will be constructed to the northwest of the site office. These will be designed in accordance with the EPA Wastewater Treatment Manual “Treatment Systems for Small Communities, Businesses, Leisure Centres and Hotels”.

Cut off drains will be constructed along the northern and southern sides of the development area. These will be designed to intercept rainfall run-off and will pass through a settlement lagoon prior to discharge to the local drainage network.

Site haul roads will be constructed of hardcore C&D materials to facilitate access around the site.

A car park for 16 cars will be constructed adjacent to the site office.

Oil storage will be contained in a tank located in a contained concrete bund. The loading/unloading area for the bund will be constructed of a concrete slab and ramped to contain any leakages or spillages during loading/unloading.

1.1.3 Traffic

All C&D soil materials will be brought to the site in covered trucks. It is anticipated that the materials will be sourced in County Wicklow, South Dublin and North Wexford. Trucks will access the site via the N11 dual carriage way, from either the north or south, through the Cullenmore interchange and along a short stretch (c. 325m) of the Coynes Cross road to the site entrance. The proposed entrance will be designed to ensure adequate sightlines in both directions. A section of the fence on the opposite side of the road will be set back to aid in the provision of the sight lines. The applicant owns these lands also. It is proposed that up to 250 trucks a day will import materials to the site, with a maximum of 200 trucks per day during the months of July and August. The site will be open from 7:30am to 7:30pm Monday to Friday and 7:30am to 3:00pm on Saturdays, with the acceptance of waste clay materials occurring between 8am to 6:30pm Monday to Friday and 8am to 2pm Saturday. The site will be closed all day Sundays and Bank holidays. Traffic within the site boundaries will be limited to 10 km/ph.

1.2 LOCATION AND OWNERSHIP

The location of the site is shown in Figure 1.1.1 and has a National Grid Reference of 327850N, 201300E.

The site is located in the townland of Kilmartin approximately midway between Newtownmountkennedy (5km) and Ashford (4km). The property is bounded to the south and north by agricultural land (some coniferous forestry to the south); to the west by the Coynes Cross road and to the east by a small lane that links the L-5064 to the R761 Coast Road. The land further to the east is agricultural land.

The property is outlined in blue on Figure 1.1.2. The footprint of the restoration area is outlined in red on Figure 1.1.3 and measures some 22.6 ha. The applicants and their family own all land on which the development is to take place, the land to the west of the Coynes Cross road and the land to the east of the lane. The family home is located to the north of the development site along the L-5064 road.

1.3 EXISTING LAND USE

The property holding is set in a rural environment as shown on Figure 1.1.4, and is presently used for sheep grazing and some small arable crop farming in the northern section. Due to the steep slopes on the eastern and western sides of the valley and the wet waterlogged ground at the base of the valley the land is not being used to its maximum agricultural potential and appears to be suitable only for sheep grazing.

The bulk of the adjacent lands are given to agricultural usage. There is some coniferous forestry to the south of the site.

Buchpa Ltd. (Norse family) applied for and were granted a waste permit by Wicklow County Council to restore the base of the valley floor with clean clays and soils in January 2007 (Figure 1.1.5). This entailed placing c. 1.5m of clays over an area of some 5.8 ha at the base of the valley and is presently ongoing. This operation is proceeding in full compliance with the conditions of the waste permit and the requirements of Wicklow County Council and there have been no reported incidents or complaints to date. The Norse family wish to restore 22.6 ha of the site by infilling that part of the valley with clean inert clays and stones to provide level surfaces and the scale of this development requires planning permission and a waste licence from the EPA. The proposed development will be similar in every way to that presently being carried out under waste permit save for it will be at a greater scale in terms of area, height and volumes of material to be used for restoration. It is submitted that the company have demonstrated their ability and expertise in undertaking such an operation efficiently and in compliance with all regulatory controls and requirements.

1.4 EXISTING INFRASTRUCTURE

The road network is described briefly in Section 1.1.3 above and in greater detail in Section 2.9. Other infrastructure currently in place at and in the vicinity of the site includes the following:

- The majority of local houses are connected to the mains public water supply system. It is reported that there are four private water wells located to the north and northeast of the proposed footprint. Two of these are within the Norse family ownership.

- High voltage electricity transmission lines run through the north-western corner of the property and in a east/west direction across the northern end of the site

1.5 PLANNING CONTEXT

1.5.1 Landscape Zones

The current development plan for Kilmartin and the surrounding area is the Wicklow County Development Plan, 2004. The County is divided in the plan into five 'Landscape Zones' as follows:

- Area of Outstanding Natural Beauty.
- Area of Special Amenity.
- Corridor Area.
- Rural Area.
- Urban Area.

The Corridor Areas are similar to the Rural Areas but are served by the main access routes in the county. Two distinct corridors have been identified in the plan. The Western Corridor is focused on the N81 (national secondary route) from Dublin, through Blessington on towards Baltinglass. The Eastern Corridor relates mainly to the lowland area of influence of the N11 (national primary route). This access corridor serves the major towns in the county such as Wicklow, Bray, Greystones and Arklow.

The Kilmartin site is located within the eastern corridor zone with excellent access to the primary access route in the county, the N11.

1.5.2 Preservation Schedules

Wicklow County Development plan, 2004, contains schedules of natural or built features that should be preserved. The schedules include the following listed features:

- Trees
- Views
- Prospects
- Access Routes to Amenity Areas
- Proposed Natural Heritage Areas
- Nature Reserves
- Candidate Special Protection Areas
- Proposed Special Areas of Conservation
- Areas of Geological Interest
- Items in Towns and Villages
- Churches
- Demesne Houses
- Vernacular Structures
- Hand Pumps
- Landmarks
- Post Boxes
- Archaeological Areas
- National Monuments
- Miscellaneous Items

Section 4.7 (Flora & Fauna) of the EIS has concluded that the development is not located in and will not impact on any proposed Natural Heritage Areas, Nature Reserves, candidate Special Protection Areas or proposed Special Areas of Conservation.

Section 4.10 (Landscape and Visual Aspects) has concluded that the development will not impact on any listed views, prospects or access routes to amenity areas.

There are no sites of archaeological significance within the footprint of the site. There is an old church ruin on the property to the northeast of the project area and there will be no impact on this site.

There are no trees, areas of geological interest, items in towns and villages, churches, demesne houses, vernacular structures, hand pumps, landmarks, post boxes or miscellaneous items, listed in the Development Plan, in the vicinity of the site that could potentially be effected by the development.

1.5.3 Waste Management

The County Wicklow Development Plan recognises the need for waste management and infrastructure. This is outlined in the Plan Section 5.4.2.1 (Waste Management) Policies WS3 and WS4; Section 5.4.2.2 (Waste Minimisation) Policy WS6 and Section 5.4.2.3 (Waste Recycling) Policy WS7. The Development Plan confirms the commitment to waste minimisation and recovery and adopts the Regional Waste Management Plan as the pertinent document with regard to waste policy and strategy.

1.6 WASTE POLICY AND STRATEGIES

1.6.1 National Waste Management Policy

National policy for waste management in Ireland for the 15 year period 1998 to 2013 is presented in three policy statements issued by the Department of the Environment and Local Government. Firstly, 'Waste Management - Changing Our Ways', was published in September 1998, this was followed in 2002 by 'Preventing and Recycling Waste - Delivering Change' and in April 2004 by 'Waste Management - Taking Stock and Moving Forward'. The proposed development will assist in achieving some of the targets set out in these policy statements as discussed below.

1.6.1.1 Changing Our Ways & Delivering Change

The waste policy document 'Changing Our Ways' (1998) defined the waste hierarchy as follows:

- Prevention
- Minimisation
- Reuse
- Recycling
- Energy recovery
- Disposal

Changing Our Ways outlines the Government's policy objectives for managing waste from 1998 to 2013 and the emphasis is on promoting recycling/recovery and reducing our reliance on landfill. The following targets for waste treatment by 2013 are included in this policy statement:

- diversion of 50% household waste from landfill,
- 65% reduction in landfilled biodegradable wastes,
- development of waste recovery facilities employing environmentally beneficial technologies, as an alternative to landfill, including the development of composting and other feasible biological treatment facilities capable of treating up to 300,000 tonnes of biodegradable waste per annum,
- recycling of 35% of municipal waste,
- recycling at least 85% of construction and demolition (C&D) waste,
- reduction in landfill numbers to an integrated network of some 20 state-of-the-art facilities incorporating energy recovery and high standards of environmental protection, and
- an 80% reduction in methane emissions from landfill.

The proposed development will provide a significant element of infrastructure that will help to facilitate the objectives of *Changing Our Ways* for the region. The proposed restoration facility will provide an outlet for those clays and soils defined as wastes to be recovered in a land reclamation project and thereby contribute to meeting and sustaining the target of recycling 85% of C & D waste, that would otherwise have been landfilled or perhaps dumped illegally.

Changing Our Ways recognises the important role that the private sector plays in waste management in Ireland and encourages increasing private sector involvement in all aspects of waste management. Section 5.4.1 of the document states:

> *"There is considerable scope for increased participation by the private sector in all areas of waste management in Ireland, and authorities should encourage and facilitate business involvement in the provision of waste management services. Private participation can contribute much needed capital investment in infrastructure, specialist expertise in the application of alternative and emerging technologies, a better understanding of the dynamics of the marketplace, especially in relation to recyclables, and in some cases greater operational efficiency and flexibility. It can also release local authority staff and resources for other productive uses."*

The *Delivering Change* document reinforces the targets and aspirations of the earlier policy document. Section 3.1 of *Delivering Change* highlights the constraints on the improvement of Irish recycling performance. One such constraint has been recognised as:

> *"The lack of available recycling and reprocessing facilities and lack of access to the facilities which do exist."*

1.6.1.2 Waste Management - Taking Stock and Moving Forward (2004)

The policy document 'Taking Stock and Moving Forward' sets out 21 key points that together with the earlier policy documents provide a solid basis for ensuring speedier and more effective realisation of the underlying policy objectives. The proposed development at Kilmartin, as a waste recovery operation, complies with the relevant points as stated in this policy document.

Key Point 1 – "*The policy approach will remain 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 proposed development will provide an outlet for the recovery of waste clays and soils to restore a steep sided valley to useable agricultural land. This will provide a means to recover construction and demolition wastes which will aid in achieving the target of recycling 85% of C& D waste by 2013. This is one element of the integrated waste management approach required to manage all of our wastes.

Key Point 11 – *" Landfill, subject to rigorous licensing, will have a continued role as a waste management tool but it will progressively change to a residual role, in accordance with its place at the bottom of the waste hierarchy. Local Authorities, when updating their waste management plans, will need to ensure that a timetable for the provision of the range of integrated waste management infrastructure is provided so that an appropriate balance can be struck between –*

- *Having sufficient landfill capacity available in the short to medium term, pending the delivery of alternative 'higher-in-hierarchy' infrastructure, and*

- *Guarding against the overprovision of landfill which would be incompatible with its residual' role in the integrated waste management mix.*

In order to provide better information, one of the fact sheets to be produced as part of the Race Against Waste communications campaign in May 2004 will be devoted to landfill related issues".

The proposed development will recover C&D materials that would otherwise have been landfilled. This complies with the objective of progressively changing landfills to a residual role and will help in freeing up capacity at existing landfills in the short to medium term.

Key Point 14 – *"The structure and operation of the waste market will be kept under close scrutiny in order to guard against any anti-competitive practices. In that context, an analysis of the structures and trends in the waste sector and an examination of the adequacy of existing regulatory tools will be initiated in Autumn 2004".*

The provision of a new outlet for the recovery of waste clays and soils will add to this sector of the waste market and will increase competition in this area. The proposed development will therefore help in guarding against anti-competitive practices in this sector and complies with this key point.

Key Point 18 – *"1 January 2005 is being set as the date for the completion, nationally, of the switch to weight/volume based charging for waste. There will be discretion as to the types of systems to be used, provided that the key principle of use based charging is respected".*

The cost of all waste soils recovered at the site will be charged to the producers on either a weight or volume based system.

It is clear that the proposed development will provide a facility for the recovery of waste clays and soils and remove the need for landfilling these wastes. The project therefore fits in well with all Government Policies relating to waste management and in particular with the policy documents '*Changing Our* Ways' and '*Waste Management – Taking Stock and Moving Forward*'.

1.6.1.3 Proximity Principle

The materials will consist of clean clays and stones and will originate from construction and demolition developments, housing developments, road cuttings, trench laying projects etc. These projects are ongoing in the region on a continual basis and require an outlet for the surplus clays and stones. The exact locations for these developments are impossible to predict. However, it is fair and accurate to state that the origin of the materials to be used in the restoration programme will comprise source materials from approximately a 50 mile radius of the site. This will cover areas in Counties Wicklow, South Dublin and North Wexford.

The catchment area for the proposed facility, measuring a radius of some 50 miles out from the site means that clays and soils defined as wastes from infrastructural developments will be recovered close to their point of origin and therefore the proposed development complies with the Proximity Principle.

1.6.1.4 Polluter Pays Principle

Buchpa Ltd. intend to charge a gate fee for authorised contractors bringing clay materials to the site. In this way the producer of the waste materials will be charged in line with the polluter pays policy.

1.6.2 Wicklow Regional Waste Management Plan

Wicklow County Council has recently updated their Waste Management Plan which was originally adopted in 2000 and served the county for a 5 year period. The plan revision for the period 2005 to

2010 is a continuation from the previous plan in which the goal was to develop a strategy to manage waste for the next 15 to 20 years. The purpose of this review is to produce a continuous waste management plan mainly for recovery, recycling and disposal of waste arising in County Wicklow. The plan's objective is to:

> *"Promote waste prevention and minimisation through source reduction, producer responsibility and public awareness and education. It sets objectives and targets, roles and responsibilities. The primary objective is to ensure the best environmental management of all waste arising."*

During the completion of the 2000 to 2004 Waste Management Plan, a lack of landfill space was a concerning issue. A number of short term policies were proposed to help resolve the waste disposal situation until further landfill space became available. Provisional solutions were proposed and have been in place since. The Local Authority landfill facility at Ballymurtagh, Avoca closed in 2002. The Rampere Landfill located in Baltinglass received a waste licence (WL 66-2) in April of 2004 to increase their waste intake to 50,000 tonnes per annum. Construction commenced in 2005 on the extension of the site. Two waste licence applications from the Environmental Protection Agency for a residual Landfill operated by Greenstar Ltd in Ballynagran (WL 165-1) and a composting facility operated by Kings Tree Services (WL 218-1) in Coolbeg were granted in 2005.

The long term waste strategy of the updated Waste Management Plan in Section 3.2.1 in volume 3 of 4 focuses on waste prevention and minimisation. To date the County Council has commissioned waste composition surveys which were carried out over a six months interval to take into account seasonal variations in waste composition and uses education as a tool within Wicklow schools to promote waste awareness.

The private sector of waste management has played an important role throughout Wicklow County. All household, municipal, industrial, commercial and C&D waste within the County is collected by the private sector through waste contracts.

With regard to recovery, reuse and recycling, the Plan puts forth the following proposal in Section 3.2.2 of volume 3 of 4.

> To achieve national waste management targets
>
> - *recycle at least 35% of municipal waste by 2009*
> - *recycle at least 50% of C&D waste within a 5 year period, increasing to 85% over 15 years.*
>
> *Implement the following infrastructure to facilitate recovery, recycling and reuse:*
>
> - *expansion of the network of bring sites*
> - *4 no. recycling centres*
> - *a green composting facility*
> - *a MRF for household waste*

- *additional sorting and baling capacity for recycling commercial/industrial waste in the North and in the South of the county*
- *a biological treatment facility for composting or anaerobic digestion of separately collected food and organic waste*
- *a recycling facility for C&D materials*

Establish a programme to examine the possibility for using recovered materials within industries in Wicklow

Table 2.1 of the WMP indicates that some 500,000t of C&D waste was collected in 2004 (reported as collected). This is considered an underestimate as there has been some difficulties in securing accurate or full data (normally obtained from annual environmental reports) from the waste collectors and other sources. Table 2.13 of the WMP provides a breakdown of the C&D wastes collected and shows the vast bulk of the C&D to consist of soils and stones and concrete, bricks and blocks.

The longterm policy for C&D waste is given in section 3.2.11 of the WMP where the plan set out the following proposals:

- Provide more recycling capacity for C&D waste
- Seek to use recovered C&D in building development works carried out by the Council
- Encourage the development of stable markets for recycled materials among private developers
- Consider the possibility of requiring developers to segregate at source
- Provide for the authorised disposal of inert waste.

With the predicted increase of C&D waste over the next twenty years and the objective of recycling at least 50% of C&D waste over the next 5 years, the reclamation project at Kilmartin fits in well with the objectives of the Waste Management Plan for Wicklow County. The development will entail the recovery of waste clays and soils (and some bricks, blocks and concrete) by reclamation/infilling of the valley.

1.7 ALTERNATIVES

1.7.1 Alternative Waste Management Practices

Clean Clays and Soils

There are few alternatives for the recovery of waste clays and soils. These are usually recovered by restoring sand/gravel pits, quarries, poor agricultural land, landfill cover material, landscaping and some horticultural uses etc. As the clays and soils are essentially clean and free from any contamination they are ideal for these purposes.

Bricks, Blocks and Concrete

It is proposed that some bricks, blocks and concrete (hardcore) be recovered at the site. These materials will be imported already segregated and used for the construction of haul roads and hardstanding areas only. This is considered a positive form of recycling for these materials as the need to construct roads and hardstand will be achieved without the use of natural resources.

1.7.2 Alternative Sites

The site is owned by the Norse family and is defined by very steep slopes on the eastern and western sides and wet land at the base of the valley. In its present form it is not suitable for optimum agricultural usage. The site is presently grassed and used as low value grazing for sheep. The steep slopes and the wet ground at the base make it impractical if not impossible to optimise its potential as a valuable agricultural resource. The proposed restoration programme is designed to provide a level surface that can be used for all farming practices to include tillage, grazing etc. with no physical impediments. This will significantly improve the agricultural value of the land and will be designed and operated in such a way that there will be no significant impacts on the local environment.

1.7.3 The Do-Nothing Alternative

The do-nothing scenario will maintain the situation where the site in its present form will not allow for the optimum usage of this potentially excellent agricultural resource. In addition, the development will allow for the provision of a much needed outlet for the recovery of clean clays and soils in the region. In the absence of this development these materials may be required to be landfilled (using up sparse landfill capacity) or illegally dumped.

1.8 REQUIREMENT FOR AN EIS

This Environmental Impact Statement has been prepared to accompany the planning application for permission for the proposed development. This EIS will also be submitted to the Environmental Protection Agency in support of a Waste Licence Application in accordance with the Waste Management Act, 1996.

The EIS has been prepared in accordance with the requirements of the following statutory documents:

(i) The European Community Directive on Environmental Impact Assessment (No. 85/337/EEC), as amended by Directive 97/11/EC.

(ii) The European Communities (Environmental Impact Assessment) Regulations, 1989 to 1999.

(iii) The Local Government (Planning & Development) Regulations, 1994 (S. I. No. 86/1994), as amended.

(iv) The Local Government (Planning & Development) Regulations, 1999 (S. I. No. 92/1999).

1.9 STRUCTURE OF THE EIS

The EIS is presented in the "Direct Format Structure" as set down in the Draft Guidelines produced by the Environmental Protection Agency (EPA-1997). In general, it follows the framework presented in the EPA Advice Notes on Current Practice in the Preparation of Environmental Impact Statements. The structure employed allows individual examination of the main components of the EIS, namely:

(i) the receiving (existing) environment (Section 2).
(ii) the proposed development (Section 3).
(iii) environmental impacts and mitigation measures (Section 4).

1.10 CONTRIBUTORS TO THE EIS

This EIS was prepared by a number of consulting firms. The members of the study team and their respective inputs are as follows:

White Young Green Environmental (Ireland) Ltd. - Project Management/Co-ordination, Engineering Design, Climate, Air Quality, Noise Environment, Ecology, Roads and Traffic, Geology & Soils, Groundwater, Cultural Heritage, Landscape, Surface Water, Human Beings and Material Assets.

Address: Apex Business Centre,
Blackthorn Road,
Sandyford,
Dublin 18

A number of firms provided services to the project as follows:

Murphy Surveys, Naas, Co. Kildare – Topographical Surveys, volume projections
AL Control Laboratories Ltd. – Water Analyses
Enterprise Ireland Inorganic Laboratory - Dust Analyses
Wicklow County Council – Copy of the EIS for the N11 Dual Carriageway

1.11 SCOPING OF THE EIS

The EIS was designed to provide an assessment of all aspects of the environment.

The project team met with officials from Wicklow County Council Planning, Environment and Roads departments on 11th November 2005 and with the environment department on 20th March 2006 to discuss the project. Recommendations made by the County Council were taken on board and considered in the EIS.

The project team also met with the Environmental Protection Agency to discuss the land reclamation project. Recommendations from this meeting were taken into consideration as well for the preparation of this EIS and for the Waste Licence Application.

1.12 DATA NECESSARY TO IDENTIFY AND ASSESS ENVIRONMENTAL EFFECTS OF DEVELOPMENT

The data necessary to identify and assess the environmental effects of the development are:

- the existing environment, as described in Section 2 by the specialists in various fields,
- the characteristics of the development as described in Section 3, including its physical dimensions, volumes and nature of materials being handled, the processes involved and the emissions from the facility.

The potential environmental effects of the project are assessed and proposed mitigation measures are presented in Section 4.

1.13 DIFFICULTIES COMPILING SPECIFIED INFORMATION

Baseline information for the development site and its environs was readily compiled by the EIS contributors. No difficulties were encountered.

1.14 FORECASTING METHODS USED TO ASSESS THE EFFECTS ON THE ENVIRONMENT

The methods employed to forecast the effects on the various aspects of the environment are standard techniques used in the professional disciplines. The general procedure employed was to describe the receiving environment in a dynamic fashion, to add to that a projection of the "loading" placed on all aspects of the environment by the development in its mitigated form and thereby arrive at the net likely significant effect of the development on the environment.

SECTION 2

2. EXISTING ENVIRONMENT

2.1 CLIMATE

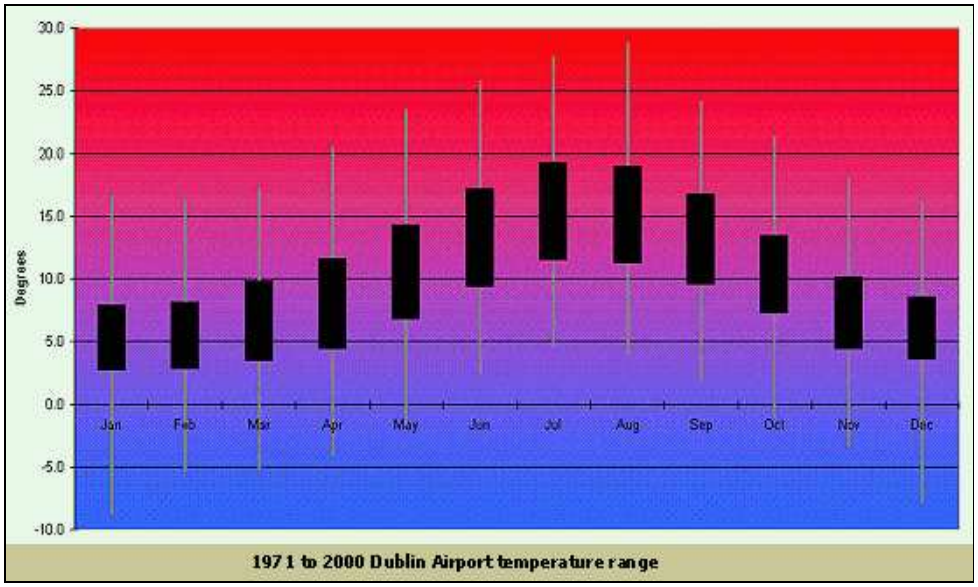
Ireland lies in the middle latitudes and its climate is predominantly influenced by the prevailing westerly winds and its position on the western sea board of the European landmass. Ireland is associated with mild winter and cool summer climates.

The Kilmartin site occupies a valley with elevations ranging from c.35 mOD to c.65 mOD. The site is situated roughly midway between Newtownmountkennedy (5km) and Ashford (4) and is on the leeward (eastern) side of the Wicklow Mountains. The climate of the Wicklow region is described by meteorological measurements collected by the national Meteorological Service at their network synoptic stations in the region and from rainfall observations recorded at nearby rainfall gauging stations. The nearest weather station to the site is in Ashford.

2.1.1 Temperature

The mean daily air temperature taken by MET Eireann for the area (Newtownmountkennedy) during winter months (January 2005) is 7.8^{0}C and 15.6^{0}C in the summer (July 2005). This gives an annual mean daily air temperature of approximately 10.7^{0}C.

The average temperature data from Dublin airport is displayed below. In the graph, the solid bars show the difference between the mean daily minimum and maximum for the month in question and the thinner lines indicate the range of daily minima and maxima observed over a thirty-year period. The graph is based on daily reports from 1971 to 2000.



2.1.2 Rainfall

The annual rainfall data for 1986 to 2005 from the Ashford Rainfall Station given by Met Eireann is presented in Table 2.1.1.

Table 2.1.1 - Rainfall in the Vicinity of Ashford County Wicklow from 1986 to 2005

Total Rainfall (TR) mm														
Rainfall Station	**Month**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Annual Mean**
Ashford	**Mean Rainfall (mm)**	87.7	65.9	57.8	64.2	54.0	55.9	39.9	63.9	59.7	82.7	81.6	82.9	796.2

Rainfall runoff occurs on site due to the landscape structure, particularly on the eastern and western slopes. In general due to the location of the site, between the Wicklow Mountains and the Irish Sea, rainfall tends to be slightly greater in comparison to other eastern parts of Ireland.

2.1.3 Evapotranspiration

The annual average potential evapotranspiration (PE) measured at Dublin Airport is 555mm. Actual Evapotranspiration (ET) is a little less than PE (probably around 80% of PE) in this part of Eastern Ireland.

2.1.4 Wind

Wind speed, frequency and direction at Dublin Airport are depicted on Figure 2.1.1. The strongest and most frequent winds are from the west and the second most frequent are from the southwest. Forty five percent of all winds are from these two directions. The least frequent wind directions are from the north (5%) and the northeast (6%).

2.2 AIR QUALITY

2.2.1 General

The site is currently used for agricultural purposes mainly as rough grazing for sheep and comprises 22.6 hectares in area. Land to the north, south and east of the site is predominantly agricultural in nature. The nearest residential property is located along the northern boundary of the property and is the Norse family home. The N11 Dublin to Wexford road is approximately c.225 metres from the western site boundary with access to the site just off the Cullenmore interchange on the Coynes Cross Road. A walk over survey of the site and surrounding area identified no other activities in the immediate vicinity of the site that could have any significant adverse impact on the local air quality.

As part of this investigation into the likely impact of the proposed development, a baseline investigation of existing air quality was undertaken. The results from this investigation are presented in Sections 2.2.2 to 2.2.5 below.

2.2.2 Dust

A dust deposition survey was undertaken at 3 (No.) monitoring locations over a 31-day monitoring period from the 15/12/05 to the 16/01/05. The dust monitoring locations identified as AD1 to AD3 are presented on the attached Figure 2.2.1.

Total dust deposition was measured at the site using Bergerhoff Gauges as specified in the German Engineering Institute VDI 2119 document entitled "Measurement of Dustfall Using the Bergerhoff Instrument (Standard Method)". The dust gauges were set up so that the sample containers were approximately 2 m above ground level and located a safe distance away from trees and hedges which may contribute particulate matter to the gauges.

The following are the dust deposition levels measured at the three monitoring locations over the monitoring period from the 12/6/01 to the 10/7/01.

Table 2.2.1: Baseline Dust Results (mg/m^2/day)

Monitoring Location	Dust Fallout (mg/m^2/day)
AD1	10
AD2	20.1
AD3	15.1

The results indicate that dust deposition levels at the site are well below the EPA guideline limit of 350mg/m^2/day.

2.2.3 Decomposition Gas Emissions

The two major components of landfill gas are Methane (CH_4) and Carbon Dioxide (CO_2). In ambient conditions these compounds can be present due to a number of sources such as livestock, slurry spreading, manure, decaying vegetation, combustion of fuels etc. The type of infill to be used at the site will consist of clean clays, soil and stone with some segregated construction and demolition (C&D) wastes and will not contribute to decomposition gases.

2.2.4 Odour Emissions

There are no existing odours at the property or environs and none would be expected in this environment save for those generated by normal agricultural practices. The proposed development will not entail the generation of any potential odours.

2.2.5 Aerosol Emissions

There are currently no aerosol emissions at the property and none will be generated by the proposed development.

2.3 NOISE

2.3.1 Introduction

The assessment has been undertaken in accordance with the *Draft Guidelines on the Information to be contained in Environmental Impact Statements* (Environmental Protection Agency, 2002) and also *Advice Notes on Current Practice in the Preparation of Environmental Impact Statements* (Environmental Protection Agency, 2003).

A survey of the existing noise levels at the proposed site was carried out on the 15th of December 2005. The survey was undertaken to measure the existing noise levels at the site boundaries and the existing noise level at the nearest noise sensitive receptor (NSR).

2.3.2 Methodology

The measurements were made according to the requirements of *ISO 1996: Acoustics – Description and Measurement of Environmental Noise Part 1, a*nd the EPA "*Environmental Noise Guidance Document".* The measurements were made using a Cirrus 831A Data logging integrating sound level meter fitted with 1:1 and 1:3 Octave Band Filters. The instrument was calibrated *in-situ* at 93.7dB prior to and after the survey using a Cirrus CR 513A acoustic calibrator. Factory calibration certificates for the noise level meter and acoustic calibrator, detailing equipment serial numbers, calibration traceability and re-calibration dates are presented in Appendix 2.3.1. The sound level meter was orientated towards the noise source. This instrument is a Type 1 instrument in accordance with IEC 651 regulations. The Time Weighting used was fast and the Frequency Weighting was A-weighted as per IEC 651. A glossary of noise related terms is presented in Appendix 2.3.2.

2.3.3 Monitoring Locations

The noise monitoring locations were chosen according to the guidelines in ISO 1996: Acoustics – Description and Measurement of Environmental Noise. In all cases the sound level meter (SLM) was located 1.5 meters above ground level and at least 2 metres away from any sound reflecting objects. A wind shield was placed on the microphone to reduce wind interference during measurements. A description of the measurement locations is presented in Table 2.3.1 below.

Table 2.3.1: Description of Noise Monitoring Locations

Location	Description of Location	Justification
N1	Southern Boundary	Boundary location
N2	Eastern Boundary	
N3	Northern Boundary	
N4	Western Boundary	
N5	Nearest NSR (c 250m North of site)	Noise Sensitive Receptor (NSR)

2.3.4 Survey Implementation

In total measurements were taken at five locations and are illustrated on Figure 2.3.1. The measurement duration was 30 minutes per location. A five minute one third octave reading was also taken at each location.

The measurement parameters included meteorological observations of prevailing conditions at the time of the survey. The primary measurement parameter was the equivalent continuous A-Weighted Sound Pressure level, $L_{Aeq, T}$, over 30-minute measurement intervals for the duration of the day-time monitoring survey. A statistical analysis of the measurement results was also completed so that the percentile levels, $L_{AN, T}$, for N = 90% and 10% over 30-minute measurement intervals were also recorded.

$L(A)_{10}$ The noise level that is equalled or exceeded for 10% of the measurement period. The level is indicative of the contribution from traffic noise at the measurement location.

$L(A)_{90}$ The noise level that is equalled or exceeded for 90% of the measurement period. The $L(A)_{90}$ readings are taken to represent the background noise levels.

$L(A)_{eq}$: Equivalent Continuous A-weighted Sound Level. The continuous steady noise level, which would have the same total A-weighted acoustic energy as the real fluctuating noise measured over the same period of time. Measurements were carried out over an approximate thirty minute period for this survey.

In all cases the microphone was mounted on a tripod at 1.5m above ground level and at least 3.5m away from any sound reflecting objects. A wind shield was placed on the microphone to reduce any wind interference during measurements.

An octave band frequency analysis was also carried out to determine whether a tonal character was present at the noise monitoring locations. High or very low frequency is considered to be more disturbing than middle range frequency noise. A tonal element exists if any given 1/3rd octave frequency band exceeds its adjacent bands by 5dB or more (ISO 1996: Acoustics – Description and Measurement of Environmental Noise, Part 2). All sources of noise were noted, recorded and where possible, identified during each survey.

2.3.5 Assessment Criteria

This facility is currently not IPC licensed and in the absence of stipulations set by a licence the ‘’WHO Guidelines for Community Noise, 1999’’ have been adopted as the criteria for the purpose of this noise assessment. The guideline limits outlined in this document are presented in Table 2.3.2 below.

Table 2.3.2: WHO recommended Guideline Levels

Specific Environment	Critical health effect(s)	L_{Aeq} dB(A)
Outdoor living area	Serious annoyance, daytime and evening	55
Outside bedrooms	Sleep disturbance, window open (Outdoor values)	45

Furthermore guidance is also taken from the EPA document “Guidance Note for Noise in relation to scheduled activities, 1995” which stipulates daytime and night time noise levels as 55dB(A) and 45dB(A) respectively. The noise criteria presented above are applicable at noise sensitive locations only; however, the recorded level at boundary locations are compared to the above guideline levels for comparison purposes only. However, it was noted that these criteria are already been exceeded due to the proximity of the receptor to the M11.

2.3.6 Existing Noise Environment

The area consists of four to five fields and measures some 15 ha and occupies a relatively deep glacial valley running north to south with steep sides to the east and west. The land use is currently agricultural in nature and used for grazing sheep. There are no existing on site noise sources.

The predominant noise source in the area is traffic noise on the M11, N11 and Cullenmore Interchange.

2.3.7 Meteorological Conditions

The weather conditions were noted during throughout the survey. In general it was mild, calm and dry. Windspeeds did not exceed 5 meters per second (ms^{-1})

2.3.8 Baseline Survey Results

Presented in Table 2.3.3 below are the measurements recorded at each location.

Table 2.3.3: Noise Survey Results

Noise Measurement Location	Location Description	Survey Start Time and Date	$L_{A,eq}$ (dB)	L_{A10} (dB)	L_{A90} (dB)	Main Noise Sources
N1	Southern Boundary	09:00 15/12/05	57	58	55	Traffic on M11
N2	Eastern Boundary	09.40 15/12/05	54	61	51	Traffic on M11
N3	Northern Boundary	10.20 15/12/05	46	49	43	Traffic on M11
N4	Western Boundary	11:00 15/12/05	50	60	44	Traffic on M11
N5 (NSR)	NSR north of site	11.45 15/12/05	56	64	50	Traffic on M11, and old N11

2.3.9 Discussion of Results

2.3.9.1 Boundary Locations

The L_{Aeq} at N1 to N4 was measured as 57dB, 54dB, 46dB, 50dB respectively. The dominant noise source at each location was traffic on the M11. The L_{A90} at each location is elevated which reflects the

high background traffic noise. The noise level at N3 (46dBA) is lowest reflecting its location in the trough of the valley with some attenuation was provided by the steep slopes. The other locations were more exposed and traffic noise was clearly audible.

Analysis of the sound pressure level graphs found in Appendix 2.3.3, illustrates a relatively consistent noise level at each location. However, there is a notable decrease in the noise level at N4 during the last 10 minutes of the survey. This can be attributed to a decrease in the traffic volume during this time.

Tones were detected at each location. A tone is identified on the corresponding 1/3 octave bar graph if it exceeds its adjoining frequency by 5dB. A tone was detected at 16kHz at N1. This tone is an anomaly as the noise level at which it was recorded at was 200dB. A tone was detected at 8kHz at N2, at 80Hz at N3 and at 6.3kHz at N4. As no other tonal sources were observed during the survey these tones can be attributed to traffic.

2.3.10 Noise Sensitive Receptor N5

N5 was measured at the NSR approximately 250 meters north of the site. A L_{Aeq} of 56dB was measured. The L_{A90} was measured as 50dB and the L_{A10} was measured at 64dB. As with the boundary locations the M11 was the main influence on noise levels in the area. However, more localised traffic on the existing N11 which runs adjacent to N5 was a significant contributor to the noise level at this location. The sound pressure level graph illustrates a noise pattern with clear peaks. Each of these peaks represents a passing vehicle. No tones were detected at this location.

2.4 SOILS AND GEOLOGY

2.4.1 Regional Geology

The Kilmartin site is situated within the structural domain of the Leinster Massif, which includes Cambrian to Ordovician meta-sedimentary rocks and the Leinster Granite, as indicated by the memoir (1994) and sheet (1995) for Kildare - Wicklow published by the Geological Survey of Ireland (GSI). The meta-sediments comprise a range of rock types including greywacke turbidites, volcanoclastic sediments, lavas, shales, mudstones, siltstones and cherts, which were highly folded and fractured during the Caledonian Orogeny (Ordovician to Silurian) and then subsequently intruded into during the Devonian era by the Leinster Granite. The intrusion of the granite metamorphosed the surrounding rocks on a regional scale transforming the original sequence and giving the rocks their pervasive fabric or cleavage.

The Cambrian succession has been subdivided by the Geological Survey of Ireland (1994) into the Bray Head Formation on which the site is located and Devil's Glen Formation, both of which are composed of greywacke interbedded with units of quartzite and shale. The Ordovician succession is subdivided by the Geological Survey of Ireland (1994) into the Ribband Group (Lower Ordovician) and the Duncannon Group (Upper Ordovician). The Ribband Group comprises of slates, phyllites and schists of the Maulin Formation (as well as its higher metamorphic grade equivalent the Wicklow Head Formation) and slates with interbedded siltstones of the Ballylane and Oaklands formations. The Duncannon Group comprises slates with interbedded sandstones of the Kilmacrea Formation as well as rhyolitic volcanics of the Avoca Formation and Ballymoyle Formation.

This part of County Wicklow has a variable covering of overburden. The overburden deposits include glacial tills (boulder clays), fluvio-glacial sands and gravels as well as post glacial peat and alluvium.

2.4.2 Local Geology

The geological structure of the Kilmartin site is shown in Figure 2.4.1. The site rests on the Bray Head Formation which is dominated by greywacke and very distinctive quartzite units. Greywacke and quartzite units can range within a thickness of 10m to a 100m plus. Slump deformation is widespread within this area with zones alternating in thickness and coherent under formed sediments.

Results from the borehole installation indicated a sandy clay overburden across the site. The depth of bedrock varied from 11m below ground level (BGL) to 14.2mBGL. The bedrock across the site mainly consisted of weathered shale bedrock. Water levels across the site varied from 4mBGL to 10.5mBGL. Small amounts of boulder clay were noted just above the bedrock in BH3 (see figure 2.5.2 for borehole locations).

2.4.2.1 Overburden Geology

The nature and thickness of the overburden was assessed by the excavation of 14 No. trial pits at the site. The locations of the trial pits are shown on Figure 2.4.2 and the logs are presented in Appendix 2.4.1.

The trial pits were located randomly across the site and were excavated to depths ranging from 1.9m to 2.4m deep. All trial pits intersected glacial tills and bedrock was not encountered in any of the trial pits. No significant water inflows were recorded in the trial pits located on higher ground. Water seepages were observed in some of the trial pits located in the valley floor.

The results indicated a layer of dark brown clayey topsoil ranging in thickness from 0.1m to 0.3m thick. This overlay a layer of light brown very sandy silts/clays ranging in thickness from 1.6 to 2.1m at the bulk of the trial pits located outside the floor of the valley. The lower layer in the trial pits located on the floor of the valley comprised grey sandy clays.

There are no geological sites of scientific interest in the area.

2.5 HYDROGEOLOGY

The site covers some 22.6 ha and is underlain by two distinct geological and hydrogeological units comprising loose overburden materials and the solid underlying bedrock. The overburden is a minimum 2 m thick and is composed of sandy silts and clays. This unit would not be considered as an important aquifer but may have potential for very localised individual supplies.

The bedrock is composed of the Bray Head Formation which is represented by greywacke and quartzite units. These are generally recognised as low yielding rocks in terms of groundwater productivity and have been classified by the Geological Survey of Ireland (GSI) as a 'Poor' (Pl) aquifer (generally unproductive except for local zones).

Most of the dwellings located along the Coynes Cross road and at Coynes Cross are connected to the mains public water supply. Some of the houses located to the north on the L5064 of the site rely on private individual wells for their potable water supply. Figure 2.5.1 shows the number of dwellings who rely on private wells and those connected to the mains public water supply. The nearest dwelling with a private well is located approximately 150m away from the footprint and it belongs to the Norse family.

The Kilmartin stream is located at an approximate elevation of 33mOD at the southern end of the site and this may represent the local water table level at this part of the site.

There is an area in the centre of the valley that is lower than the surrounding land levels. Rainwater run-off to this area becomes trapped and forms wet ground and sometimes ponding occurs after heavy rainfall events. It is likely that water in the pond percolates to ground over time (there is likely some evaporation also).

The physiography of the site is such that there are steep sides (to east and west) that fall to the valley floor. The northern part of the valley drains northwards and the southern part of the valley drains southwards. It is possible that the groundwater flow beneath the site mirrors these patterns. However, in a regional sense it is likely that groundwater flow will be to the southeast mirroring the regional surface water flow patterns towards the coast.

2.5.1 Groundwater Monitoring

Three monitoring boreholes were installed within the proposed footprint of the site between the 12/07/06 and the 14/11/06. Two PVC water sampling pipes, one in the overburden and one in the bedrock, were installed in each borehole and separated by a bentonite seal. The location of the boreholes are shown on Figure 2.5.2.

All wells were installed using an air rotary rig and varied in depth from 18.5mBGL to 20mBGL Borehole logs are located in Appendix 2.5.1.

All groundwater boreholes on site were surveyed. A groundwater contour map was generated using groundwater levels from the three boreholes drilled and is presented in Figure 2.5.2. This map shows groundwater flow to be in a southerly direction.

2.5.1.1 Groundwater sampling

Each groundwater monitoring borehole was purged using a standard plastic bailer 2" in diameter on July 19th 2006 and February 21st 2008. A minimum of 3 well volumes of stagnant water was removed from the standing column in order to draw representative groundwater into the borehole. The samples were delivered to the AlControl laboratory in Ballycoolin, Dublin 11 within 24 hours. The samples were tested for a variety of parameters including EPA Groundwater Baseline suits and total coliforms (during the first sampling round). All parameters have been compared to the Interim Guideline Values set out in the EPA document *"Environmental Quality Objectives and Environmental Quality Standards".* Results are presented in Appendix 2.5.2.

All chemical, metal and inorganic parameters in the boreholes tested were below the recommended IGV levels and indicated excellent quality groundwater. However, elevated levels of faecal coliforms and total coliforms were detected in all well monitoring boreholes during the first monitoring round. This may be a result of the sheep grazing activities and is unusual in that there is no reflection of any contamination in the water chemistry analyses.

During the second monitoring round, a slightly elevated level of zinc above the recommended IGV value at BH103-D at 0.168mg/l. All other parameters were below the recommended IGV at all other monitoring locations.

2.5.2 Domestic Well Monitoring

In addition to groundwater sampling, water samples were taken from the surrounding domestic wells on July 13th 2007 and on February 21st 2008 to assess the drinking water quality. The location of the domestic well is presented in Figure 2.5.2 and the results are presented in Appendix 2.5.2. All parameters were compared to the EPA Interim Guideline Values.

The results from the domestic wells indicated excellent quality water with all the parameters below their respective IGV limits. Faecal coliforms and total coliform were tested for in DW3. No levels of coliforms were detected.

2.6 SURFACE WATER

2.6.1 Surface Water Drainage

The property at Kilmartin is bounded by two small streams, one to the north and one to the south of the site. The southern stream runs from west to east across the southern boundary of the site and is here referenced as the Kilmartin stream. The northern stream runs from west to east along the L-5064 road about 300m north of the footprint area and is here referenced as the Coynes Cross stream. These two streams join about 600m to the southeast of the site and flow southwards into Broad Lough where they confluence with the Vartry river to form the Leitrim river and eventually discharge to the Irish Sea at Wicklow town.

The site itself occupies a deep north south trending valley and the bulk of the runoff drains down the steep sides to the base of the valley. Run-off from the northern part of the valley drains to the Coynes Cross stream and run-off from the southern part of the valley drains to the Kilmartin stream. There is an area in the centre (lowest part of the valley) that is lower than the streams and run-off accumulates here and forms ponds and wet ground in the winter. An old French drain has been discovered running northwest to southeast across the site towards the Kilmartin stream.

2.6.2. Quantity and Rate of Discharges

The volume of water discharging as surface water from the site is a function of the volume of precipitation, evapotranspiration and percolation from the site. The annual precipitation in the area is approximately 796 mm/annum. (Area = 22,600m^2).

Assuming 555mm of evapotranspiration this indicates that there is 241mm of effective rainfall. It is considered that the bulk of the effective rainfall discharges to the two streams either directly from surface water run-off or indirectly via groundwater flows. The available meteorological data indicates that recharge to the streams from run-off and groundwater amounts to some 54,466 m^3/annum. It is considered that perhaps 60% of runoff from the site drains to the Kilmartin stream and the remainder to the Coynes Cross stream.

2.6.3 Surface Water Quality

Surface water samples were collected from 4 No. sampling locations from both the Kilmartin stream and the Coynes Cross stream to the north and south end of the proposed footprint and would be representative of surface water quality in the region. Samples were collected on the 11th of February 2006 from the Kilmartin stream and on 17th of July 2006 from the Coynes Cross stream (see Figure 2.6.1

for monitoring locations). Both streams were monitored again on February 21st 2008. The first sample, SW1 was collected up-stream of the site on the Kilmartin stream located close to the N11. The second sample SW2 was taken from a downstream point on the Kilmartin stream. SW3 and SW4 were also collected at both up and down stream points along the Coynes Cross stream.

The samples were collected by White Young Green staff and delivered to Alcontrol Geochem, Ballycoolin Dublin 11 within 24 hours of sampling where they were analysed for the EPA baseline range of parameters for surface waters. During the 2008 sampling round, SW1 was inaccessible and therefore was not sampled. The results are presented in Appendix 2.6.1

Parameters have been compared to the Environmental Quality Standards of EPA document *"Environmental Quality Objectives and Environmental Quality Standards".* The overall results indicated the surface water to be of good quality with all parameters below their respective EQS limits.

2.7 FLORA AND FAUNA

2.7.1 Scope and Methodology

The assessment will be conducted in accordance with *EPA Advice Notes on Current Practice in the Preparation of Environmental Impact Statements* (EPA, 2003) and *Draft Guidelines on the information to be contained in Environmental Impact Statements* (2002).

2.7.2 Desk Study

The desk study comprised the following elements:

- Identification of all designated sites of nature conservation interest within and adjacent to the study area.
- Consultation with the Heritage Division, Dept. of Environment, Heritage and Local Government.
- Consultation with the Eastern Regional Fisheries Board.
- Assessment of fisheries/aquatic value of surface water bodies.
- Review of Ordnance Survey maps and aerial photos where available.
- Review of relevant reports and literature for the areas.

2.7.3 Field Survey

2.7.3.1 Flora

A habitat survey and habitat description was carried out for the site and immediately adjacent habitats. A map of habitats is illustrated in Figure 2.7.1. Habitats were mapped according to *A Guide to Habitats in Ireland* (Fossitt, 2000) and in accordance with *Draft Habitat Survey Guidelines: a Standard Methodology for Habitat Survey and Mapping in Ireland* (Heritage Council, 2002). A site visit was conducted January 9th 2006. The weather conditions were good, cold but bright with no rain. Plant nomenclature followed Webb *et al*., (1996) for vascular plants (excluding grasses) and Hubbard, (1984); for grasses.

2.7.3.2 Fauna

The survey for vertebrate fauna was carried out by means of search within the site. Presence of mammals is indicated principally by their signs, such as dwellings, feeding signs or droppings - though direct observations are also occasionally made. Bird species observed during the survey were recorded.

The field survey was supplemented by an evaluation of relevant literature and existing information e.g. Mullarney *et al*., (1999) for birds and Hayden & Harrington, (2000) for mammals.

Watercourses within the vicinity of the proposed development were identified and an assessment of the fisheries potential was made.

2.7.4 Survey Limitations

There were seasonal constraints with respect to the flora component of the survey. The survey was carried out outside the growing season and the optimal period for habitat surveys, which is generally regarded as being from April to September inclusive (JNCC, 2003). There were some seasonal constraints with respect to the general fauna survey as breeding bird species would not be present.

2.7.5 Receiving Environment

2.7.5.1 Nature Conservation Designations

A review of the National Parks and Wildlife (NPWS), database (www.heritagedata.ie) showed that there are two designated sites within a 5km radius of the proposed site. These are listed in the table 2.7.1 below and a full site synopsis is given in Appendix 2.7.1.

Table 2.7.1 National Parks and Wildlife Database

Site	Designation	Site Code	Description	Approx. distance to study area
2249 00730	The Murrough	SAC pNHA	A coastal wetland complex	2.3 km east
00718	The Devil's Glen	pNHA	A broadleaved woodland dominated by oak	4.35 km south-west

2.7.5.2 Consultation

The Heritage Division, Dept. of Environment, Heritage and Local Government, Development Applications Unit (DAS) and the Eastern Regional Fisheries Board were consulted with respect to the proposed development. No reply has been received to date. Any additional information will be added as an addendum to the final report.

2.7.6 Flora

Five habitats were found on site and described below. These are:

i. Improved agricultural grassland
ii. Hedgerows
iii. Re-colonising bare ground
iv. Tilled land
v. Horticultural land

i. Improved agricultural grassland

This is the most widespread habitat type within the study area. The sward is tightly grazed to approximately 3-4cm by sheep. This habitat type is primarily a grassy sward dominated by perennial rye-grass (*Lolium perenne*), common bent (*Agrostis capillaris*) and yorkshire fog (*Holcus lanatus*).

Broad-leaved herbs include white clover (*Trifolium repens*), dandelion (*Taraxacum* spp.), self-heal (*Prunella vulgaris*), ladies smock (*Cardamine pratensis*), mouse-eared chickweed (*Cerastium fontanum*) and thistles (*Cirsium* spp.). Bryophytes were frequent throughout.

Ecological evaluation

This habitat is widespread within the wider landscape. It is a highly modified habitat with low species diversity and low wildlife value. Consequently it is considered to be of low ecological value.

ii. Hedgerows WL1

Hedgerow habitats are common within the area and define the boundary of field parcels. The dominant species are elder (*Sambucus nigra*), gorse (*Ulex europaeus*), holly (*Ilex aquilinum*) and bramble (*Rubus fruticosa*). Hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) were occasional. The hedgerows were recently cut at the time of visit to 1-1.5m in height and approximately 1m in width. The ground flora is generally species-poor and dominated by grasses. Many of the hedgerows on site support mature trees, particularly sweet chestnut (*Castanea sativa*) and occasionally ash (*Fraxinus excelsior*) and oak (*Quercus robur*). A brief description of the individual hedgerows is given below.

WL1 (a): Heavily cut, in poor condition and dominated by brambles. It grades into woodland to the south of the site.

WL1 (b): Heavily cut and very gappy in places. Several (approx. 10) mature trees line the hedgerow, mostly sweet chestnut with one oak. Some trees have damaged trunks and boughs and with dense ivy cover.

WL1 (c): Running east-west across the site. This hedgerow is tightly cut, largely stock-proof with some gaps and does not support any mature trees.

WL1 (d): Tightly cut, largely stock-proof with some gaps and does not support any mature trees.
WL1 (e): Defines the eastern boundary of the site and lines either side of an access route (lane). Tightly cut, largely stock-proof and supports mature ash trees with dense ivy cover.

Ecological evaluation

Species diversity of these hedgerows is low and typical of the surrounding area. The structure of these hedgerows was also poor. Thick, well managed hedgerows provide valuable habitat and foraging ground for wildlife. They can also act as corridors for the movement of animals. When they become too gappy or too severely maintained, their wildlife value is diminished. The hedgerows on site are heavily cut and quite gappy in places and therefore they are considered to be of moderate to low, local ecological value. Because of its proximity to the adjacent woodland habitat, WL1 (a) has higher potential to support wildlife.

iii. Re-colonising bare ground

This area appears to have been previously under crop production but has now been left fallow. The area is dominated by ruderal species including willowherb (*Epilobium* spp), ribwort plantain (*Plantago lanceolata*), thistles (*Cirsium* spp), nettles (*Urtica dioica*), ragwort (*Senecio jacobaea*), groundsel (*Senecio vulgaris*) and other herb species found in the improved agricultural grassland.

Ecological evaluation

The species found within this habitat are typical of disturbed areas and may provide foraging opportunity for birds and insects. This habitat is transient in nature and common within the wider landscape. It is considered to be of low ecological value.

iv. Tilled land

An area of recently tilled land lies adjacent to the re-colonising bare ground. No crop was distinguishable at the time of visit. No species were found here.

Conservation evaluation

This habitat is of minimal ecological value.

v. *Horticultural land*

This habitat consisted of a vegetable crop (*Crucifer* family) with occasional ruderal species similar to these found in the tilled land interspersed throughout.

Ecological evaluation

This habitat is dominated by one species and is of minimal ecological value.

2.7.6.1 Adjacent Habitats

The majority of the site is surrounded by improved agricultural grassland, which is of low ecological value. Mixed conifer woodland with some broadleaved mixed through occurs just beyond the site boundary to the south. The boundary hedgerow grades gradually into this habitat. A small stream (Kilmartin stream)_runs through this area and is shown on Figure 2.7.1 (FW2 Depositing lowland rivers). The ruins of an old church were found to the north east of the site. These were surrounded by mixed woodland dominated by larch and elder.

2.7.6.2 Overall Assessment – Flora

The proposed site is not covered by any nature conservation designations. None of the habitats are considered rare or unique to this particular location. The habitats described are widespread and of moderate to low ecological value. The site showed a poor floral diversity. The hedgerow to the south (WL1 (a)) and adjoining woodland and stream provide the moderate species diversity.

2.7.7 Fauna

2.7.7.1 Mammals

Common species

Due to the lack of good quality habitat on site, the mammalian fauna on site is restricted and is likely to be limited to house mouse (*Mus (musculus) domesticus*), brown rat (*Rattus norvegicus),* pygmy shrew (*Sorex minutus),* wood mouse (*Apodemus sylvaticus)*, rabbit (*Oryctolagus cuniculus*) and red fox (*Vulpes vulpes*). The hedgehog (*Erinaceous europaeus)* is also likely to be present in adjacent habitats. There were no signs of these on site though this species does occur in similar areas

Bats

An assessment of the bat roosts potential of the site was made during the visit. Limited potential exists for roosting bats on the site. A number of ash and sweet chestnut trees had good ivy cover and crevices that may provide potential for roosting (WL (b) and (e)). Given the relatively poor species composition and structure of the hedgerows, their potential as commuting and foraging habitat is limited. The adjacent church ruins may also provide roosting habitat for bats.

Other species

Signs of badger (*Meles meles)* foraging were observed on site and were limited to one area. No signs of badger setts were found. The woodland area adjacent to the south of the site may provide some potential for shelter and foraging.

There are no significant watercourses on site and therefore otters (*Lutra lutra*) are unlikely ever to occur on this site. Adjacent watercourses have limited potential to support this species.

Protection of Mammals

A number of mammalian species, including bats, otters and badgers, are protected under the Wildlife Act, 1976, and (Amendment), 2000 and it is therefore an offence to wilfully interfere with or destroy the breeding or resting place of these species, though there are exemptions under the Wildlife Act for road and housing developments and other works. The otter is also listed under Annex II and IV of the E.U. Habitats Directive. All bat species are also protected under the E.U. Habitats Directive (Annex IV).

Birds

No species of conservation concern were recorded on site. A number of common bird species were recorded including blackbird (*Turdus merula*), wood pigeon (*Columba palumbus*), robin (*Erithacus rubecula*), wagtail (*Motacilla cinerea*), coal tit (*Parus ater*), magpie (*Pica pica*), rooks (*Corvus frugilegus*) and jackdaw (*Corvus monedula*). Many of these were observed flying to and from the adjoining woodland to the south of the site.

Protection of Birds

Most bird species are protected under the Wildlife Act, 1976, and (Amendment), 2000 except those regarded as pest species, and those considered as game species (where they may be hunted under conditions). It is an offence to interfere with the breeding place of protected species, though there are exemptions for developments such as road construction and building works. For the generally common species, best practice provision is made to limit the season for removal of vegetation and nesting habitat. Provisions of section 46 of the Wildlife (Amendment) Act, 2000 require that disturbance to vegetation is excluded during the period 1st March to 31st August (with exemptions as above).

Amphibians and Reptiles

There are no permanent pools or ponds on site that are suitable for frogs (*Rana temporaria*) or newts (*Triturus vulgaris*). Pasture grasslands provide forage for frogs and this species may be expected on occasion. There is also a lack of suitable habitat for the common lizard (*Lacerta vivipara*) although they are frequent in the wider countryside and may potentially be found here on occasion.

Protection of Reptiles and Amphibians

The common lizard, the common frog and the smooth newt are all protected species under the Wildlife Act, 1976, and (Amendment), 2000. It is standard good practice to ensure protection of breeding sites where these have been identified and to make provision for maintenance of the species if possible.

Fisheries and water quality

Two water courses were found in the vicinity of the site and are marked on Figure 2.7.1. Both are low order tributaries of the River Vartry. No information was available on the water quality of either stream from the EPA web site (www.epa.ie/rivermap/data/rivmaptop.html).

The stream to the north (Coynes Cross stream) is approximately 300m away from the site at its closest point. Most of its course in the vicinity of the site is through a channel at the foot of a hedgerow. At one point, it flows openly across a lane and re-enters the channel bordering a hedgerow. From here, it appeared to continue its course as a drainage ditch before entering a small tributary of the River Vartry, which is a sea and brown trout fishery.

The stream to the south (Kilmartin stream) passes adjacent to the site. It flows through a small ravine dominated by mixed broadleaved/conifer woodland. This stream continues its course east, partly as a drainage ditch, before entering a small tributary of the River Vartry.

These streams appear to have very limited fisheries potential but may have some capacity as a spawning ground for brown trout populations.

2.7.7.2 Overall Assessment – Fauna

The habitats on site are relatively poor and consequently the fauna diversity of the site was low. No protected faunal species were found on site. Bat roosts may occur within mature or ivy-covered trees or tree crevices on site. A number of species such as badger or bat may utilise the site and the surrounding land for foraging.

2.7.7.3 Characteristics of the proposal

The proposed development area measures some 23 ha and forms a deep valley running north to south through the project area. It is planned to recover this area by importing clean clays and soils and infilling the valley depression. The project area runs approximately 700m in a north south direction and about 300m wide (east to west). The height ranges from a low of some 35mOD at the base of the valley to a high point of some 65mOD at the north western corner of the project area. It is envisaged to fill in this depression and form a relatively flat or slightly dome shaped field. This will provide a relatively level field with the existing natural surface levels at the eastern and western sides of the project area. However, there will be relatively steep slopes at the northern and southern sides of the fill area. The final level will be seeded and grassed and hedgerow planting carried out at the site in accordance with the ecological and landscape requirements.

2.7.7.4 Potential impacts of the proposal

- Direct habitat loss: the removal/destruction of habitats. The proposed development will result in the loss of most of the habitats on site and their associated fauna.

- Indirect habitat changes. This occurs when a habitat not directly affected through development is altered as a consequence of the development through effects such as disturbance, drainage or pollution. The adjacent watercourses may be affected through run off from the site. Any impact on these streams would eventually impact on the River Vartry which is a sea and brown trout fishery. Therefore all preventive measures should be taken to ensure that there is no impact to these watercourses through sedimentation or contamination. This is particularly important for the stream to the south because of its proximity to the site. Fauna will be disturbed during the proposed development.

- Habitat fragmentation. This involves the break up of a habitat by a development, resulting in one or more smaller habitat areas. Species that use linear features such as hedgerows for movement are also highly susceptible to the effects of habitat fragmentation. The loss of connecting hedgerows and mature trees may result in the loss of commuting and foraging habitats for wildlife.

2.8 HUMAN BEINGS

In accordance with the EPA 'Advice Notes on Current Practice (in the preparation of an Environmental Impact Statements'), 2003, this chapter has considered the 'existence, activities and well being of people' with respect to 'topics which are manifested in the environment such as new land uses, more buildings or greater emissions'. Issues examined in this section include:

- Socio economics (Human beings baseline study)
- Economic Activity
- Social Consideration
- Land Use
- Health and Safety
- Employment

2.8.1 Land Use

Land use at and in the broader vicinity of the site is given primarily to agriculture. Much of the agricultural usage is comprised of grasslands for sheep and cattle grazing with some arable farming also practised in the region. The western side of the site is adjacent to the Coynes Cross road and the N11 motorway. In between the Coynes Cross road and the N11 motorway there is an area that has been backfilled in previously with clay and stones as part of the N11 development. Coynes Cross is located to the north and houses a few of the local residences.

2.8.2 Housing Density

The Kilmartin site is located in a rural area about 5 km south of Newtownmountkennedy and 4 km north of Ashford. The local housing comprises farms and single-family detached bungalows and houses. The nearest house to the site, the Norse Family home is located near to the site boundary, c150m north of the proposed area (footprint). The nearest town land is Coynes Cross consisting of mainly residential homes.

Other population centres in the area include the villages of Ashford (4 km south of the site) and Newtownmountkennedy (5 km north of the site). Wicklow town is located c.8km from the site with Dublin city c.44km north of the site.

2.8.3 Population Statistics

The site is situated in the south east of the Newcastle District Electoral Division (DED). Table 2.8.1 shows the change in population figures for Wicklow County and relevant areas from 1996 to 2002.

Table 2.8.1: Population Statistics

District	1996	2002	Male 2002	Female 2002	Population difference	Percentage
Wicklow County	102,683	114,676	56,800	57,876	11,993	11.7%
Wicklow Urban Area	6,416	7007	3,437	3,570	591	9.2%
Newcastle upper	1,636	1,820	937	883	184	11.2%
Newcastle Lower	3,108	3,258	1,686	1,572	150	4.8%

2.8.4 Employment

Some local employment is derived from agricultural activities in this essentially rural area. However, much employment is provided in the local towns of Newtownmountkennedy, Ashford, Newcastle, Rathnew and Wicklow. In addition, this part of County Wicklow is well within the commuter belt of Dublin and it is expected that a significant percentage of the population of the DED find employment in the Greater Dublin area.

Human health and Safety

There are no aspects of the existing environment that provide any extraordinary issues with regard to human health and safety.

Other Potential Impacts

The potential impacts on human beings derived from traffic, noise, air and water quality are defined elsewhere in this report.

2.9 ROADS AND TRAFFIC

2.9.1 Introduction

This section of the EIS assesses the likely implications for traffic as resulting from the proposed development at Kilmartin, Co Wicklow.

The proposed development will include on-site staff car parking, access road and ancillary site works. The site will take in clean clay soils for the restoration programme.

The proposed access to the development is by means of a new priority junction with the newly constructed Coynes Cross Road, approximately 300m away from the new Cullenmore Interchange of the N11. The Coynes Cross Road, The Cullenmore Interchange and the "Southbound Off" & "Northbound On" slip roads have been assessed in terms of geometric and structural capacity.

The traffic assessment examined the existing traffic behaviour patterns and then predicted future patterns with the Proposed Development in place.

The following have been considered as part of the assessment:

- Effect of the Proposed Development on the Coynes Cross Road in the immediate vicinity of the development.
- Effect of the Proposed Development on the Cullenmore Interchange.
- Effect of the Proposed Development on the N11 Slip Roads.

2.9.2 Background

2.9.2.1 Site Location

The site is located to the south of Coynes Cross on a newly constructed local road. This road connects Coynes Cross with the newly constructed Cullenmore Interchange on the N11 national road. The site location is shown in Figure 2.9.1. It is proposed to access the development by means of a new priority junction onto the Coynes Cross road.

2.9.2.2 Project Description

It is proposed to backfill a natural valley with clean clays and soils to restore the land to agricultural usage. It is anticipated that the site will have a capacity of approximately 4.23 million tonnes of clay materials (based on void space of 2,350 000m^3 and clay density of 1.8 tonnes per m^3).

2.9.3 Existing Road (Traffic) Assessment

Existing Peak Hour Manual traffic counts were undertaken on Tuesday, 21st February 2006 at the two roundabouts which form the Cullenmore Interchange.

The results have been expanded using the factors described in the RT201 "Expansion Factors for Short Period Traffic Counts". The Peak Hour counts have been expanded to give an Annual Average Daily Traffic (AADT).

Table 2.9.1 – RFC Results

Road	AADT
Coynes Cross Road	1200
N11 Northbound On Slip Road	300
N11 Southbound Off Slip Road	430

The AM peak hour for the junctions was deduced to be between 07.45 and 08.45 hours and the PM peak to be between 16:30 and 17:30 hours. The traffic counts for these hours are shown in Figures 2.9.2 and 2.9.3.

Coynes Cross Road

The Coynes Cross Road at the proposed junction location has an average carriageway width of 7.5m with 1-2m soft verges on both sides. There is a continuous centreline with yellow edge markings on both sides of the road. There are no hard shoulders. The speed limit is 80kph and the observed speeds are in this order. The existing AADT for this road has been deduced from the traffic data gathered as 1200.

Cullenmore Interchange

The Cullenmore interchange is a newly constructed "Dumb-Bell" interchange made up of 2 by 50m diameter roundabouts connected via a link road under the N11 Dual Carriageway.

N11 Slip Roads

The Cullenmore Interchange is linked to the N11 by slip roads. The Northbound On Slip and the Southbound off slip are to be assessed. These are one-way link roads with a 4.0m wide carriageway with a 0.5m hard strip and a 1.5m hard shoulder. The existing AADTs for the slip roads are 300/430 (Northbound On/Southbound Off)

2.9.3.1 Accident Data

Accident data available from the NRA database is only up to 2003, hence the newly constructed Cullenmore Interchange and Coynes Cross road would not be represented by this data base.

2.9.4 Proposed development

2.9.4.1 Site Entrance Layout

Access to the proposed development will be via a new priority junction. The junction will link a new 6m wide access road to the Coynes Cross Road with 15m radii. The priority will be controlled by a Yield system of signs and road markings. Visibility to the left and right will be provided by 4.5 x 160m visibility splays appropriate to the 80 kph speed limit. The visibility splay to the left will require slight re-alignment of the existing fence line on the opposite side of the road. This fence is in the control of the developer and will result in approximately 65m of fence being moved away from the road by 3.5m, refer to Figure 2.9.14.

2.9.4.2 Site Operation and Trip Generation

The traffic generation for the development was based on the projected number of staff intended to work at the site and on the number of trucks that are likely to be importing material to the site. It is intended that the site will operate with 250 truck deliveries per day, however this will reduce to 200 truck deliveries per day during the summer months of July and August. For the purpose of analysis a figure of 300 trucks per day has been used as it represents the “worst case scenario”.

The traffic generation was deduced to be 30 HGV in and out in the AM and PM peak hours. 5 cars arriving in the AM and 5 cars departing in the PM peak hours have also been included. The analysis has been carried out on the assumption that all traffic will exit the site and join the N11 northbound for the Dublin Area. However, there may be trips onto the N11 southbound, but this analysis will generate the worst case scenario. The Development generated traffic is shown on Figures 14.8 & 14.9.

For the purposes of this section it is assumed that the traffic generated by the development when open will be at 100% saturation and that the trip rate generated by the development will not be subject to growth factors.

The total capacity of the development is approximately 4.23 million tonnes. Using the operation profile as described above (300/200 trucks per day) and assuming a 5½ day week, approximately 1,500,000 tonnes will be imported per year; this would give the site a life expectancy of less than 3 years.

2.9.4.3 Construction Traffic

Construction works on the site will be very limited. As a consequence traffic generated from such works would not compare to traffic in the operational phase and subsequently the impacts of the Operational phase have been deemed to outweigh those of the Construction phase.

2.9.5 Traffic Growth

This section assesses the impacts of the proposed development on the 2007 (Opening year) traffic volumes. The report will also assess the likely impacts in the 'Design Year', which is taken at 15 years after opening.

For this reason the traffic volumes on the existing network for 2006 (current year), need to be expanded to 2007 and 2022. These factors are derived using traffic growth predictions in the "National Roads Authority's' Future Traffic Forecasts 2002-2040," report published in August 2003. The traffic generated by the proposed development is not subject to growth factors, as there are currently no plans to expand the facility once operational.

From the table "Forecast indices for vehicle kilometres of travel by vehicle category and road type, 2002-2040", expansion factors for each vehicle category can be obtained.

This section uses the following expansion factors:

2006 to 2007, a growth factor of 1.04 for Cars & LGV's and 1.03 for HGV's is used.

2006 to 2022, a growth factor of 1.42 for Cars & LGV's and 1.47 for HGV's is used.

These factors have been used to determine the AM and PM peak hour movements for 2007, and for 2022, the design year. The growth figures for the traffic are shown in Figures 2.9.4-2.9.7 & 2.9.9-2.9.13.

2.9.6 Traffic Assessment

2.9.6.1 Peak Hour Flows

Peak Hour flows have been determined for the proposed access junction. The opening and design year flows with the development traffic are shown in Figures 2.9.9 to 2.9.13. These figures are used to determine the capacity of the proposed junction.

To assess the capacity of the junctions and the impact likely to be generated by the proposed development, the software packages Arcady and PiCady were used. The junction capacities for 2007 and 2022, with the development in place, have been determined and the "Reference Flow to Capacity Ratio (RFC)," for the junctions are reported.

An RFC of 0.75 or less is desirable in rural areas, for a junction to be considered to be working efficiently. It should be noted, however, that if the RFC is between 0.75 and 1.0 there is still spare capacity at the junction.

2.9.6.2 Junction Assessment

The existing junctions and proposed development access were assessed with the development generated flows for the AM and PM peak hours for 2007 and 2022. Table 2.9.2 shows the maximum RFC results for the existing junction as determined by PiCady.

Table 2.9.2 – RFC Results

Scenario	Max RFC Cullenmore West	Max RFC Cullenmore East	Max RFC Development Access
2007 AM peak Base Flow + Development	0.050	0.061	0.101
2007 PM peak Base Flow + Development	0.057	0.075	0.093
2022 AM peak Base Flow + Development	0.053	0.068	0.100
2022 PM peak Base Flow + Development	0.061	0.085	0.094

As Table 2.9.2 shows, the RFC levels for the all junction are well below the desired 0.75 RFC comfort level for all scenarios. This indicates that all the junctions will operate well within capacity with the proposed development in place.

2.9.7 Geometric Capacity of Roads

The newly constructed Coynes Cross Road has a width of 7.5m. According to RT 180, a road of this type would have a capacity of approximately 1000 vehicle per hour (both Directions) for LOS C. Referring to Fig 2.9.13 (2022 PM peak with Development), the likely traffic would be 146 vehicles in the peak hour. This is obviously much less than the capacity of 1000.

The slip roads of the interchange have widths of 4.0m. These slips are one way, so according to RT 180, a road of 7.5m would have a capacity of approximately 1000 vehicle per hour (both Directions) for LOS C. If we were to consider the slip roads as one half of this 2-way 7.5m road we could deduce a capacity in the order of 500 vehicles per hour for LOS C. Referring to Fig 2.9.13 (2022 PM peak with Development), the likely traffic on the slip roads would be 58 in the peak hour. This is obviously much less than the capacity of 500.

2.9.8 Structural Capacity of Roads

At the request of Wicklow County Council, the structural capacity of the Coynes Cross Road and the N11 Slip Roads are to be assessed. The pavement thickness details for the new roads have been provided by Wicklow County Council and are summarised below in table 2.9.3.

Table 2.9.3 – Pavement Construction

Pavement Layer	Type A mm	Type C mm
HRA Wearing Course	45	45
DBM Base Course	55	55
DBM Road Base	200	70
Total Bituminous Thickness	**300**	**170**

Pavement Type A was used for the N11 mainline and the slip roads at the Cullenmore Interchange. Pavement Type C was used for the construction of the Roundabouts and the Coynes Cross Road.

The NRA Design Manual for Roads and Bridges (DMRB) is the accepted method of designing road pavements given traffic loadings. A reverse engineering exercise has been carried out to determine the capacity of each of the Pavement Types used during the construction of the Cullenmore interchange.

Two documents from Volume 7 of the DMRB have been used in this exercise. HD26/94 is used to relate the overall thickness of bituminous material to a parameter “million standard axles (m.s.a.)”. Fig 2.1 of

HD 26/94 suggests that 15 m.s.a. and 1 m.s.a. are representative of Pavement Types A and C respectively.

HD 24/96 is used to relate m.s.a. to the number of Commercial Vehicle per day cv/d in one direction for each. Fig 2.1 is used for Pavement Design of 20 years design life. The exercise found that Pavement Types A & C have capacity of 700 & 50 cv/d in one direction for a 20 year pavement design.

This suggests that the slip roads (Type A) have a whole life capacity of over 5 million commercial vehicles, where as the Roundabouts and Coynes Cross Road have a whole life capacity of approximately 365,000 commercial vehicles.

Based on the capacity of the proposed site as 4.23 million tonnes, and an average truck load of 20 tonnes, total commercial movements in one direction would be approximately 225,000. These results are summarised in Table 2.9.4 below.

Table 2.9.4 – Pavement Capacity

Pavement Layer	Pavement Type	Capacity No (1000s)	Development No (1000s)
N11 Northbound On Slip	A	5,000	225
N11 Southbound Off Slip	A	5,000	225
Cullenmore Interchange	C	365	225
Coynes Cross Road	C	365	225

The table above compares the structural capacity of the newly constructed roads with the intended generated traffic from the proposed development. As can be seen there is massive spare capacity on the slip roads and significant spare capacity on the interchange and Coynes Cross Road.

2.9.9 Vulnerable Road Users

The nature of development and its location in relation to Kilmartin means that there is unlikely to be a significant level of pedestrians or cyclists passing the site. Facilities have not been provided on the newly constructed Coynes Cross Road or the Cullenmore Interchange. Subsequently no additional facilities have been considered necessary.

2.10 LANDSCAPE AND VISUAL ASSESSMENT

2.10.1 Scope and Methodology

The methodology is based on the *EPA Advice Notes on Current Practice in the Preparation of Environmental Impact Statements* (EPA, 1995) and EPA *Waste Licensing Guidance Notes (*EPA, 2000).

The assessment involves a description of the visibility of the development and an assessment of the development on the landscape character of the area.

The visibility of the site is assessed in terms of its visibility from a number of features including roads, residences, designated tourism routes and viewing points.

The landscape character of the area is defined by a number of both natural and man-made features including topography and drainage, landform, land use, habitats, enclosures, built environment and traffic.

The assessment involved a desk study comprising the following elements:

- A review of the Wicklow County Council Development Plan for 2006 to 2011
- A review of relevant Ordnance Survey maps
- A review of relevant literature and reports

A field study was conducted on 14th February 2006 to assess land use, landscape character, and visibility.

A photographic record was also undertaken. Photo-plates are contained in Appendix 2.10.1 and their location on Figure 2.10.1

2.10.2 Landscape Character

The general landscape character of the area is one of hills and valleys with steep slopes at and to the west of the site with rolling fields to the east towards the coast.

The site itself ranges from some 35mOD at the base of the valley to a high point of 65mOD in the northwest of the site.

There is a hill at 164mOD located about 1km to the west of the N11 in the townland of Courtfoyle.

ESB transmission lines run north south along the western boundary of the site and through part of the northwestern corner of the site. Another transmission line runs through the centre of the site in an east/westerly direction. The N11 dual carriageway runs north south about 100m to the west of the site

and the Cullenmore interchange provides substantial road infrastructure immediately to the southwest of the site (see Figure 2.10.1 and Appendix 2.10.1 for photos).

Land use at and in the broader vicinity of the site is given primarily to agriculture. Some mainly coniferous forestry is present immediately to the south of the site with some minor forestry to the west of the N11 dual carriageway.

Much of the agricultural usage is comprised of grasslands for sheep and cattle grazing with some arable farming also practised in the region. There is mature hedgerow development along field boundaries in the region generally and this provides strong vegetative relief within the area.

2.10.3 Visibility

The valley shaped physiography of the site is such that there are very limited views into the site from most directions. The site cannot be seen from the east or west unless standing at the very site boundaries and looking down into the site. Views from the south are limited to the high ground in the fields immediately to the south of the southern boundary and also from parts of the western suburbs of Wicklow town some 8km distant. Views from the north are limited to a few areas of high ground in the townlands of Ballyvolan, Timore and Kiltimon in excess of 1km distant.

The vast majority of local houses within 1km of the site including those in the Coynes Cross area and Cullenmore have no views into the site due to the unique physiography of the site and adjoining ridges, high ground etc. Some houses immediately to the north of the site along the L-5064 road have limited views of the very northern part of the proposed site. These include the Norse family home and their two immediate neighbours to the west. There are a few views of the site from isolated houses located on high ground to the north of the site in Ballvolan, Timore and Kiltimon though these are approximately 1km distant.

2.10.4 Landscape Planning

A review of the County Wicklow Development Plan 2004 to 2010 states that with regard to agricultural and rural enterprise the goal of the Wicklow County is to attempt to try and maintain rural populations by diversifying the local economy and promoting local employment within these areas.

2.10.4.1 Protected Views and Aspects

There are no protected views or aspects at or in the vicinity of the site.

There are no designated routes or walkways at or in the vicinity of the site and no views of the site from walkways.

2.10.5 Photographic Record

The attached photo-plates (Appendix 2.10.1) provide a photographic record of the proposed site, surrounding areas, landscape character, views and features. The photographs were taken using a manual camera and 35mm film. No zoom or wide-angle lens was used.

2.11 CULTURAL HERITAGE

An archaeological assessment was undertaken within the area prior to the construction of the N11 dual carriageway between Newtownmountkennedy and Ballynabarny and the Kilmartin site area was included in the assessment (carried out by Wicklow County Council as part of the EIS for the N11 project). The results for the Kilmartin area indicated that there were no sites of archaeological interest on the proposed footprint of the project area. There are church ruins (SMR19:18) located on the property to the northeast of the footprint. Other sites such as a ringfort and Fulacht Fiadh's are located further north from the site, along with circular earthworks and a mound located further south of the property. The locations of these sites are shown in Figure 2.11.1 and details are provided on Table 2.11.1 and 2.11.2 below.

Table 2.11.1 Archaeological Features within the Rathmore Area

Site No.	Sheet/Plan/ Trace	Townland	Description
17	19/14	Rathmore	Track way
18	19/14	Rathmore	Linear Earthwork
19	19/14	Rathmore	Circular Earthwork
20	19/14	Rathmore	Mound

Table 2.11.2 Archaeological Features within the Kilmartin Area

Site Ref.	SMR No.	Sheet/Plan/ Trace	Nat. Grid Ref	Town land	Description
R	19:16	19/10/2	32848 20165	Kilmartin	Ringfort
BB	19:17	19/10/2	32880 20173	Ballyvolan Lower	Castle & Earthworks
CC	--	19/6/5	32864 20184	Ballyvolan Lower	Souterrain Site
DD	19:18	19/10/2	32880 20143	Kilmartin	Church (ruins)
EE	--	19/10/3	32917 20164	Kilmartin	Fulacht Fiadh
FF	--	19/10/2	32879 20168	Kilmartin	Fulacht Fiadh

2.12 MATERIAL ASSETS

2.12.1 Introduction

The Kilmartin site is located just off the N11 close to Coynes Cross, Co. Wicklow. This is an agricultural area with the N11 running north to south about 100m from the western boundary of the site.

2.12.2 Land Use

The site is linked to the main Dublin Wexford route, the N11, which runs close to the western edge of the site. The surrounding environment is dominated by agricultural land, forestry and some residential. There is no significant industry, commercial or retail within 1 km of the site.

The site and surrounds are chiefly given to agriculture with grasslands predominating and some tillage farming. There are some areas of forestry in the fields immediately to the south of the site and also on high ground to the southwest of the N11.

2.12.3 Housing

There is a cluster of residential development at Coynes Cross about 400m to the northwest of the site. Other residential development comprises low density ribbon development along the county and regional roads including the Coynes Cross road and the L-5064. There are approximately 30 dwellings located within 500 m of the proposed site.

2.12.4 Infrastructure

The area is well served with road infrastructure. The N11 dual carriageway runs north to south about 100m to the west of the site. The Cullenmore interchange is located adjacent to the southwestern corner of the site and this is a major interchange that allows access to and from the N11 to the site, Coynes Cross, Cullenmore, the old N11 road, the L-5064 road (linking to the R761 Newcastle-Rathnew regional road) and the L-5563 road.

The Dublin Wexford railway line runs north south about 2.5 km to the east of the site.

ESB transmission lines run north south along the western boundary of the site and through part of the northern side of the site. A second set of ESB lines runs east to west across the centre of the site. The Location of all ESB lines in and near the site is shown in Figure 2.12.1.

The area immediately to the west of the site, between the site and the N11 is owned by the applicants and comprises an area that was previously backfilled in with clays and stones. This was carried out as part of the construction of the N11 and with the agreement of the applicants.

There are no known quarries or gravel pits within 500m of the site.

2.12.5 Tourism

On a regional scale there are several tourism and leisure amenities located in the region including Powers Court, Glendalough, the Wicklow Way, Wicklow Gaol and Brittas Bay Beach among many others. However, there are no significant tourist attractions in the locality.

SECTION 3

3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

3.1 SITE DESIGN

The proposed development includes for the restoration of a deep sided valley by backfilling with clean clays, soils and stones and the associated infrastructural and operational components. The principal elements of the development will be described in the following Sections and these are outlined in Figure 3.1.1 and Drawings CE0456-08-1-3A to Drawing CE04561-08-10A

3.1.1 Materials Reception Area

3.1.1.1 Site Roads, Parking and Hard-standings

The internal road network is detailed in Figure 2.9.1 and shown in detail in Drawing CE04561-08-1-3A. The roads and hard-standings within the site property will be constructed to the following different specifications;

- The main internal road which leads from the site entrance gate to the administration area will comprise a minimum 100mm of hot rolled asphalt on circa 400mm sub-base of road making material (Clause 804).

- Haul roads will be constructed from the administration area to the backfill areas. These will be constructed of hardcore material sourced from incoming pre segregated C&D waste loads.

3.1.1.2 Hard-standing Areas

Hard-standing areas will be constructed adjacent to the administration building and used for parking and marshalling of trucks. All hard-standings adjacent to the administration buildings and the main internal road will be drained to the surface water drainage system. Run-off will be directed to a silt trap, oil interceptor and discharged to a soak pit to be constructed on site. Layout of the drainage system of the hard-standing areas is given on Drawing CE04561-08-1-3A and Drawing CE04561-08-3A

3.1.1.3 Wheel Cleaning System and Weighbridge

A wheel cleaning system will be constructed along the main site access road and to the north of the site office. All trucks exiting the site will be required to pass through the system. The wheel cleaning system will be designed in accordance with Local Authority requirements and will be effective at removing mud from the wheels of trucks using and exiting the site. Drainage from the system will be directed to the silt trap, oil interceptor and soak pit. Silt cleaned out of the system will be transported for recovery at the active backfilling area.

A weighbridge will be constructed near the site office and this will be used to weigh incoming loads and any outgoing loads of unsuitable materials should that situation arise. The weighbridge will be a

proprietary system and will be calibrated in accordance with the manufacturers guidelines. All incoming loads will be recorded and documented in the site office.

3.1.1.4 Waste Quarantine & Waste Inspection Areas

Waste quarantine and inspection areas will be constructed at the locations given on Drawing CE04561-08-3A and CE04561-08-6A. The waste inspection area will be defined by a 1.5 m high concrete wall and concrete base with a low concrete ramp at the entrance. The surface will be sloped inward to a sump for collecting rainwater and pumping out to a road tanker.

All loads entering the facility will be visually inspected at the check in point at the site office where this is physically possible. More thorough inspections will be carried out at the tipping area. At the discretion of the site manager, suspect loads will be tipped in the waste inspection area and examined in detail. Rejected loads will be removed from the site by the haulier back to the site of origin or to an approved facility or stored in the waste quarantine area. Compliant loads will be reloaded and deposited at the tipping area.

Any loads stored in the waste quarantine area will be stored on a temporary basis and removed at the earliest opportunity to a suitably licensed recycling/disposal facility.

3.1.1.5 Materials Recovery

The restoration programme entails the recovery of clean clays and soils. These will be sourced from construction works, site clearance from housing/industrial developments, road cuttings, trenching works etc. in the Wicklow, South Dublin and North Wexford areas. The restoration programme will be carried out in a series of phases. Phase 1 will start at the northern side where a clay bank will be constructed from west to east. Once completed this will be grassed and seeded at the earliest opportunity. All subsequent filling will take place behind (to the south of) the bank and will move progressively southwards to the southern boundary. This will provide a screening bund to the north and will screen any noise and visual intrusion from dwellings located to the north of the site. The existing natural slopes will act as screens to the east and west and there are no dwellings located to the south where there is also naturally occurring high ground.

3.1.2 Administration

3.1.2.1 Site Accommodation

Site accommodation will consist of modern porta-cabin offices. This will house the site offices, canteen, washrooms, file stores and toilets. A layout of the proposed administration building and the administration area, site manager's office, stores, canteens, toilets and showers are given in Drawing CE04561-08-4A. Toilets will be connected to a septic tank and percolation area.

3.1.2.2 Sheds and Garages

The site will be provided with one steel shipping container as stores for miscellaneous small plant and other equipment. The shipping container will be equipped with a workbench and power tools and equipment. The container will be served with electrical power.

3.1.2.3 Site Services

The site will be connected to mains water, 380v three phase electricity and the telephone network.

The site staff will be equipped with two-way radios. Key staff will be contactable by mobile telephones.

3.1.2.4 Sewerage and Surface Water Infrastructure

Sewage and wash water will be generated in the administration building only and will be sewered using 150mm diameter PVC pipework to a septic tank and percolation area. The tank and percolation area will be designed in accordance with the EPA Wastewater Treatment Manual "Treatment Systems for Small Communities, Business, Leisure Centres and Hotels".

It is planned that there will be 8 to 10 full time staff on site and the sewage systems will be designed to cater for 20 PE.

The layout of the sewerage infrastructure is given on Drawing CE04561-08-1-3A

Surface water run-off will arise from the following sources:-

- roads
- hardstandings
- roofs
- run-off from the active areas
- run-off from the undeveloped areas
- run-off from the finished areas
- run-off during construction.

Surface water that arises upgradient of the project footprint (on the high ground to the east and west) will be diverted via open swales to the existing surface watercourses i.e. the small stream located along the southern boundary of the site (referenced here as the Kilmartin stream) and the small stream located to the north of the site (referenced here as the Coynes Cross Stream).

Surface water arising from areas affected by the deposition activities will be controlled by cut off drains which will intercept any run-off from the active part of the site. The cut-off drains will be constructed from east to west across the southern part of the site adjacent and parallel to the Kilmartin stream, and from east to west across the northern part of the site to the north of the proposed footprint. Each of these cut-

off drains will collect any run-off from the active and finished areas of the development and will direct the drainage to settlement lagoons. Each cut-off drain will drain to an individual settlement lagoon system. The lagoons will be designed to allow settlement of solids from the drainage that may arise from site activities and bare soil surfaces. The outfall from the southern lagoon will be directed to the Kilmartin stream. The outfall from the northern lagoon will be directed to the local drainage network that drains to the Coynes Cross stream. Details of these are provided on Drawing CE04561-08-1-3A

- **Fuel and Oil Storage**

Fuel for site plant and equipment will be stored in an oil storage tank located in a contained concrete bund with a minimum capacity of 110% of the fuel tank. The location of the fuel store and bunding are given on Drawing CE04561-08-3A and CE04561-08-8A and the structure will comprise a concrete structure designed in accordance with BS 8007. All pipes and valves associated with the tank will be located within the bund. A concrete apron will be constructed adjacent to the tank and vehicles loading or unloading diesel will park on the concrete apron. The edges of the apron will be ramped to ensure that any oil spillages occurring during loading or unloading will be contained on the concrete apron. Daily inspections of the bund and apron will be carried out and rainwater pumped out as and when required.

The following site plant items will use diesel fuel:

- 3 No. D6 dozer
- 2 No. back-hoe excavator
- 1 No. dump truck
- 1 No. site tractor

It is proposed that fuel be stored on site for the off-road (site) vehicles only. There will be no excise-paid diesel stored on site.

It may be necessary to store small quantities of lubricants and hydraulic oil on-site. These will be stored on a bunded pallet within the plant shed (steel container). Liquids arising in the bunded pallet will be handled in a manner appropriate to their nature.

3.1.2.5 Traffic Control

Traffic accessing the site will do so only from the N11 and local road (Coynes Cross Road). Signs will be placed on the northern and southern approaches to the site entrance identifying the site and its entrance. A site identification sign and a restricted access notice will be placed at the site entrance. Key speed restriction signs will be repeated on the internal road. Site traffic will be limited to 10 km/hr inside the site.

It will be possible to queue a minimum of 10 trucks between the site entrance and the site office

Lighting will be provided along the access and haul roads; around the administration complex and at the active tipping face.

The administration car park will facilitate 16 private vehicles. Signs will be erected along the site road to direct vehicles to appropriate areas and trucks will be directed by the reception clerk.

3.1.2.6 Fire Control

The site will be connected to the public water supply and the fire brigades in surrounding population centres will be advised of the existence of the facility. It is proposed to drill a water well on site to provide a back up water supply for potable uses, site uses and can be used for fire fighting purposes. The phone numbers of the emergency services including fire brigade will be clearly posted adjacent to all phones on site.

The site tractor and a water bowser will also be used to control small fires at the site.

The site administration building will be fitted with smoke alarms and fire extinguishers. Site staff will be trained in use of this equipment.

Any break out of fire will be treated as an emergency. The Wicklow County Fire Service will be contacted in the first instance. Staff will be trained in emergency response procedures and will activate the appropriate standard operating procedure (SOP) without delay.

3.1.3 Restoration Plan

The restoration area will cover approximately 22.6 hectares as detailed in Figure 1.1.3 and Drawing CE04561-08-01A. The restoration project will be conducted in phases, carried out over a number of years.

Phase I

Phase I will consist of the construction of the northern bund or bank of the backfill material. This will be constructed with imported clean clays and soils. Once constructed it will be seeded and grassed at the earliest opportunity. After the northern bank has been constructed all works will be carried out behind, to the south of the bank. This will in effect screen the bulk of further activities from any sensitive receptors located to the north of the site. The bank will provide effective screening for any visual intrusion, noise and to a lesser extent dust generation. The northern slope of the northern bank will be constructed with a maximum slope of 1 in 3. The southern slope of the bank will be gentler than this at 1 in 4 or 1 in 5 to allow for ease of site traffic movements at the active areas.

Phase II

Phase II will consist of the backfilling of the main part of project site in a southerly direction.

Phase III

Phase III will consist of the construction of the southern bank. This will be constructed from east to west across and near to the southern boundary of the site and will be constructed in much the same manner as the northern bank. The southern slope of this bank will have a maximum fall of 1 in 3.

Phase IV

Phase IV of the development will comprise the final capping of the entire site. This will entail placing the final volumes of soil on the top of the backfilled area to ensure that the final proposed contours are reached and that the site is designed with a dome shape to aid the shedding of surface water from the finished surface. This phase will also entail the placing of a layer of topsoil on the surface of the site to provide optimum agricultural ground on a permanent basis. The finished surface will be harrowed, seeded and grassed. Final drainage will be constructed during this phase. Once the entire site has been developed with grass it is planned that the cut-off drains and lagoons will be removed and natural drainage encouraged. This will likely entail the provision of swales around the perimeter of the site draining to either the Kilmartin stream or Coynes Cross stream whichever is the most appropriate.

It is proposed that as the Phases progress that finished areas will be capped, top-soiled and grassed. This will continuously improve the visual aspects and reduce the potential for silt laden runoff from the development as it progresses.

It is not possible to predict exactly the amounts of materials that will be brought to the site on any given day, week or month and this will be dependent on a number of variables in the construction industry such as the level of development going on, the weather, seasonal variations in trade, builders holidays etc. However, it is proposed to be permitted to import up to a maximum of 250 trucks per day of C&D materials from September to June inclusive. It is proposed to reduce this maximum to 200 trucks per day during the months of July and August to provide a reduction in the level of potential impacts to traffic and the local environment during the traditional holiday period. Assuming an overall capacity of 4,230,000 tonnes, 5.5 days a week, 52 weeks a year and 20 tonnes per truck then the following table gives an indication of the likely site life of the development.

Table 3.1.1 Likely Site Life of the Development

Trucks per Day	Annual Intake (tonnes)	Site life (years)
250 (200/day in July and August)	1,380,500	3.06
200	1,144,000	3.7
100	572,000	7.4

3.1.3.1 Construction Schedule and Details

It is proposed that construction would proceed upon the granting of planning permission and a waste licence by the EPA. Assuming these are granted the initial construction phase will entail the construction of the cut-off drains, settlement lagoons, site access road, wheel cleaning system, entrance gate, site

administration building, hardstand area for car parking, steel container store, waste inspection area and waste quarantine area in that order. Once the site infrastructure has been constructed and is operational then the restoration project comprising the backfilling in of the site starting with the northern bank will be initiated.

The cut-off drains will be constructed in the first instance. It is envisaged that these will run the length of southern and northern boundaries and will be about 1m wide and 1 metre deep. They will discharge to a settlement lagoon to be constructed at the lowest points topographically at both the northern and southern ends of the project area. The lagoons will be designed in terms of areal extent and depth to allow suitable residence time for water passing through.

The site administration comprising offices, toilets, canteen, washroom and file store will consist of porta-cabin structure laid on concrete.

The storage container will comprise one forty foot lockable steel container and will be used for storage of tools, equipment, engine oil and lubricants (on containment trays).

The wheel cleaning system will be designed through discussions and in accordance with the requirements of Wicklow County Council. It will be of a type suitable for the adequate removal of mud from the wheels of the trucks.

The roads, paved areas and wheel cleaning system will be connected to a storm drain collection system. This will be directed to a silt trap and oil interceptor prior to discharge to a soak pit to be constructed on site.

The toilets, canteen and washrooms located in the administration building will discharge to a septic tank and percolation area to be constructed on site. These will be designed and constructed in accordance with the EPA Wastewater Treatment Manual “Treatment Systems for Small Communities, Business, Leisure Centres and Hotels”.

The entrance road will be constructed of hot asphalt laid on 400mm sub-base.

The entrance gate will be a steel palisade gate 2.1m high.

The waste inspection bays and waste quarantine area will be constructed of concrete floor, concrete walls on three sides (1.8m high) and a concrete ramp at the entrance. The two waste inspection bays will measure approximately 6m by 3m each and the waste quarantine bay 6m by 6m.

3.1.3.2 Material Requirements

The existing site topographical contours are provided on Drawing 05374C1. Cross sections are provided in Drawing CE04561-08-2A. It is proposed to backfill in the valley and the footprint and proposed final contours are also provided on Drawing 05374C1. The void space has been calculated at approximately

2.35 million $m^{3.}$ Using an estimated density of 1.8 tonnes per $1m^3$ for clays and soils indicates that the amount of material required will be some 4,230,000 tonnes. The existing recovery project operating under waste permit (No. 249) will utilise some 58,000 m^3 (max. tonnage allowed is 130,000 tonnes) of the void space if it runs its full course. While this will have the effect of reducing the overall lifespan of the proposed development it will be a relatively small reduction and the overall void space figures of 2.35 million m^3 (4,230,000 tonnes) are used in all calculations in the EIS to provide a conservative worst case scenario in terms of potential impacts to the environment.

3.1.3.3 Bank Stability

Bi-annual surveys will be carried out on the banks and slopes at the site to assess slope stability. Any visual evidence of instability will be investigated immediately and a topographical survey and analysis will be carried out.

3.1.4 Site Security

Site security will be effected by: -

- The provision of boundary and other fencing.
- The maintenance of the existing perimeter fences and hedgerows.
- Installation of an intruder alarm system in the administration building.
- Monitoring, logging and supervision of all visitors.
- A security gate will be located on the site entrance road at its junction with the Coynes Cross road.
- A CCTV camera will be installed at the site entrance. The need to install additional CCTV cameras will be reviewed during operation.

All defects in any of the above listed infrastructure will be made good by effecting an immediate temporary repair and permanent repair within 72 hours of the detection of the defect.

Every visitor to the site will be required to log in at the site office. This will also include all truck deliveries.

3.1.4.1 Fencing

The site is presently well defined with fencing and mature hedgerows. These will be maintained and repaired as necessary.

3.2 WASTE ACCEPTANCE AND HANDLING

3.2.1 Hours of Operation

The proposed opening hours for materials acceptance at the facility are between 08:00 and 18:30 hrs Monday - Friday and 08:00 to 14:00 hrs Saturday. The site will be closed all day Sundays and bank holidays. There will be pre-opening and post-closure activity on the site from 07:30 to 08:00 and 18:30 to 19:30 in order to prepare the site in the morning and to finish off materials handling and closing the site in the evening. On Saturdays this will be carried out between 07:30 and 08:000 in the morning and from 14:00 to 15:00 in the evening. It is considered that opening for a half day on Saturdays will be essential for the construction industry generally. This is traditionally a time when they tidy up their sites and move stockpiles of clays that have built up during the week and will require an outlet for their clean clays and soils.

3.2.2 Staffing

It is envisaged that there will be a requirement for 8 to 10 staff at the site during the operational phase. This will comprise approximately four machine (dozer/excavator/ truck/tractor) drivers, gate/weighbridge operator, banks man, clerical staff, site foreman and the site manager.

The applicant is agreeable to this arrangement in principle and it is submitted that the costs would be incurred by the applicant in lieu of all other charges by the Local Authority normally levied for this type of operation.

3.2.3 Material Types and Quantities

The following waste types will be accepted on site;

Construction and demolition wastes consisting of clean inert clays and soils, sands, gravels and stones. These will be used in the overall backfilling operation.

A certain amount of hardcore C&D materials consisting of concrete, blocks and bricks will also be used. These will be pre-segregated before they arrive on site and will be used for the construction of site haul roads, hardstanding areas and sub-base for site roads.

No contaminated soils will be accepted at the facility.

No putrescible waste, kitchen waste, domestic waste, food waste, green waste, wood, paper, glass, plastics, textiles or metals will be accepted and only those C&D materials defined above will be accepted.

3.2.4 Acceptance Procedures

Waste destined for the site will be accepted via the main entrance gate where all vehicles will be weighed and registered. Only pre-authorised vehicles will be permitted entry to the site. Site users must have a contract with the facility operators. A register will be maintained on site for every load that arrives. The log will include details of the type and quantity of the materials, the producer, the source, the haulier, the truck registration number, date and time.

Authorised vehicles will be directed to the deposition area.

A site operative will be on duty at the deposition area to direct and control the deposition of clays. There will be three designated deposition/stockpile areas on site. These will include a deposition area for materials destined for backfilling on site, an area for pre-segregated C&D hardcore materials and an area for pre-segregated topsoil material.

When the materials are tipped out they will be given a thorough inspection by the site operative. Should any suspect materials be tipped, the site manager will be informed. The materials will be moved to the waste inspection area for detailed inspection. If the materials are deemed unsuitable they will be reloaded into the truck and sent off site to the producer or deposited in the waste quarantine area. Such wastes will be stored temporarily in the waste quarantine area until such time as they will be exported off site to a suitably licensed facility. The site manager may investigate the matter further and will inform the local authority if he feels that further action is required. Such action may require that any unacceptable waste, and other waste contaminated by it, would be removed to the quarantine area pending removal off site to a suitable facility. Appropriate sanctions, such as prohibition of future deliveries, may be taken against the individuals responsible for the delivery of unacceptable materials.

3.2.5 Materials Handling

It will be a requirement of all carriers that all loads are properly covered to ensure the prevention of windblown dust on the approach roads and within the confines of the site. Only hauliers in possession of a waste collection permit will be allowed to access the site.

Clays will be deposited in the designated tipping area appropriate for the type of waste. There will be three designated areas or stockpiles as detailed in the section above. The stockpiles will be located near to the active tipping face. The designated stockpile areas will not therefore be fixed for the duration of the project but will move in line with the filling sequence.

Materials designated for backfilling will be moved from the stockpile to the active tipping face by dozer. Here it will be deposited, rolled and shaped to conform with the phased approach to the restoration programme.

Pre-segregated C&D hardcore materials to be used on site will be moved by dozer and placed in the appropriate areas to form haul roads around the site.

Pre-segregated topsoil materials will be stockpiled on site. A significant amount of topsoil will be required on site for the final capping phase of the restoration programme and this will be maintained on site. Any excess topsoil will be made available for resale and reuse in the construction industry, landscaping projects etc. Topsoil will be stockpiled to such heights that there will be no deformation to the structure of the soil.

Deposited loads will be moved into place by the site plant (dozers), levelled and shaped accordingly.

Dust control measures may be carried out on the site roads and active areas during very dry and windy periods if fugitive dust emissions are perceived to be an issue. This will be effected by use of the water bowser. It is not expected that dust emissions will be unusually large as the active areas will not differ significantly from that of say a ploughed field which are not uncommon in the area. However, every effort will be taken to minimise dust emissions.

3.2.6 Raw Materials and Energy

Raw materials likely to be used in the operation of the facility will include:

- Diesel, engine oils and lubricants for the site plant and machinery
- Electricity for the site administration building and weighbridge,
- Water for the site administration building, water bowser and wheel cleaning system.

It is difficult to estimate the quantities of these materials that will be used prior to site operation. However, quantities will be logged and can be reported to the local authority after the first three months of operation. It is expected that the site administration office will connect to the mains public water supply. Notwithstanding this it is proposed to install a water well at the site to provide a backup supply for the facility. Every effort will be made to reduce the volumes and quantities of raw materials used at the site.

3.3 ENVIRONMENTAL NUISANCE CONTROLS

3.3.1 General

Operation of the Kilmartin restoration project will be subject to the conditions of a Waste Licence issued by the EPA. These conditions will incorporate controls to minimise or prevent nuisances to the public occurring as a result of the presence or operation of the site. The proposed controls for nuisances are detailed in the Sections below. Any additional controls conditioned as part of the Waste Licence will also be implemented.

3.3.2 Bird Control

Given that the backfill material will consist of clean inert clays it is not expected that bird populations will increase or become a problem and there will be no need for any specific controls for scavenging birds.

3.3.3 Dust Control

Dust will be controlled at the site by the following means:

- A wheel cleaning system will be provided and all haulage vehicles will be required to utilise this facility before exiting the site.
- After passing through the wheel cleaning system, all vehicles will travel along approximately 85 metres of paved road before reaching the public road network. This road will be regularly cleansed of mud and dust should it be required.
- Areas of the project area will be capped and seeded with grass as soon as practicable after completion of filling operations. This will bind the topsoil together and prevent fugitive dust emissions.
- A water bowser will be on standby at the site to control dust nuisance from haul roads, bare stockpiles and active tipping areas.

3.3.4 Roads Cleansing

The Coynes Cross road will be cleansed with a water bowser and/or mechanical brush should it be required. The wheel cleaner will prevent dust and mud build up on the site and external roads.

3.3.5 Vermin Control

It is not expected that vermin such as rodents or insects will be attracted to the site and no special controls for vermin are planned. Should a noticeable increases in rodents be observed then a specialist pest control company will be employed to deal with the problem.

3.4 POTENTIAL ENVIRONMENTAL EMISSIONS

The potential emissions from the proposed facility are discussed under the relevant environmental topics in Sections 2 and 4 of the EIS. This Section is designed to summarise all the potential emissions from the facility.

3.4.1 Air Emissions

The main emissions to air from the development will be as follows:

- *Dust* - primarily consisting of clay particles from the backfilling operation and fugitive emissions from the site haul roads and stockpiled materials.

Minor emissions will include sulphur dioxide and nitrogen oxides from the exhausts of plant and machinery on site as well as waste haulage vehicles.

Aerosols will not be generated or emitted as part of the development.

The potential impacts of these air emissions and the mitigation measures proposed to avoid or reduce the effects on the surrounding environment are described in Section 4.2.

3.4.2 Emissions to Groundwater

An element of rainfall at the existing site percolates into the ground and mixes with the water table. This situation will not change significantly either during or post development. A certain element of rainfall will fall on the restored site and percolate into the groundwater.

There may be a slight reduction in the volumes of rainfall percolating into the groundwater. The restoration programme is designed to provide a slight dome shape to the finished surface levels in order to promote run-off from the restored fields compared to the existing situation where rainfall accumulates in the base of the valley providing soggy conditions. While it is expected that the finished development will reduce the volume of rainfall percolating into the ground it is not expected to cause any significant impact.

There will be no change in the quality of groundwater as the materials proposed for the restoration programme consist of clean inert clays and soils and will not impact on the quality of the percolation water.

The proposed septic tank and percolation area has the potential to impact on groundwater quality. The volumes of effluent generated will be relatively low, approximately 800 litres per day (based on 10 No. staff at 80l/hd/day for a 12 hr day) equivalent to approximately 4 PE (similar to an average dwelling) per

day. The effluent will be treated in a septic tank and percolation area both of which will be designed in accordance with the EPA Wastewater Treatment Manual "Treatment Systems for Small Communities, Business, Leisure Centres and Hotels".

The surface water run-off from the access road, car parking, hard paved areas and any discharge from the wheel cleaning system will be collected in the designed site drainage system and directed via a silt trap and oil interceptor to a soak pit to be constructed on site. This will essentially comprise clean rainfall and will be treated in the silt trap and interceptor prior to discharge to groundwater via the soak-pit.

It is considered that given these conditions and mitigation measures that emissions to groundwater from the development will not have any significant impact on groundwater flow or quality

3.4.3 Emissions to Surface Water

Surface water arising from areas affected by the deposition activities will be controlled by collection drains which will collect any run-off from the active part of the site. The collection drains will be constructed from east to west across the southern part of the site adjacent and parallel to the Kilmartin stream, and from east to west across the northern part of the site to the north of the proposed footprint. Each of these collection drains will collect any run-off from the development area and will direct the drainage to settlement lagoons. Each collection drain will drain to an individual settlement lagoon system. The lagoons will be designed to allow settlement of solids from the drainage that may arise from site activities and bare soil surfaces. The outfall from the southern lagoon will be directed to the Kilmartin stream. The outfall from the northern lagoon will be directed to the local drainage network that drains to the Coynes Cross stream. Details of these are provided on Drawing CE04561-08-1-3A

These mitigation works will ensure no significant impact of the site emissions to surface water.

3.4.4 Noise Emissions

The main noise emissions from the development will be from the following sources:

- Traffic – haulage trucks delivering loads to the site
- Site Machinery.

Details of these emissions are presented in Section 4.3 and mitigation measures are proposed to avoid or reduce the noise related impacts. Predictions made as part of this study suggest that a worse case scenario of a likely increase of 2dB(A) during operational phase in LAeq noise levels at the nearest noise sensitive receptor .

The nearest sensitive receptor is a minimum 250 m distant from the nearest site works. Phase I of the development will entail the construction of the northern bank. After this is constructed the bulk of the site

activities will be carried out inside the bowl shaped valley with effective noise screens on all sides including the natural valley sides to the east and west, the natural high ground to the south and the constructed clay bank to the north. This will screen noise from the site machinery and tipping of soils for the bulk of the duration of the project. When the deposited material rises to the natural ground levels and the final capping layer is being completed then the site noise emissions will not benefit from this screening. However, the final capping phase will be temporary in nature and the works are sufficiently distant from the nearest sensitive receptors that there will not be a significant impact on the receptors.

Trucks entering and exiting the site travel along the N11 and then onto the Coynes Cross Road and then to the site. The trucks will pass along some 300 m of the Coynes Cross road before entering the site. They will not pass by any dwelling along the N11 or Coynes Cross road. The site entrance is located some 250m from the nearest dwelling. It is considered that site related traffic will have minimal impact on the local environment in terms of noise.

3.5 ENVIRONMENTAL MONITORING

3.5.1 General

At present under the current waste permit for the site, there is no set schedule for environmental monitoring. All monitoring on site under Condition 9 (9.2) of waste permit ESS/15/8/12 shall be specified by Wicklow County Council from time to time.

Under a waste licence environmental monitoring will be carried out for the facility as requested by the EPA. The conditions of the Waste licence will include a section on monitoring. The monitoring regime suggested by the project team is detailed in the following Sections (3.5.2 to 3.5.10) and will be carried out subject to the agreement of the environmental protection agency.

3.5.2 Meteorological Data

It is proposed to compile meteorological data from the nearest synoptic weather station. This will be carried out bi-annually and will include data on rainfall, wind strength and direction, evapotranspiration and temperature.

It is also proposed to install a permanent weather station at the facility. This will be located near to the administration building and will include for the monitoring of rainfall, wind strength and direction and temperature.

3.5.3 Dust

Dust will be monitored using Bergerhoff dust fall gauges or equivalent. These gauges will be installed a minimum of one month prior to construction. They will be installed around the perimeter of the site at a minimum four locations and monitored on a quarterly basis.

3.5.4 Noise

Noise will be monitored at a number of locations around the perimeter of the site and at nearby residences on an annual basis. There will be a minimum of 4 No. noise monitoring stations in total, the locations of which will be agreed with the EPA.

3.5.5 Surface Water

A surface water monitoring programme will be carried out by the developers and their environmental consultants in consultation with the EPA. A visual inspection of the surface water streams on and

adjacent to the site will be carried out by site personnel on a weekly basis. Surface water quality monitoring will be carried out both upstream and downstream of the site on the Kilmartin and Coynes Cross streams on a quarterly basis during the operational phase of the development. Each surface water sample will be analysed for an indicative suite of parameters and will include pH, temperature, conductivity, suspended solids, total dissolved solids, ammonia, chloride and BOD.

The monitoring proposals provided above are indicative only. Any monitoring programme will be agreed in advance with the regulatory authority or as stipulated in the waste licence.

3.6 CONTINGENCY ARRANGEMENTS

3.6.1 Emergencies and Contacts Outside of Normal Operating Hours

A phone number for the site manager will be established if emergencies arise outside of normal operating hours and days. Staff members will be available for call-out in the event of an emergency.

3.6.2 Contingency Plans for Breakdown and Emergencies on Site

In the unlikely event of an emergency the procedures outlined in the Emergency Response Plan will be followed. The plan outlines the actions to be taken in emergencies relating to health and safety, spills, equipment breakdown and fire. The Emergency Response Plan for Buchpa Ltd. is provided below.

3.6.2.1 Emergency Response Procedure

Purpose: To address emergency situations and minimise potential impacts on the environment.

Responsibility: The foreman is responsible for ensuring this procedure is implemented.

Procedures: The emergency response procedures are predicated by the types of emergency that may occur at this facility and are discussed individually below.

3.6.2.2 Health and Safety

In the event of any serious injury or health incidents to personnel on site the emergency number for the ambulance service is clearly posted adjacent to all telephones on site. The site foreman and or assistant manager will be notified of any incidents immediately and will assume charge in order to handle the emergency as swiftly and efficiently as possible. For minor injuries the number of the local doctor who is on call will be posted beside the telephone in the site office. In addition, first aid kits will be available in the site office. Certain members of staff will be given appropriate first aid training.

3.6.3 Oil Spill/Leachate spill

All oil and diesel storage tanks are located in containment bunds. However, in the unlikely event of an oil spill the following procedure will be followed:

a) The source of the spill will be closed off immediately if possible. The foreman or assistant manager will be notified immediately.

b) The liquid will be contained as far as is practicable by employing absorbent booms and mats around drainage gullies and in the spill liquid itself.

c) A waste oil tanker (or tankers) will be contracted immediately to pump liquid from interceptors and/or sediment traps.

d) The following Agencies will be notified by telephone at the earliest opportunity: EPA; Wicklow County Council; Eastern Regional Fisheries Board.

e) All oil will be removed from the surface by either pumping or use of absorbent mats. All waste oils and materials will be disposed to an appropriate facility.

f) Specialist firms or consultants will be retained to manage larger or difficult spills. Absorbent booms, mats and materials are stored on site. All staff will be informed as to the location and use of the absorbent materials.

3.6.4 Breakdown of Equipment

In the event of breakdown of essential equipment all incoming waste destined for that piece of equipment will be diverted to an alternative area. The staff fitter will be notified immediately and will affect the necessary repairs. In some cases, alternative plant equipment can be hired from local plant hire companies.

3.6.5 Fire

Buchpa Ltd. have placed emphasis on the need for fire prevention measures on site. Smoking is not allowed on site. Smoke detection alarms are employed in all buildings.

The emergency telephone number for the fire brigade is clearly posted adjacent to all site telephones.

In the unlikely event of a fire the following procedure will be employed:

a) The alarm will automatically sound or will be switched on manually by the person who first notices the fire.

b) All staff will be evacuated from the site buildings.

c) The fire brigade will be notified immediately.

d) The foreman or assistant manager will be informed immediately.

e) All incoming vehicles will be directed to an alternative facility and the site entrance kept clear of traffic and machinery.

f) The Wicklow County Council, and the Eastern Regional Fisheries Board will be notified at the earliest opportunity.

It may be possible for site staff to extinguish small fires using the fire extinguishers and fire hoses. This procedure will be restricted to small fires only and the decision will be made by the site foreman/assistant manager.

3.6.6 Other Emergencies

All other emergencies will be notified to the site foreman/assistant manager and dealt with as speedily and efficiently as possible.

Emergencies of an accidental nature during normal working hours will be handled by calling in the Gardaí, the Fire Brigade or Ambulance Services. The site office will be open on Monday to Friday between 7:00 and 20:00 hours and half day Saturday, therefore personnel will be on site at these times. The site will be unattended by staff during the night, Sundays and Bank Holidays. A phone number for the site manager will be established if emergencies arise outside of normal operating hours and days. Staff members will be available for call-out in the event of an emergency.

SECTION 4

4. POTENTIAL IMPACTS, MITIGATION MEASURES AND LIKELY SIGNIFICANT EFFECTS

4.1 CLIMATE

4.1.1 Potential Impacts

There will be no potential impacts from the proposed development on either the global or micro climate of the area and no mitigation measures are proposed.

4.2 AIR QUALITY

4.2.1 Present Situation

The air quality in the area of the proposed site is typical of a rural environment where agriculture is the predominant landuse. The main sources of atmospheric emissions in this area are from surrounding agricultural practices and from traffic movements along the main N11 and local county roads surrounding the site.

4.2.2 Potential Impacts on Air Quality

There is a potential for the development to impact on air quality from dust emissions. Dust emissions could arise from trucks transporting the clay materials to the site, from the tipping area, from the bare soil surfaces of deposited material and from traffic movements along site haul roads. There will be no potential for impact from decomposition gases, odours or aerosols as all materials imported to the site will consist of dry inert clays, soils and stones (some bricks, blocks and concrete). Emissions from the exhausts of site related traffic may provide a minimal impact in that site traffic will account for less than 1% of the total traffic on the adjacent N11 dual carriageway.

4.2.3 Mitigation Measures

Dust will be controlled at the site by the following means:

- All trucks accessing the site will be required to transport clays in tipper trucks with tarpaulin covers.
- A wheel cleaning system will be installed near the site office and all haulage vehicles will be required to utilise this facility before exiting the site.
- All site vehicles will be limited to 10km/hr within the site boundaries.

- All site roads will be power swept as and when required to ensure dust free conditions on the entrance road. This will extend to the Coynes Cross road outside the site entrance in the unlikely event that it be required.
- A water bowser will be maintained on site. This will be used during dry windy periods to dampen down the site haul routes and any exposed clay surfaces observed to be generating dust.
- It is proposed to maintain as small an active tipping area as possible and to complete the restoration on an ongoing basis.
- Areas of the backfill operation that have been completed will be topsoiled and grassed at the earliest opportunity. This will bind the soil particles and prevent dust emissions.

It is expected that there will be some unavoidable dust arisings during the actual tipping operation. However, these will be individual instantaneous events and will only cause dust arisings during very dry and windy conditions. It is expected that the bulk of these arisings will settle back to the ground within a short distance and will not be sufficiently large to cause significant emissions at the site boundaries. The site manager will monitor these operations and if considered necessary will arrange for a sprinkler system to be employed on these occasions.

It is proposed to install a weather station at the site and the wind strength and direction will be monitored on a permanent basis. This will inform site staff as to the likely direction of any emissions.

The nearest residential property belongs to the Applicants family located immediately to the north of the footprint. The second nearest dwelling is located to the northeast of the site and also belongs to family members. The bulk of other nearby residential properties are located to the north and northwest and are a minimum 250 m from the footprint area.

The prevailing winds are generally from the west and southwest and there is a low density of dwellings located to the east or northeast, downwind of the site and are generally located at least 450m from the footprint.

It is proposed to monitor dust quality at the site on a regular basis. This will comprise monitoring dust at a minimum four locations on a quarterly basis. Any monitoring programme will be agreed in advance with the local authority. The dust monitoring results will be reviewed and additional dust control measures will be implemented should they be required.

4.2.4 Likely Significant Effects

It is considered that the mitigation measures outlined above will reduce the potential for dust emissions from the site and that there will be no significant effects on the environment.

4.3 NOISE ENVIRONMENT

4.3.1 PREDICTED IMPACTS FROM NOISE AND VIBRATION

4.3.1.1 Potential Impacts during the Construction Phase

Noise Impact

All construction projects generate noise and vibration impacts with the level of noise/vibration generally depending upon the precise construction methods employed. The significance of the effects of these various activities will depend upon the duration of each particular construction activity, the particular items of plant used and the time at which the activity occurs. In the absence of a detailed construction plan it is not possible to accurately model construction noise levels. It is possible; however, to predict indicative construction noise levels in accordance with *BS 5228:1997 - Noise and Vibration Control on Construction and Open Sites Part 1.* This standard sets out sound power levels for plant items normally encountered on construction sites which allows for the prediction of noise levels at selected locations. This standard does not however specify noise limits for construction activities but does recognise that since the activities are temporary, noise limits higher than those associated with permanent installations are generally acceptable in the community. International practice dictates that noise limits in the range L_{Aeq} 1hr of 65 to 75 dB are generally acceptable for daytime construction activities.

The construction phase will be short and will occur over a 3 month period. Construction will involve the installation of a portacabin office, a canteen, washroom toilets, a wheel cleaner, hardstand for parking, a septic tank, gates, fencing, drainage and lighting.

Table 4.3.1 presents details of the machinery to be used during the construction phase of the proposed development.

Table 4.3.1: Sound Pressure Levels of machinery to be used during construction phase

Machinery	Type	Sound Pressure Level [Note 1]
CAT 320 (x2)	Dozer	81
JCB 532 (x2)	Excavator	81
Crawler Crane (x1)	Tracked Crane	86
Cement Truck (x2)	Cement Truck	72

NOTE: **[1]** Sound Pressure Levels taken from BS 5228: Part 1: 1997, Annex C at a reference distance of 10m

Table 4.3.2 overleaf presents predicted noise impacts at sensitive receptors using the 'inverse square rule' for noise attenuation due to distance only. This law is based on the principle that as you double the distance from a source the noise level decreases by 6dB. It is noted that at distances in excess of 300 metres from a given noise source that predictions based on the inverse square law rule may not be truly representative of the noise level experienced at the receiver. As the distance between source and receiver increases so does the significance of other factors such as meteorological conditions on the noise level.

The 'inverse square law rule' is defined by the following equation:

SPL= 20log (R1/R2)

Where R2 is the distance from the source to the noise meter and R1 is the distance from the proposed construction area of the development to the noise sensitive receptors. Natural attenuating factors such as topographical features have been taken into consideration. It is noted that construction phase mitigation measures will be employed during the construction phase and are detailed in Section 7.

The significant construction works will only take place close to the proposed entrance of the landfill. This is a measured distance of approximately 600 meters to N5 during the construction phase of the proposed development the calculations are based on the assumption that each of the items of machinery detailed in Table 4.3.2 may be in operation simultaneously, with the exception of the crane. Although in reality this is highly unlikely. The worst case scenario has therefore been considered.

Table 4.3.2: Predicted Impacts Due to Construction Activities

Location	Combined Sound Pressure Level (dB)A Note 1	Distance to receptor (metres) Note 2, 3	Attenuation due to distance (dB)A	Attenuation due to no line of site (dB)	Predicted Noise Level (dB)A	Daytime Measured Background Noise Level (dB)A	Combined Noise Level (dB)A
N5	91	440	33	10	48	56	56

NOTE: **[1]** It is assumed that each item of plant will be in operation simultaneously and at the same location

[2] For calculation of the distance it has been assumed that the combined noise source will be in operation 10m from the nearest boundary of the construction area of the proposed facility to noise sensitive receptor.

[3] Estimated distances based on site engineering drawings and ordinance survey data.

In summary, construction works may temporarily increase the noise levels in the immediate vicinity of the site for a short timeframe during the initial site preparation and construction phase of the project. However, taking into consideration proposed noise mitigation measures, the existing ambient noise

levels, and the fact that all on-site construction activities will be conducted during day-time hours, it is not considered that noise impacts on the receiving noise climate will be significant and will remain within the recommended community noise exposure in the range $L_{Aeq\ 1hr}$ of 65 to 75 dB. Predictive calculations indicate that the construction phase will have no impact on N5.

Vibration Impact

No piling will take place on site and rock breaking is not anticipated. Potential vibration sources could include the use of plant machinery involved in earthworks, dump trucks, bulldozers and compacting equipment. It is noted; however, that potential vibration impacts from such sources will only be experienced in the immediate vicinity of the operation itself. If during construction, rock is encountered vibration monitoring will be undertaken in order to verify that appropriate vibration criteria set out in the following standards are not exceeded.

- BS 7385: parts 1 and 2:1990 and 1993 respectively, provide guidance on the measurement and evaluation of vibration and its effects on buildings, and a guide to damage levels from ground borne vibration
- Building Research Establishment (BRE) Digest 353(July 1990): Damage to structures from ground borne vibration
- BS 5228:1997 - Noise and Vibration Control on Construction and Open Sites Part 1

4.3.2 Potential Impacts from the Operational Phase

The proposed facility will operate form 7am to 8pm Monday to Friday and from 8am to 2pm Saturday. The facility will be closed on Sundays and bank holidays. The noise to be generated from operations will consist of backfilling operations within the site and traffic movements to and from the site.

The main noise sources arising from operations at the plant are presented in Table 4.3.3 below:

Table 4.3.3: Sound Pressure Levels of machinery to be used during operational phase

Machinery	Type	Sound Pressure Level Note 1
CAT 320 (x3)	Dozer	81
JCB 532 (x2)	Excavator	85
Tractor	Dumper	65
Dump Truck Tipping Fill	Dump Truck	82

NOTE: **[1]** Sound Pressure Levels taken from BS 5228: Part 1: 1997, Annex C at a reference distance of 10m

Predicted Noise Levels from Operations

For the calculation of noise emissions from particular site activities, it has been assumed that all significant noise sources outlined above will be operational for a full working day, thus representing a worst case scenario. Calculations of the likely noise levels were then extrapolated to give an indication of the potential noise impacts at the noise sensitive receptor N5.

Sound pressure levels have been used to extrapolate the predicted impact at the nearest noise sensitive receptors using the 'inverse square law' rule for noise attenuation due to distance. Other natural attenuating factors such as topographical features have also been taken into consideration. Site observations have revealed that there is no direct line of sight between the proposed plant and the nearest sensitive receptors due to the existing topography of the area.

Table 4.3.4: Predicted Noise Levels from External Sources

Location	Combined Sound Performance level (dBA)	Approx. Distance to Receptor (metres)	Attenuation Distance (dB)	Attenuation (No Line of Sight) (dB)[Note 3]	Predicted Noise Level (dB)
N5	90	250	28	10	52

[1] It is assumed that each item of plant will be in operation simultaneously and at the same location

[2] For calculation of the distance it has been assumed that the combined noise source will be in operation 10m from the nearest boundary of the proposed facility to noise sensitive receptor.

[3] Estimated distances based on site engineering drawings and ordinance survey data.

Table 4.3.5 Combined Existing and Predicted Noise Level

Location	Existing Noise Level (dBA)	Predicted Noise Levels (dBA)	Combined Predicted Noise Levels (dBA)	Predicted Increase (dBA)
N5	56	52	58	2

The predictive calculation considered a worst case scenario in relation to likely noise sources on-site during operation of the landfill, i.e that all items of plant will be operational at the same time and at a distance of 10 meters from the nearest boundary to N5. Natural attenuation was also taken into consideration. The topography of the land presents a natural berm which will significantly reduce the potential for any impact on N5. It is concluded that the operation phase noise sources resulting from the proposed development will not adversely affect the ambient noise environment in the vicinity of the nearest sensitive receptors.

Table 4.3.6 below presents the likely effects associated with the predicted increase in noise levels arising from the proposed development. As presented, an increase of up to 3 dB(A) as a result of plant operation will be at worst 'barely perceptible' at the noise sensitive receptors.

Table 4.3.6: Likely Effects of Noise Level Increase

Change in Sound Level (dBA)	Level of Significance	Subjective Reaction to sound Level Increase
<3	Not significant	Barely Perceptible
3 - 5	Minor	Perceptible
6 – 10	Moderate	Up to a Doubling of Loudness
11-15	Major	Over a Doubling of Loudness

The results show that as a result of a worst case scenario all items of plant operating continuously, at the same time and at 10m from the closest boundary to N5 there is the potential for a 2 dB increase in noise level at N5. However, this increase is considered '*not significant*' and will be barely perceptible at this receptor.

Development Related Traffic

The anticipated volumes of operational traffic indicate that there will be negligible impact on the receiving environment. It is proposed to import some 2,000 tonnes of clay materials per day (c. 560,000 t/a at 100 loads/day) to the site. This may rise to a maximum 250 loads per day during busy periods in the construction industry and to 200 loads per day during the months of July and August. This indicates that it will take a maximum 7.5 years to complete the project.

Traffic is dealt with in more detail in section 2.9. and 4.9. In reality, a doubling of road traffic volumes would give rise to a 3 dBA increase in the traffic noise. The anticipated added volumes outlined above as a result of operational activities will be minor considering existing volumes of traffic and HGV's on the N11. In general, any action which results in an increase or decrease in the sound pressure level by less than 3 dB will not have a significant effect on how humans hear or perceive the noise (see Table 4.3.6). There is direct access to the site from the Cullenmore interchange and the N11. Traffic to the site will not pass any of the noise sensitive receptors.

In summary, the proposed development will not result in an adverse impact at the nearest sensitive receptors arising from on-site traffic noise.

4.3.3 Mitigation Measures

4.3.3.1 Noise

Construction Phase

A comprehensive quantitative assessment of the potential noise impacts resulting from construction of the proposed development has shown that no adverse impacts resulting from the construction of the proposed development will occur as a result of the construction phase. However, to ensure this, all best practicable means will be used to minimise noise produced during the construction of the proposed facility in accordance with recommendations outlined in British Standard BS 5228, Noise Control on Construction and Open Sites – 1997. The following parts of this British Standard are applicable:

Part 1: Code of Practice for basic information and procedures for noise and vibration control

Part 2: Guide to noise and vibration control legislation for construction and demolition including road construction and maintenance.

In particular, the operator shall comply with the following requirements for the control of noise from plant machinery:

It is recommended that "Best Practice Means" should be employed to minimise construction impacts. These include:

- Working hours during site development and construction will be restricted as outlined in Section 7.3.4.1.1.
- Where practicable the use of quiet working methods will be selected and the most suitable plant will be selected for each activity, having due regard to the need for noise control.
- All contractors will employ the best practicable means to minimise noise emissions and will be obliged to comply with the general recommendations of BS 5228, 1997. To this end all contractors will use "*noise reduced*" plant and/or will modify their construction methods so that noisy plant is unnecessary.
- Where possible, position potentially noisy plant or operations as far as possible from a noise sensitive receptor (NSR) to minimise the transmission of sound. Similarly, where practicable, all machines and/or noisy equipment will be positioned so that the quietest side faces the NSR.
- All mechanical plant used on site will be fitted with effective exhaust silencers and will be maintained in good working order. Where practicable, machines will be operated at low speeds and will be shut down when not in use.
- All compressors will be of the *"noise reduced"* variety and fitted with properly lined and sealed acoustic covers. In all cases engine and/or machinery covers will be closed whenever the machines or engines are in use.

- All pneumatic percussive tools will be fitted with mufflers or silencers as recommended by the equipment manufacturers. Where practicable all mechanical static plant will be enclosed by acoustic sheds or screens unless they are likely to have negligible impact upon NSRs.
- Where practicable the number of machines in simultaneous operation will be minimised.
- Plant and machinery used on-site will comply with the EC (Construction Plant and Equipment) Permissible, Noise Levels Regulations, 1988 (S.I. No. 320 of 1988).
- All noise producing equipment will comply with S.I. No 632 of 2001 European Communities (Noise Emission by Equipment for Use Outdoors) Regulations 2001.
- Machines in intermittent use shall be shut down in the intervening period between works or throttled down to a minimum
- Where particular 'noisy' work is expected to occur, these will be scheduled between the hours of 9.00 – 17.30. Enclosures to usually noisy activities will be provided where these works cannot be scheduled for the hours 9.00 – 17.30
- Employees working on the construction site will be informed about the requirement to minimise noise and will undergo training on the following aspects:
  - The proper use and maintenance of tools and equipment
  - The position of machinery on-site to reduce the emission of noise at the nearest sensitive receptors
  - Avoidance of unnecessary noise when carrying out manual operations and when operating plant and equipment
  - The use and maintenance of sound reduction equipment fitted to power pressure tools and machines
  - Reporting defective noise control equipment

It is also recommended that periodic noise monitoring be undertaken during the initial construction phase to determine levels at noise sensitive receptors, in particular during 'noisy' activities. Where the community noise exposure levels are exceeded further mitigation measures will be employed including temporary enclosures or screens around particularly 'noisy' plant.

4.3.3.2 Operational Phase

The predictive calculations detailed in the previous section considered a worst case scenario in relation to likely noise sources on-site during the operation of the proposed restoration programme. Natural and proposed attenuation factors were also taken into consideration. The valley sides provide natural attenuation to the sensitive receptors located to the west and east of the proposed development.

It was concluded that operational phase noise sources resulting from the proposed development will not adversely affect the existing ambient noise climate in the vicinity of the nearest sensitive receptor.

To further reduce the potential of any adverse noise impact on the nearest noise sensitive receptors resulting from activities at the landfill the following mitigation measures will be implemented;

- All pumps coolers, compressors, generators will be housed internally
- The layout and design, where possible will be constructed to minimise noise output from machinery.
- Machines in intermittent use shall be shut down in the intervening period between works or throttled down to a minimum
- A regular maintenance programme will be implemented for all plant items to ensure they are operating effectively
- All vehicle engines will be switched off when not in use.

In summary, the results form the predictive analysis show that the increase in ambient noise levels arising from the proposed development will not be perceptible at the nearest noise sensitive receptor. It is probable that any noise generated at the facility will be masked by noise generated by existing traffic volumes on the N11.

4.3.4 Residual Impact

In summary with mitigation measures implemented, the proposed development will not result in a perceptible increase in noise levels at any of the noise sensitive receptors beyond the site boundary.

4.4 GEOLOGY

There are no geological sites of scientific interest in the area. Some removal of topsoil and subsoil will be required for the construction of site roads, offices and hardstand and the construction of cut-off drains. The proposed development will not provide any impact on local geology.

4.5 HYDROGEOLOGY

The proposed restoration project will consist of backfilling in a valley with clean inert clays and stones. The finished profiles will be designed to promote surface water runoff from the surface to provide normal dry conditions on the surface for farming practices. In this way, it is expected that there will be an increase in the fraction of effective rainfall draining as surface water runoff directly to local streams and a decrease in the fraction of effective rainfall going to groundwater recharge and indirectly to the local streams. It is not considered that this will have any significant effect on groundwater recharge or flow directions in the region.

As the materials to be used in the restoration project will consist of clean inert clays and stones there will no impact on groundwater quality from recharge at the site.

It is expected that there will be 8 to 10 permanent staff on site. The site offices will cater for staff by providing canteen, washroom facilities and toilets. It is calculated that wastewater generated at the facility will amount to some 800 l/day (10 staff at 80 l/hd/day). This is equivalent to approximately 4 population equivalents (PE)or similar to a typical dwelling. The foul water will be treated in a septic tank and percolation area prior to discharge to ground. The septic tank and percolation area will be designed in accordance with the EPA Wastewater Treatment Manual "Treatment Systems for Small Communities, Business, Leisure Centres and Hotels" and the treated effluent will not impact significantly on the quality of local groundwater.

Rainwater run-off from the entrance road, paved hard-standing areas and wheel cleaning system will be collected and directed through a silt trap and oil interceptor prior to discharge to ground via a soak pit. As this will generally comprise clean rainfall it is not expected that there will be any significant impact on groundwater quality.

Oil storage at the site will be located in a tank inside a contained concrete bund. This will provide double protection for any potential oil spills from the oil storage facility on site. The bund will be inspected daily and any accumulated rainwater pumped out to the silt trap and oil interceptor.

These measures will ensure that there will be little or no impact on groundwater quality from the development.

The bulk of local dwellings are served by a public mains water supply and there will be no impact on these potable supplies. Some residential dwellings to the north of the site use individual private wells as

shown in 2.5.1 for their potable supply. The proposed development will not alter in any way the quantity or quality of these water supplies.

It is expected that given the nature of the proposed development and the mitigation measures outlined above there will be no significant impact on groundwater at or in the vicinity of the site.

4.6 SURFACE WATER

4.6.1 Potential Impacts

The primary potential impacts of the development on the surface water in the vicinity of the site are as follows:

- There will be a potential for silt laden runoff from the active and bare soil areas of the site to enter local streams.
- There will be a potential for contaminated runoff from the site roads, hardstand and wheel cleaning system.
- There will be a potential for surface water contamination from oil storage on site.
- There will be a potential for surface water contamination from the sewage effluent generation on site
- There will be a potential for increased flows to the local streams caused by higher run-off and lower percolation/groundwater recharge from the developed site.
- The proposed development will be designed to promote surface water run-off from the finished surface. Therefore, there will be increased flows in the local drainage network.

4.6.2 Proposed Mitigation Measures

In order to mitigate against these potential impacts the following measures will be implemented at the site:

- Cut-off drains will be installed at the site running east west along the northern and southern boundaries during the first phase of works. These will be the first construction works to be carried out at the site. The cut-off drains will measure approximately 1m wide by 1m deep and will run the length of the northern and southern boundaries. These will connect into settlement lagoons to be located at the low point of each drain. The drains will collect all surface water runoff draining from the entire site and will allow for settlement of the silts and settleable solids prior to discharge to the Kilmartin and Coynes Cross streams. This will prevent any ingress of silt to the local streams. It is also proposed to install cut off drains or swales along the eastern and western boundaries. These will be designed to cut-off surface water drainage coming into the site from areas outside the site and divert it to the streams directly. Finished areas of the restoration project will be capped with topsoil and grassed at the earliest opportunity. This will bind the clay particles together and will prevent any further generation of silt from these areas.
- Drainage from the site entrance road, paved hardstand and wheel cleaning system will be collected and directed through a silt trap and oil interceptor prior to discharge to a soak pit to be located adjacent to the site office. This will prevent any contamination of surface water or groundwater from

road drainage or effluent from the wheel cleaning system. The soak pit will be designed to cater for the expected water volumes.

- Diesel for site machinery will be stored in a tank located in a contained concrete bund. The bund will be designed to provide 110% of the capacity of the tank. All pipes and valves will be located inside the bund. This will ensure that any oil spillages or leakages associated with the bund will be fully contained and will not impact on either surface waters or ground waters. The bund will be checked on a daily basis and rainwater pumped out of the bund to the site silt trap and oil interceptor. A concrete apron with ramps will be provided adjacent to the bund to allow for containment of any potential spillage/leakage during loading/unloading of diesel.

- Wastewater generated at the site from the canteen, washrooms and toilets will be collected and drained to a septic tank and percolation area. These will be constructed in accordance with the EPA Wastewater Treatment Manual "Treatment Systems for Small Communities, Business, Leisure Centres and Hotels". The volume of effluent generated is calculated to amount to some 800 l/day. This is equivalent to approximately 4 PE or similar to a typical household. This proposed volume of effluent and the proposed treatment will ensure that there will be no impact on surface waters directly or indirectly through groundwater flow.

- The development of the finished profiles at the site will be designed to promote surface water run-off. The existing site occupies a valley where ponding (and presumably some percolation) occur at the base of the valley. The bulk of rainwater falling on the site discharges to the local streams either directly as surface water run-off or indirectly through groundwater flow. The finished profile on the other hand will be dome shaped and will likely contain low permeability clays. This will inhibit the rate of percolation and promote surface water run-off. This will have the effect of directing more rainwater directly to the streams as surface water run-off and less rainwater to the streams indirectly as groundwater flow. It is not considered that this will have any significant impact on the local drainage network.

4.6.3 Likely Significant Effects

The proposed mitigation measures outlined above indicate that there will be no significant impact on either quantity or quality of local surface waters from the proposed development.

4.7 ECOLOGY

4.7.1 Characteristics of the proposal

The proposed development area measures some 23 ha and forms a deep valley running north to south through the project area. It is planned to recover this area by importing clean clays and soils and infilling the valley depression. The project area runs approximately 700m in a north south direction and about 300m wide (east to west). The height ranges from a low of some 35mOD at the base of the valley to a high point of some 65mOD at the northwestern corner of the project area. It is envisaged to fill in this depression and form a relatively flat or slightly dome shaped field. This will provide a relatively level field with the existing natural surface levels at the eastern and western sides of the project area. However, there will be relatively steep slopes at the northern and southern sides of the fill area. The final level will be seeded and grassed and hedgerow planting carried out at the site in accordance with the ecological and landscape requirements.

4.7.2 Potential impacts of the proposal

- Direct habitat loss: the removal/destruction of habitats. The proposed development will result in the loss of most of the habitats on site and their associated fauna.

- Indirect habitat changes. This occurs when a habitat not directly affected through development is altered as a consequence of the development through effects such as disturbance, drainage or pollution. The adjacent watercourses may be affected through run off from the site. Any impact on these streams would eventually impact on the River Vartry which is a sea and brown trout fisheries. Therefore all preventive measures should be taken to ensure that there is no impact to these watercourses through sedimentation or contamination. This is particularly important for the stream to the south because of its proximity to the site. Fauna will be disturbed during the proposed development.

- Habitat fragmentation. This involves the break up of a habitat by a development, resulting in one or more smaller habitat areas. Species that use linear features such as hedgerows for movement are also highly susceptible to the effects of habitat fragmentation. The loss of connecting hedgerows and mature trees may result in the loss of commuting and foraging habitats for wildlife.

4.7.3 Avoidance, remedial and reductive measures

Mitigation measures in relation to hedgerows and trees

- Best practice should be employed to limit the season of vegetation removal and nesting habitat. Provisions of section 46 of the Wildlife (Amendment) Act, 2000 require that disturbance to vegetation is excluded during the period March 1st to 31st August. Therefore, no hedgerow removal or tree felling should be carried out in this period.

- Retain boundary trees and hedgerows where possible. Those to the east and south have the greatest wildlife potential. Trees to be retained should be fenced off (approx. 5m from the base or to the edge of the canopy, whichever is greater) to prevent damage to the root systems and boughs.

Mitigation measures in relation to protected species

- In relation to bats, trees with potential as bat roosts (ivy-clad or creviced) should be felled during March, April or the autumn months of September, October or November to avoid the periods when the bats are most active.

- A bat specialist should be present when trees with crevices are removed to deal with any bats found. Such animals should be retained in a box until dusk and released on-site.

- Any ivy covered trees which require felling should be left to lie for 24 hours after cutting to allow any bats beneath the cover to escape.

- Large mature trees should be felled carefully, essentially by gradual dismantling by tree surgeons, under supervision of a bat specialist.

- Care should be taken when removing branches as removal of loads may cause cracks or crevices to close, crushing any animals within. These cracks should be wedged open prior to load removal. The dead branches should be lowered to the ground using ropes to avoid impacts which may injure or kill bats within.

Mitigation measures relating to the adjacent stream

- Siltation: To prevent loss of suspended solids during construction, all exposed clay/sand surfaces should be stabilised immediately, using covers such as grass, mulches or plastic sheeting to eliminate run-off.

- It is recommended that a reasonable buffer zone between the stream and the development be maintained (at least 6 m). This should be vegetated to provide further protection to the stream.

- To prevent siltation of surrounding watercourses, all run-off water should be intercepted before reaching any watercourse. Suspended solids should be removed using settlement ponds, allowing finer materials to settle out of suspension. Other measures such as oil interceptors should be used to remove potential contaminants from surface water.

- Pollution: To prevent chemical pollution during construction and operational phases, all fuels or chemicals kept on site should be stored in bunded containers. All refuelling should be carried out away from stream area should be regularly maintained and leaks repaired immediately. Accidental spillages should be contained and cleaned up immediately. Remediation measures should be carried out in the unlikely event of pollution of adjacent watercourses in accordance with consultant's recommendations. Any potential areas for leakage of oils (e.g. internal road, carparking) should be drained through an oil interceptor and/or silt trap.

4.7.4 Predicted impact of the proposal

The proposed development will result in the loss of a number of habitats on site including the improved agricultural grassland, internal hedgerows and trees, re-colonising bare ground, tilled land and horticultural land. These are of low ecological value and the predicted impact of the loss is not considered to be significant. The hedgerows to the south and east will remain intact and should be cut during winter months to avoid disturbance to wildlife.

The prescribed mitigation measures will ensure that disturbance to fauna will be minimised. It is inevitable that faunal species will leave the area once construction begins. Given that the habitats on site are widespread, it is likely that species will relocate to similar habitats in the immediate vicinity of the site. However, once the project is complete and the land reclaimed it is likely that the area will be re-colonised by species.

Best practice will be used to prevent any impact on the adjoining watercourse to the south on the site. The stream to the north is unlikely to be affected because of its distance from the proposed development.

Worst case scenario

A permanent loss of existing habitats would be of limited significance to the ecological value of the area. In the unlikely event of a severe pollution incident in adjacent watercourses, the freshwater ecology of the stream and its connecting watercourses would be negatively impacted and recovery would be slow.

Monitoring

Periodic assessment of the efficiency of prescribed mitigation measures should be carried out. This is particularly important for insuring that watercourses remain unaffected by the proposed development.

Reinstatement

The landscape design should be based on sound ecological principles and designed to enhance local flora and fauna where possible.

- New hedgerow and tree planting should use native species similar to those found in the surrounding area.
- New grassland areas should avoid typical agricultural commercial seed mixes where possible and use mixes with a higher species diversity of native species. If this is not practical, small areas of the site could be sown with species-rich grassland mixes to improve the diversity on site and encourage wildlife.
- All seed stock should be sourced locally where possible.

4.8 HUMAN BEINGS

4.8.1 Potential Impacts

There are approximately 30 houses located within 500m of the facility, the majority of these located at Coynes Cross and along the Coynes Cross road. The nearest house is located about 160m to the north of the footprint and belongs to the applicant (the Norse family home), the next nearest is located about 200m northeast of the site and also belongs to the applicants family. All other dwellings are located a minimum 270m from the footprint area. Potential impacts on these local residents and the local community in general include the following:

- noise,
- dust,
- water quality dis-improvement,
- traffic increase,
- visual intrusion,
- fly tipping.

Potential noise impacts are assessed in Section 4.3 of the EIS. Potential impacts on air quality and odours are assessed in Section 4.2. Groundwater quality is assessed in Section 4.5 and surface water quality in Section 4.6. Traffic is covered in Section 4.9 and visual impacts in 4.10.

At facilities such as these there is a potential for fly tipping to occur at or near the site entrance or in the vicinity of the site itself. Any fly tipped material will be handled by site staff and removed from the site entrance into the internal waste quarantine area prior to removal to an appropriately licensed facility. The local authority will be notified of all such instances. If this practice persists site staff will implement monitoring procedures outside of normal working hours and the need for CCTV cameras will be reviewed at the site entrance and perhaps at other locations. Every attempt will be made to prevent these practices should they occur and the perpetrators if discovered will be reported to the Gardai.

Given that the facility will only accept clean inert clays and soils it is considered that there will not be any impact on the local populace from litter, vermin, odours or health aspects.

No putrescible wastes will be accepted at the facility so there will be no impact from odours or vermin such as rodents or scavenging birds. Should rodent populations be observed to increase in the locality then vermin control specialists will be employed to deal with the problem.

No paper, cardboard or plastics will be received at the facility and so there will be little or no potential for windblown litter. Should isolated pieces of paper or plastic contained in the middle of loads be tipped on site and blow over the site boundaries these will be picked up by litter patrols to be carried out on a weekly basis.

The development will not have any extraordinary potential for impact in relation to human health aspects.

It is considered that there will be a slight positive benefit to the local community in terms of providing employment and to the wider regional community in providing an outlet for the recovery of clays and soils that otherwise may not be dealt with in an environmentally sound manner. Given the scale and location of the proposed development with excellent access prospects from the N11 and Cullenmore interchange it is submitted that this facility will significantly reduce the need for reliance on similar smaller type facilities that may exist at less accessible parts of the County and thereby reduce potential traffic impacts on smaller County roads.

4.8.2 Likely Significant Effects

The likely significant effects on human beings from environmental emissions and nuisances such as noise, air quality, water pollution, traffic and visual intrusion are assessed elsewhere in this EIS. With the mitigation measures described above, the likely effects of the proposed development on the local population in relation to vermin, odours, litter, human health and fly-tipping are expected to be insignificant.

4.9 ROADS AND TRAFFIC

4.9.1 Potential impacts

4.9.1.1 Impacts on Existing Roads

The development will generate an increase in vehicle movements on the Coynes Cross Road and the Cullenmore Interchange slip roads, however the assessment has shown that in terms of both Geometric and Structural capacity, there is plenty of capacity in the existing roads to accept the additional traffic from the development.

4.9.1.2 Impacts on Cullenmore Interchange

The roundabouts of the Cullenmore Interchange were assessed in terms of capacity and their ability to deal with additional traffic generated by the proposed development. The assessment has clearly shown that the roundabouts operate extremely well in the Design year with the development traffic. The max RFC experience is 0.070 which is considerably less than the threshold value 0.75.

4.9.1.3 Impacts on Proposed Access Junction

The proposed access junction was analysed using traffic flows for 2007 and the design year 2022 with the development-generated traffic. The results indicate the capacity of the junction is not in doubt as the maximum RFC value at 0.069 is significantly below the threshold value of 0.75.

4.9.2 Mitigation Measures

When operational the development will add traffic onto the Coynes Cross Road and the Cullenmore Interchange but with no significant impact on capacity and so mitigation measures are not considered necessary for the Coynes Cross Road or the Cullenmore Interchange.

The proposed development access is being designed to suit the scheme and will be designed with enough capacity such that mitigation measures are not required. The only specific mitigation required is in relation to provision of visibility to the left when exiting the development. This mitigation takes the form of relocating the fence line on the opposite side of the road back (to the west) by 3.5m, over a distance of approximately 65m. This fence line and adjacent land is under the control of the developer, refer to Figure 14.14.

4.9.3 Residual Impacts

As the impacts are not considered to be significant and that Mitigations are not required on the Coynes Cross Road and the Cullenmore Interchange, then any residual impacts will also be considered as not significant.

There will be no residual impact in terms of visibility requirements for the development access.

4.10 LANDSCAPE AND VISUAL ASPECTS

4.10.1 Potential Impact of the Proposed Development

There are no particular amenity, landscape or views and prospects designations pertaining to the site or its immediate surrounds and as such it is considered that the development will have no adverse landscape planning impact either in the short or longer term. The site is well removed from any designated areas and designated views and prospects from the N11 are all well removed from the development site.

The proposed development has the potential for landscape and visual impact in relation to ground disturbance, tree removal, changes in ground level, erection of administration buildings/site infrastructure and the general operational activities.

4.10.2 Mitigation

It is submitted that the proposed development area consisting of a steep sided valley is and will be largely hidden from view from most aspects of the site. Certainly, there will be no views of the site activities from the east or west until the final capping layer and grassing activities are being carried out. There are very limited views of the site from the south and those are restricted to distant views from Wicklow town (c. 8km distant). There are some views of the site from the north. These are limited to perhaps four dwellings along the L-5064 county road and include two dwellings belonging to the applicants and their family, and from some dwellings located on high ground further north in the townlands of Ballyvolan, Timmore and Kiltimon. These generally consist of distant views in excess of 1km distant. The majority of dwellings located at Coynes Cross and along the Coynes Cross road have no view of the site due to intervening ridges and high ground.

Therefore, the natural physiography of the site in which the development is to take place provides significant natural attenuation in terms of views of the site and the operational activities planned at the site.

A number of mitigation measures to reduce potential visual impact are planned and include the following:

• The very first phase of development at the site will include the construction of a bund running east west along the northern side of the footprint. This will be constructed of imported clays and soils and will be constructed within approximately 12 months. The bank will be seeded and grassed as soon as constructed. Thereafter, the bulk of the operational works will be carried out to the south of the bund and hidden from views of the site from the north. In this way the bulk of the site works will not be seen from any direction. Operational activities will come into view again when the project is nearing completion and the uppermost capping layer is being completed. It is planned that the capping activity will be temporary in nature and will be completed within a year. The entire site will then be harrowed, seeded and grassed and will be used for agricultural practices.

• The bulk of the proposed site infrastructure consisting of administration building, equipment storage container, oil bund, waste inspection and waste quarantine areas will be constructed approximately 50m east of the site entrance down slope in a position where they will be largely hidden from view by the natural topography.

• It is proposed to carry out a landscaping exercise at the property. This will include for the planting of native trees and shrubs around the administration building and near the site entrance. The local hedgerows bounding the site to the east and south generally consist of robust well developed hedgerows. These will be further strengthened by augmenting the hedgerows in areas where they are weak or where there are gaps. These works will provide further attenuation to visual aspects of the site.

It is considered that the entire operation will be completed within a maximum seven to eight years (within 3 years at maximum operational capacity) and therefore operational activities will cease after completion. The final profiles of the site are designed to blend in with the native topography and provide a generally level surface from east to west across the site. The final profile will include for a slight dome shape to the surface in order to aid surface water runoff and avoid ponding or wetlands developing on the restored area.

The finished site will be used for agricultural practices such as pasturelands and/or arable crops and will blend in with local land uses.

4.10.3 Likely Significant Effects

The development is set within a rural and agricultural landscape, of primarily hedgerow separated farmland with grazing, tillage and coniferous plantations at higher elevations to the south. The development will not obstruct or intrude on any vulnerable ridgeline or skyline, will utilise screening from existing vegetation and does not impact on any landscape or scenic designations, listed views or prospects, trees or tree groups considered for preservation.

While some minor visual impact is expected during the temporary construction of the northern bank no appreciable medium, or long term or lasting impact, will arise.

The development will not have a particularly adverse impact on the existing character of the landscape and on completion of the restoration project will be graded to give the appearance of a low undulating mound from east to west with steeper slopes to the north and south, not inconsistent with regional landscape features. Given the relatively short life-span (maximum 8 years), the proposed development should be readily integrated into the surrounding landscape without significant adverse impact on the landscape or visual character.

The mitigation measures afforded by the natural physiography and those outlined above indicate that there will be no significant impact on the landscape character or visual amenity of the area.

4.11 CULTURAL HERITAGE

The nearest site of archaeological interest is site SMR 19:18 (Church ruins) located about 100m northeast of the footprint within the applicants property boundary. There will be no activities at this part of the site. It is proposed to fence off this area of interest to protect it and prevent any access to the area.

There will be no impact on any other cultural heritage features in the region and no mitigation measures are required.

4.12 MATERIAL ASSETS

4.12.1 Potential Impacts

As discussed in Section 2.12 material assets in the environs of the proposed landfill can be divided into the following categories:

- Land use
- Housing
- Infrastructure
- Tourism

The potential impacts, mitigation measures and likely significant effects of the landfill under each of these headings are discussed below.

4.12.2 Land Use

Land use in the region is primarily given to agriculture with grazing and some arable farming. There is also some coniferous forestry in the fields immediately to the south and to the southwest of the N11,

The development at the site is designed to provide good quality agricultural land from the existing steep sided valley and wet land. The proposed development will not impact on any of the surrounding land uses. In this way there will be a defined improvement to the agricultural potential of the area.

4.12.3 Housing

The proposed development will not impact on the structure, density or value of local houses. The vast bulk of the traffic accessing the site will travel along the N11, onto the Coynes Cross road for approximately 270m and enter the site. No traffic will pass any of the houses located in the area.

4.12.4 Infrastructure

Section 2.12.4 of the EIS lists a number of infrastructural features in the vicinity of the site and includes the N11 dual carriageway, the Cullenmore interchange, the Dublin to Rosslare railway line and ESB transmission lines. The potential impact on road infrastructure in the area is assessed in Section 4.9. The Dublin to Rosslare railway line to the east of the site is well removed from the proposed development and no impact on the line is predicted.

ESB transmission lines are located adjacent to the proposed site and run through the northwestern part of the site and a second line runs east west through the central part of the site. Mitigation against impacting on these features will include the following:

- Buffer Zones of 15 metres will be maintained between the filling area and the main powerline.
- Any site works carried out proximal to the high voltage powerline will be in accordance with guidance from the ESB.
- It will be necessary to move the ESB line (timber poles) running through the site in an east west direction. An application will be made to the ESB in this regard and it is likely that the line will be diverted around the northern side of the proposed development. This will be carried out under the direction of the ESB.

A positive impact of the proposed development will be the provision of an outlet for the recovery of inert clays and soils in the region. There is a requirement for such facilities to cater for the large volumes of clays and soils generated from infrastructural developments such as housing developments, road cuttings, pipe laying works etc. The facility will have a major role in servicing the needs of householders, industry and commerce in the region.

There will be little use or loss of natural resources. There will be a relatively low requirement for raw materials in the construction of the site roads and site infrastructure. Much of the materials required for the construction of haul roads and subbase will comprise recovered C&D materials (such as stones, bricks, blocks etc.).

It is submitted that this proposal will be of significant benefit to the County in terms of providing a large scale facility for the recovery of clean inert clays and soils at a site that benefits from excellent access characteristics due to its location adjacent to the N11 dual carriageway and Cullenmore interchange. At present, there are a large number of smaller similar type facilities dotted around the County and many of these are accessed via small County or Regional roads. The proposed facility will provide a very accessible alternative and will reduce the industries reliance on these smaller facilities with a consequent reduction in the numbers of HGVs using smaller County and Regional roads.

4.12.5 Tourism

As detailed in section 2.12.5 there are no defined tourist sites within the area. There are no designated routes or walkways, views or prospects of the site or environmentally designated areas within the vicinity of the site.

In addition, the site and operations at the site will be well screened from most vantage points in the region (apart perhaps from the installation of the final capping layer). It is considered that the likely effects of the proposed development on tourism will be insignificant.

4.13 INTERACTIONS

The European Communities Environmental Impact Assessment (Amendment) Regulations, 1998, require that an EIS describes the impacts and likely significant effects on the interaction between any of the following environmental media:

- human beings
- flora
- fauna
- soil
- water
- air
- climate
- the landscape

Table 4.13.1 highlights impacts and effects on interactions between these media and identifies the sections of the EIS where the interactions are addressed. It should be noted that in certain cases there are obvious interactions between environmental media, e.g. climate and flora, however, if the development does not have the potential to impact or affect the interaction then that interaction is not highlighted in Table 4.13.1. The identified interactions are as follows:

4.13.1 Human Beings / Water

Contamination of surface water and groundwater at the site has the potential to impact on the water quality in the local streams and water wells. This impact could potentially affect the amenity value of these watercourses and this would affect human beings. Contamination of groundwater beneath the site could impact on local domestic wells, would restrict any future use of the underlying strata for water supplies and would also have the potential to impact on the water quality in the streams. Mitigation measures to ameliorate these potential impacts are proposed in Sections 4.5 and 4.6, after which the effects are expected to be insignificant.

4.13.2 Human Beings / Air

Dust emissions and noise emissions from the facility have the potential to impact on human beings in the vicinity of the site. Impacts from dust are addressed in Section 4.2 whereas noise impacts on humans are addressed in Section 4.3. Mitigation measures are proposed for each of these potential impacts and the likely significant effects on the local population are expected to be minor.

4.13.3 Human Beings / The Landscape

The development has the potential to affect human beings in the form of visual intrusion. The natural mitigation provided by the physiography of the site and additional measures proposed in section 4.10 indicate that visual effects are expected to be insignificant.

4.13.4 Water / Flora and Fauna

Contamination of surface water or shallow groundwater at the site has the potential to impact on the water quality in the streams downgradient of the site. This impact could potentially affect the aquatic life in these water courses. Mitigation measures to ameliorate this potential impact are proposed in Section 4.6 and Section 4.7, after which the effects are expected to be insignificant.

4.13.5 Water / Soil

Soil beneath the site can act as a pathway for contaminants reaching both the groundwater and the surface water. Contamination of the soil can therefore lead to contamination of the water environment. Mitigation measures to protect against this potential impact are proposed in Sections 4.5 and 4.6 which the effects are expected to be insignificant.