

**Environmental Impact Statement**

**Restoration and Filling of Quarry**

**At**

**Hollywood Great, Naul, Co. Dublin**

**on behalf of**

**Murphy Environmental**

**Volume One**

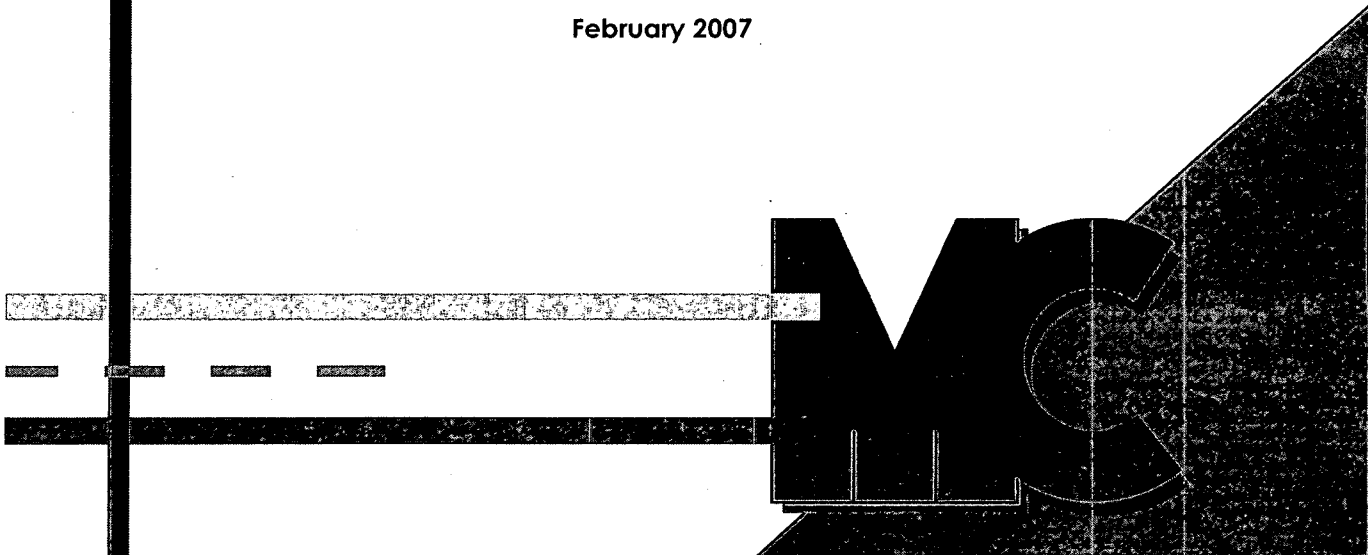
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# Table of Contents

## Study Team

### 1.0 Non-Technical Summary

- 1.1 Introduction
- 1.2 The Proposal
- 1.3 Planning & Development
- 1.4 Impacts on Human Beings
- 1.5 Traffic
- 1.6 Landscape
- 1.7 Soils/Geology/Hydrogeology
- 1.8 Surface Water
- 1.9 Noise & Vibration
- 1.10 Flora and Fauna
- 1.11 Cultural Heritage
- 1.12 Climate & Air Quality
- 1.13 Environmental Nuisances
- 1.14 Emissions to the Environment
- 1.15 Summary of Impacts, Mitigation Measures, Interactions and Alternatives Considered

### 2.0 Introduction & Administrative Context

- 2.1 Requirements of an E.I.S.
- 2.2 History of Hollywood Great Quarry and Murphy Environmental
- 2.3 The Proposal
- 2.4 Structure to the EIS
- 2.5 Data necessary to identify and assess the environmental effects of the development
- 2.6 Difficulties encountered in compiling any specific information

### 3.0 Introduction to Site and Project

- 3.1 Site Location
- 3.2 Physical Characteristics
- 3.3 Existing facilities, services and operations
- 3.4 Types of activities
- 3.5 Infrastructure & Controls
- 3.6 Landscaping Plan
- 3.7 General Operating Procedure
- 3.8 Contingency Arrangements
- 3.9 Environmental Monitoring
- 3.10 Restoration and Aftercare

### 4.0 Statutory Planning Context

- 4.1 Legislative Context
- 4.2 National Policies
- 4.3 The Fingal County Development Plan 2005-2011
- 4.4 Planning History

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## **5.0 Material Assets**

- 5.1 Introduction and Study Area
- 5.2 Archaeological and Historical Background
- 5.3 Baseline Study
- 5.4 Field Walking Survey

## **6.0 Impacts of Proposed Development**

- 6.1 Human Beings
- 6.2 Traffic
- 6.3 Landscape and Visual Impacts
- 6.4 Soils/Geology/Hydrogeology/Surface Water
- 6.5 Noise Impact
- 6.6 Flora and Fauna
- 6.7 Cultural Heritage
- 6.8 Climate
- 6.9 Air Quality
- 6.10 Environmental Nuisances
- 6.11 Emissions to the Environment
- 6.12 Natural Resources Used

## **7.0 Summary of Impacts, Mitigation Measures, Interactions and Alternatives Considered**

- 7.1 Summary of Impacts
- 7.2 Alternatives Considered
- 7.3 Likely significant direct and indirect effects on the environment arising from use of natural resources
- 7.4 Likely significant direct and indirect effects on the environment arising from emissions of pollutants and creation of nuisances
- 7.5 Methods used to forecast impacts on the environment
- 7.6 Interaction of the foregoing

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## 1.0 Non-Technical Summary

### 1.1 Introduction

This E.I.S. has been prepared in association with a planning application to vary a previous planning permission (Reg. Ref. F04A/0363) dated 7<sup>th</sup> October 2004. That permission approved the infill with inert building material of a Quarry at Hollywood Great, North County Dublin, by Murphy Environmental over a period of 15 years. The current application seeks permission to infill an extended quarry area, and at an increased rate per year in order to complete the restoration project within 15 years as per the Grant of Permission on 7<sup>th</sup> October 2004.

### 1.2 The Proposal

This planning application and E.I.S. is concerned with the restoration and infill of a Quarry located at Hollywood Great in North County Dublin.

The Quarry has been in use since the nineteen forties and the quarrying activities are therefore a pre Planning Act use. The quarrying activity on site is coming to the end of its life cycle.

Planning Permission was granted in 1988 for the restoration and infill with inert building material of the quarry. This permission had a life of 15 years. However, there was relatively less infill in the early years of the permission as quarrying was the main activity. Infill increased in importance as the life of the permission proceeded. The permission was due to expire in July 2003 and it was extended by the Planning Authority to December 2004.

An EPA Waste License (No. WO129.01) controlling the restoration and infill of the Quarry was issued in December 2002. A planning application (Reg. Ref. F04A/0363) was lodged in 2004 which sought planning permission for a period of 15 years to restore and infill the area covered by the EPA Waste License. The area covered by this application was 13.56 HA and permission was sought to provide fill to the Quarry at a rate of 340,000 tonnes per year. At this rate, it was estimated that it would take 12 years to restore the Quarry. A Decision to Grant Planning Permission was issued on 1<sup>st</sup> September 2004 and the Final Grant of Permission was dated 7<sup>th</sup> October 2004.

In 2005 in accordance with the relevant requirements the entire quarry area was registered and licensed with Fingal County Council (Reg No. Q/05/004) The total area of the quarry as registered was 39.2 Hectares.

Over the last two years, Murphy Environmental has commissioned a number of slope stability audits of the site. In response to findings, Murphy's have cut back the sides of some areas of the quarry thereby making the slopes less steep. The soil removed has been stored on the adjoining land within the quarry area as overburden and will be used as fill when appropriate. Parts of the remainder, where suitable, have been removed from the site and sold.

Permission is now sought in this application to vary the previous permission by restoring and infilling this extra area of void. This extra area now brings the total surface area to be filled to 23 Hectares and is within the 39.2 Hectares area licensed as a quarry by Fingal County Council. At the time of the 2004

planning application the remaining void space was calculated as being 2.7 million cubic metres and it was estimated that it would require 4.05 million tonnes to fill this void.

Having regard to the remaining amount to be extracted from the quarry and the extended area to be filled, it is now estimated that the remaining void space to be filled is 3.2 million cubic metres. This will require 4.8 million tonnes of infill. If the rate of fill per annum continued to be at the level of 340,000 tonnes per annum, it would take 14 more years to complete the infill stage of the process before the final restoration of the landscape. Permission is now sought to increase the rate of fill to 500,000 tonnes per annum which would enable the infill to be completed within 9 to 10 years i.e 2016. This earlier completion of the infill will allow the restoration to be completed within the 15 years of the 2004 permission i.e. 2019.

### 1.3 Planning and Development

This proposed landfill development will be carried out in accordance with the relevant legislation on waste management in Ireland and the E.U Waste Directive. The proposal for infill is in accordance with regional objectives for waste management and is in accordance with the waste management strategy for the greater Dublin area, and in particular for Fingal County Council.

The proposed site is the site of an existing quarry which has pre-act use in planning terms. There is an existing permission for landfill on site which dates back to 1988 and a further permission was granted in 2004 to permit the infill and restoration of this quarry within a period of 15 years. There is therefore precedence for this activity in this location. Landfill with inert construction and demolition waste is in accordance with principles of sustainability and is in accordance with the objectives of the County Plan.

The site is located in an area which has been designated as an area of high landscape amenity. The proposed development will over time restore and re-instate the area to its former use and levels.

### 1.4 Impacts on Human Beings

Human beings living in the vicinity of this proposal to continue the restoration of this quarry potentially could be adversely impacted upon by way of (a) injury to the visual amenities of the area, (b) unacceptable increase in traffic, (c) increased noise levels on (d) increased dust levels.

In terms of impact on visual amenities, the infill will occur within a presently deep void and will not be visible to residential properties in the vicinity. Ultimately, the restoration of this site to a rural field will integrate this site back into the rural landscape and will therefore have positive impacts on the visual amenities of the area.

Most of the houses in the vicinity adjoin the public roadways. Most of the traffic to and from the facility will travel between the site and the nearby M1 and N1. These roads are already used by vehicles going to and from this and other quarries and landfills in the vicinity. However, it is expected that traffic will decline from quarrying within the applicant quarry over the coming years and as other quarries and landfills in the vicinity come to the end of their term of use. While the restoration traffic will increase as a consequence of the

increase in the rate of fill, this increase will be balanced by the reduction of traffic to other landfills and quarries. There will therefore not be any obvious alteration in the numbers and pattern of traffic for residents in the vicinity of the quarry.

In terms of noise, the infill operation within the quarry will not have a noticeable impact on adjoining houses. The main effect on them from a noise point of view is passing traffic which is already present from passing general traffic and vehicles associated with the quarrying operation. It is not considered that the increase in traffic due to the restoration will pose a noticeable increase in traffic noise.

In terms of dust, most of this arises from the quarrying operation and vehicle movements within and at the access to the quarry. Mitigating measures have been taken to minimize dust emissions. It is considered that all potential difficulties occur within close proximity of the quarry and that most houses in the area are sufficiently far removed so as not to be significantly effected.

It is considered that, on balance, the continued restoration of this quarry will not have adverse impacts on human beings living in this area.

## 1.5 Traffic

Based on analysis of existing truck movements to the site it is estimated that the net increase in traffic will be an average of 26 twenty tonne trucks per day.

Taking cognisance of the closure of the Baldaragh and Macken Developments in 2008 there will be an estimated net increase in traffic of 2 vehicles AADT on the LPO1090 and a net decrease of 5 vehicles AADT on the LPO1080 East.

As the quarry operation is scaled down the associated traffic will reduce.

There will be no increase in the duration of the infill and restoration operation.

The majority of trucks travel to the site via the M50, the M1 and the R132. These are high quality National Roads.

If Fingal Landfill is granted planning permission all Murphy Environmental traffic will divert from the R132 to the M1 as a result of changes to the road layout. According to the Fingal Landfill Environmental Impact Statement there will be no increase in traffic on the LPO1080 and LPO1090 attributed to Fingal Landfill.

Any deterioration of pavement condition would be expected to occur on the LPO1080 and LPO1090. Murphy Environmental has contributed a sum of €500,000 in respect of this.

## 1.6 Landscape

The site is located in an area deemed sensitive in terms of landscape, due to its position at a high point within its surroundings. The proposed extension to the restoration area and increase in the annual rate of filling is deemed to have insignificant impacts on landscape. Overall, the restoration of the quarry will have wholly positive impacts on the landscape and visual impact, by restoring it to its former levels and agricultural use. Filling and restoration will be

conducted such that contours similar to the pre-quarry condition will be restored.

## 1.7 Soils/Geology/Hydrogeology

### **Soils / Geology**

Excavations at the Murphy Environmental Site have revealed a subsurface which is typical of the Irish geological environment. A thin veneer of soil overlies glacial till of varying thickness and composition. The till is underlain by shales and limestones of Carboniferous age.

Murphy Environmental will use on-site deposits of boulder clay to form a low permeability landfill liner. Imported soils, stones and other acceptable inert wastes will be used to restore the quarry to its former landscape characteristics. On-site deposits and imported material will be used to form a subsoil and topsoil surface layer at the final restoration stage.

### **Groundwater/Hydrogeology**

Groundwater surrounding the site is not used on site nor are any of the wells in the area used for drinking water. The fully lined and engineered landfill will have negligible emissions to groundwater. Incoming wastes will be carefully checked and monitored prior to deposition in the landfill, ensuring that harmful leachates will be not be generated by the wastes. Regular monitoring, licence controls and the natural geological / hydrogeological conditions will serve to reduce risk and offer greater protection. Thus, there are no significant effects anticipated on the quality or use of the groundwater within or downgradient of the site.

## 1.8 Surface Water

It is unlikely that the proposed development will have a significant impact on surface water as there will be no uncontrolled runoff to the adjoining stream. Silt settlement ponds have been constructed at the northern part of the site for silt mitigation measures, i.e. any runoff from the site is directed via two (2 No) silt settlement ponds prior to discharge to adjoining stream. In addition, runoff from concrete hardstanding areas is directed to a silt trap and oil interceptor. The proposed restoration scheme, silt control measures, oil interceptor and surface water management infrastructure will serve to appropriately manage and treat surface water, where necessary. Annual and 6-monthly analysis of upstream and downstream surface waters and landfill leachate will all serve to monitor any potential impacts.

## 1.9 Noise & Vibrations

During the operational phase of the project, the noise sensitive locations will be exposed to noise emissions from mobile excavation plant. The predicted worst-case noise levels from plant and machinery comply with the daytime noise limit of 55dB  $L_{Aeq,30 min}$ , at the three noise sensitive locations assessed. The projected noise impact at these three assessment locations is therefore not significant. The predicted increase in traffic levels associated will result in an increase of less than 1dB in the vicinity of roads and junctions surrounding the

proposed development, which is not significant. The noise assessment has indicated that the predicted noise emissions are within the recommended noise criteria, therefore remedial measures are not required.

### 1.10 Flora and Fauna

The site operations are not expected to impact on the flora and fauna of the site as development is to be located on the site of an existing quarry and adjacent spoil heaps. There are currently no flora and fauna of significant ecological value present in the surrounding land and spoil heaps. Quarry slopes only have sparse vegetative cover.

All bordering hedgerows / tree-lines currently existing and wetlands will be maintained. There are no perceived additional impacts on Flora and Fauna associated with the proposed extended restoration footprint or increased rate of filling per annum. Rather the landfilling and subsequent restoration and mitigation measures will enhance the ecological value of the site and the surrounding locality.

### 1.11 Cultural Heritage

The ground in the quarried area of this site has already been disturbed during previous site works. However, there is undisturbed land lying below the major stockpile in the northeastern part of the site.

Fieldwalking survey detailed in section 5.4 within the area of the quarry did not reveal any archaeological remains, neither in the area of the stockpiles or in the sections of the quarry sides.

A detailed description of the characteristics of the proposal relative to the cultural heritage is given in the Material Assets Section of the E.I.S.

The restoring of this quarry to the original rolling green profiles with a resumption of agricultural after-use can only be beneficial.

Therefore it is concluded that the net effect of the overall scheme of restoration will be positive so far as the amenity and value of neighbouring material assets.

It is recommended that archaeological monitoring be carried out during and after the removal of the large stockpile.

No likely adverse significant impact is predicted on the material assets of the area. It is expected that there will be an overall long term benefit by backfilling the quarry and returning the site to useful farm land.

### 1.12 Climate & Air Quality

The proposed extension to the restoration area and increase in the annual rate of filling will have no impact on climate. Also, rainfall, wind speed and wind direction will not significantly influence the environmental impacts of the site as no odours, gases or harmful leachates are generated by the

facility. Monitoring of meteorological conditions, as per EPA Licence requirements, will be continued.

### 1.13 Environmental Nuisances

#### Dust and Mud Control

Dust and mud have traditionally been problems associated with a site of this type. The quarry void at Hollywood acts as a natural defence against dust migrating from the site towards the surrounding landscape. A number of specialist pieces of infrastructure have been purchased for the site to alleviate the problem of dust/mud. These include a roadsweeper, wheelwash, bowser and sprinklers which have made a significant contribution towards keeping the roads and air clean in the area surrounding the site. It is not expected that dust levels will increase as a result of the proposed extension of the landfill footprint. It is suggested that a combination of dust/mud control measures available at the site will be adequate to maintain any increased dust emissions associated with increased truck movements. This will be verified by ongoing dust monitoring and reporting to the Agency. Murphy Environmental must comply with dust emission limit values as prescribed by the EPA in Waste Licence W0129-01.

#### Litter and Vermin Control

Litter and vermin are not a cause for concern at the site. The materials to be landfilled are heavy, inert materials which do not become wind-blown. If litter associated with non-compacting or fly-tipped waste be deposited at the site, which may cause a litter nuisance, it will be promptly removed to an alternative licensed site. The Facility Manager will conduct checks around the site at least weekly to ensure that the site is not causing a nuisance. There will no additional litter/vermin issues associated with the proposed extended restoration footprint or increased annual rate of filling.

#### Bird Control

The nature of the waste to be deposited, i.e. inert construction & demolition waste, will not be an attraction to scavenging birds, therefore bird control is not considered an issue for this site.

#### Odour Control

Inert waste materials do not cause negative odour impacts. Wastes which cause odour issues during handling and decomposition are not licensed to be accepted at the site. There will no additional odour issues associated with the proposed extended restoration footprint or increased annual rate of filling.

#### Fire Control

There is no fire risk associated with the waste to be accepted at Hollywood Landfill. Inert waste is not combustible. The main fire risk associated with the site is from fuel storage. Murphy Environmental are aware of this risk and have made provision for fire-fighting measures in the event of an emergency situation. There will be no additional fire risk issues associated with the proposed extended restoration footprint or increased annual rate of filling.

### 1.14 Emissions to the Environment

Dust levels were moderately high on site, although recent monitoring shows that they fell within limits set by the EPA for dust emissions under Waste Licence W0129-01. The main dust sources are considered to be quarrying operations and vehicle movements. Increased levels of landfilling should not have a

significant impact on dust levels at the site, although additional vehicle movements may cause a slight increase in dust, especially in the hardstand weighbridge area. Murphy Environmental has invested in a range of dust control equipment, including sprinklers and a water bowser to be used under dusty conditions to control this problem.

### **1.15 Summary of Impacts, Mitigation Measures, Interactions & Alternatives Considered**

This report considered the potential impacts of the development in the case that no mitigating measures were in place. It then concluded that with the mitigating measures there would be no unacceptable adverse impacts as a result of the increased rate of infill per year into the extended area.

The report also considered the interactions between these impacts and found them not to be significant.

In relation to alternatives, given that this a variation to an existing permission in an existing use and location, the issue of considering an alternative location was not considered to be applicable. Alternatives were considered in terms of the alternative rate of fill per year. The figure selected (500,000 tonnes per year) was considered to be the most appropriate having regard to the size of the void, the number of years left in the permission and the time needed for restoration after infill is complete and before the expiration of the permission.

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## 2.0 Introduction & Administration Context

### 2.1 Requirements of an EIS

Environmental Impact Assessment Statements are required for certain proposals under EEC Legislation Directive 85/337/EEC.

This EIS is required in accordance with the Local Government (Planning and Development) Acts 1963 to 2000 and the Local Government (Planning and Development), Regulations, 1994 to 2001 and the European Communities (Environmental Impact Assessment) Regulations, (S.I. No. 349 of 1989), the European Communities (Environment Impact Assessment) (Amendment) Regulations 1994 (S.I. No. 84 of 1994), the European Communities (E.I.A.) (Assessment) Regulations 1996 (S.I. 101 of 1996) and the European Communities (E.I.A.) (Amendment) Regulations 1999 S.I. 93 of 1999.

Article 93 and Schedule 5 of the 2001 Regulations sets out the classes of development which must be accompanied by an E.I.S. These include Part 1 type developments which are detailed in Annex 1 of the Directive and Part 2 type developments are listed in Annex 11 of the Directive.

The accompanying E.I.S. is required under Article 93 and Schedule 5 of the 2001 Regulations.

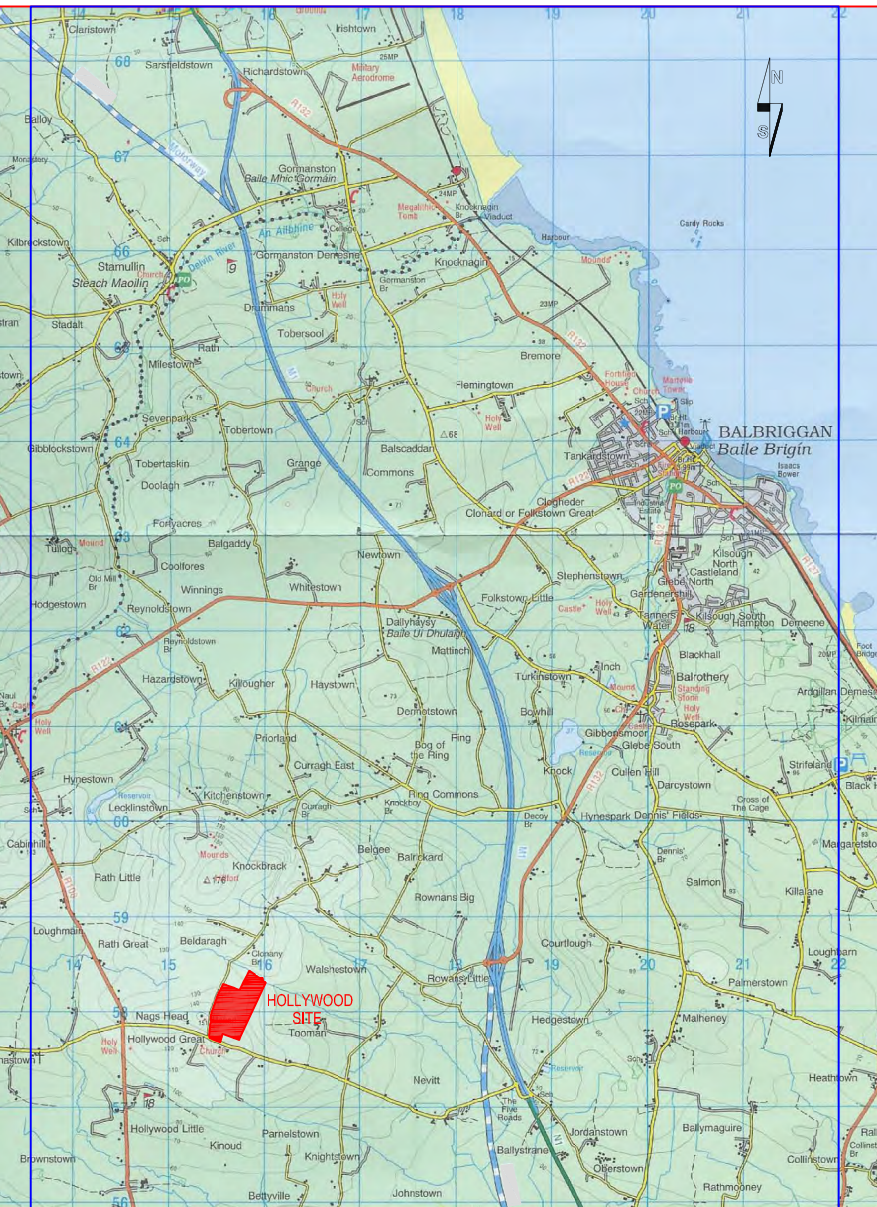
### 2.2 History of Hollywood Great Quarry and Murphy Environmental

Quarrying began at the Hollywood site in the late 1940s and Murphy Concrete Manufacturing (MCM) Ltd took over operations in 1975. MCM Ltd was formed by Seamus Murphy in 1969 and he remains as the Company Managing Director. MCM Ltd continues to manage quarry extractions at Hollywood at the present time, with operational staff based on-site, and the company office located at Sarsfieldstown, Gormanston, Co. Meath.

MCM Ltd recognised that the large quarry void that had been created over the years would need to be filled and the landscape restored. Dublin County Council granted the first planning permission for restoration in July 1988 and in 1993 they issued a permit for landfilling under the European Communities (Waste) Regulations, for a three-month period. As new waste regulations were enforced, it became necessary to apply for an EPA Waste Licence to continue filling. As soon as MCM Ltd was in a financial position to do so, the Waste Licence Application and Environmental Impact Statement were prepared by consultants on behalf MCM Ltd, and submitted to the relevant authorities in April 1999; it took over a year to prepare the application. An EPA Waste Licence (reference W0129-01) was issued in December 2002 and preparatory works for the new landfill operation in accordance with the license got underway at the site immediately.

Murphy Environmental was established as a trading division of Murphy Concrete Manufacturing Ltd. in 2003, to serve as the waste management division of the company. Murphy Environmental is responsible for all aspects of the management and operation of the landfill and compliance with the Waste Licence. Ms Patricia Rooney is the General Manager of Murphy Environmental. The registered office of Murphy Environmental is located at Hollywood, Naul, Co. Dublin.





In 2004, an application was made to Fingal County Council to renew planning permission for restoration of the quarry. A Decision to Grant Planning Permission was issued on 1<sup>st</sup> September 2004 and the Final Grant of Permission was dated 7<sup>th</sup> October 2004. The Planning Permission is for a period of 15 years.

Since Murphy Environmental was established in 2003, the company has gone from strength to strength. Staff numbers are currently at 14 full-time management and administrative staff between Hollywood and a sister facility at Gormanston (Co. Meath), with over 15 operational staff working between Murphy Environmental and MCM.

The Hollywood site has a dedicated Facility Manager, plus two additional Assistant Facility Managers. They are supported by an office team, who have responsibility for operating the weighbridge, and additional office and data management duties, and an operations team, who direct and control incoming vehicles in restoration areas. The company is further supported by its consultant teams – Patel Tonra Ltd., Environmental Consultants, Golders Associates, Engineering Consultants, AWN (Noise Consultants), Fingal Planning Consultants and Manahan Planners (Planning Consultants).

Murphy Environmental has been recognised for its achievements, both in terms of environmental management and business performance, and the company's awards include:

#### **Certification to ISO14001:2004 for Environmental Management Systems by an external, accredited body**

Murphy Environmental, Hollywood was the first privately-operated landfill facility in Ireland to attain the ISO14001 standard for Environmental Management Systems (EMS). An EMS requires the allocation of resources, assignment of responsibility and ongoing evaluation of practices, procedures and processes to improve environmental performance.



Mr. Dick Roche, T.D., Minister for the Environment, Heritage and Local Government presented the ISO14001 certificate on the 29<sup>th</sup> April 2005. Speaking at the awards ceremony, the Minister commended Murphy Environmental on their success and said that he was genuinely delighted to present the award. Murphy Environmental Gormanston attained certification to ISO14001:2004 in December 2005, and the Minister presented the award in April 2006.

#### **Drogheda Chamber of Commerce Business Excellence Awards**

Murphy Environmental took the honours for Customer Excellence in the Service Sector at the inaugural Drogheda Chamber of Commerce Business Excellence Awards in November 2005.

#### **Fingal Chamber Business Awards**

Murphy Environmental was honoured with a record-breaking double win at Swords Fingal Chamber Business Awards 2006 in the following categories: (a) Excellence in Business Practice, and (b) Corporate Social Responsibility.

### **Balbriggan Chamber of Commerce**

Seamus Murphy, Managing Director of Murphy Environmental was honoured with the 'Businessman of the Year' Award at the Balbriggan Chamber of Commerce 2006 Christmas Ball. He was recognised for his all-round contribution to both the business and the wider community.

### **Sponsorship Programmes and Community Involvement**

Murphy Environmental is involved in a number of local community initiatives and other sponsorship programmes, including a unique schools sponsorship project, which offers a five-year rolling sponsorship to 13 local primary schools for environment-related projects. Murphy Environmental is the main sponsor of Drogheda United Football Club, and has also supported Bellewstown Race Course, Balbriggan Football Club, Balbriggan R.F.C. , North County Cricket and local GAA club. In 2006, Murphy Environmental sponsored 'Habitat for Humanity', a home-building project in the Philippines.

## **2.3 The Proposal**

This planning application and E.I.S. is concerned with the restoration and infill of a Quarry located at Hollywood Great in North County Dublin.

The Quarry has been in use since the nineteen forties and the quarrying activities are therefore a pre Planning Act use. The quarrying activity on site is coming to the end of its life cycle.

Planning Permission was granted in 1988 for the restoration and infill with inert building material of the quarry. This permission had a life of 15 years. However, there was relatively less infill in the early years of the permission as quarrying was the main activity. Infill increased in importance as the life of the permission proceeded. The permission was due to expire in July 2003 and it was extended by the Planning Authority to December 2004.

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Over the last two years, Murphy Environmental has commissioned a number of slope stability audits of the site. In response to findings, Murphy's have cut back the sides of some areas of the quarry thereby making the slopes less steep. The soil removed has been stored on the adjoining land within the quarry area as overburden and will be used as fill when appropriate. Parts of the remainder, where suitable, have been removed from the site and sold.

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area licensed as a quarry by Fingal County Council. At the time of the 2004 planning application the remaining void space was calculated as being 2.7 million cubic metres and it was estimated that it would require 4.05 million tonnes to fill this void.

Having regard to the remaining amount to be extracted from the quarry and the extended area to be filled, it is now estimated that the remaining void space to be filled is 3.2 million cubic metres. This will require 4.8 million tonnes of infill. If the rate of fill per annum continued to be at the level of 340,000 tonnes per annum, it would take 14 more years to complete the infill stage of the process before the final restoration of the landscape. Permission is now sought to increase the rate of fill to 500,000 tonnes per annum which would enable the infill to be completed within 9 to 10 years i.e 2016. This earlier completion of the infill will allow the restoration to be completed within the 15 years of the 2004 permission i.e. 2019.

## 2.4 Structure of the EIS

This EIS has been prepared in accordance with the Section 177 of the Planning and Development Act of 2000 and in accordance with Article 94 and Schedule 6 to the 2001 Planning and Development Regulations.

## 2.5 Data necessary to identify and assess the environmental effects of the development.

The report assesses the likely effects of the proposal on the environment in both quantitative and qualitative terms. Some aspects of the environment and the effects that the proposal might have are not readily quantifiable in data terms. Those which are more easily measurable in data terms and fall within the scope of this environmental impact statement include site statistics.

However, site statistics and project descriptions are not an aspect of the environment, per se, they form the data base upon which most of the calculations related to impacts on the environment are based. The site statistics include the site area, rock reserves, volume of void space, rate of rock and waste disposal, hours of operation and traffic generation.

Other data collected include:

- **Air Quality-** Dust was monitored at 4 monitoring stations within or adjacent to the facility.
- **Climate-** Climatic data for the area were compiled, relating to temperature, rainfall, wind and evapotranspiration.
- **Cultural Heritage-** An appraisal of the cultural heritage was undertaken, detailing relevant aspects of local history, providing an archaeological assessment of the subject site and environs.
- **Flora and Fauna-** Field surveys and a data review were carried out to establish the baseline information in respect of flora and fauna at the site.
- **Human Beings –** A survey of the location of houses within 2km of the quarry was undertaken.
- **Traffic and Local Network -** AADTs (Annual Average Daily Traffic figures) on LP01080 and LP01090 related to an increased annual tonnage limit

at Hollywood were estimated. 2005 traffic analysis data for LPO1080 compiled for the Fingal County Council Landfill EIS was used.

- **Geology and Soils-** Site investigations and literature review techniques were utilised to establish the geological conditions at the site. The field tests comprised monitoring boreholes and field reconnaissance by geologists.
- **Groundwater-** To assess the potential impact of the fill materials upon the groundwater quality, it was necessary to determine the hydrogeological conditions, i.e. hydraulic gradient, permeability, thickness of geologic material and the quality of the existing groundwater regime. Site investigation methods included water level monitoring in boreholes, in situ permeability testing and groundwater sampling.
- **Landscape-** A detailed assessment of the landscape and visual impact of the development upon the existing built and natural environment is given. The relevant County Development Plan was referred to.
- **Noise-** Noise levels were recorded at locations in the vicinity of the site. Daytime and night-time noise levels were recorded.
- **Surface Water-** It was necessary to identify the nature and extent of the surface water drainage on and adjoining the site. This was achieved by a combination of techniques including reviewing available County Council and EPA data, site reconnaissance, water sampling and analysis.

## 2.6 Difficulties encountered in compiling any specified information

No particular difficulties, such as technical deficiencies or lack of knowledge were encountered in compiling any of the specified information contained in the statement. The majority of the information contained in the EIS was obtained from surveys and studies specifically undertaken for the purpose of preparing this study and has been compiled by specialists in the field of both environmental concerns and planning and development.

A list of the consultants who prepared this Report are set out next to the Table of contents.



### 3.0 Introduction to Site and Project

#### 3.1 Site location

The site is located at Nags Head within the townland of Hollywood Great, in North County Dublin. The town of Naul is situated approximately 4 km to the northwest, as shown on Figures 3.1.1 and 3.1.2. The site is located off the M1 Dublin-Belfast Motorway. Site traffic is directed to take the R132 Balbriggan exit off the M1. The site is located approximately 1km east of Regional Road R108 and is accessed by a minor road which links the N1/M1 to the R108.

The site is strategically located in North County Dublin, as the only inert waste facility in the region. The site has a waste catchment area covering Dublin City and County, Louth, Meath and the Border/Midlands region. Other landfill facilities in the region are shown in Figure 3.1.1. Hollywood Landfill lies in close proximity to a large concentration of inert waste-generating areas, particularly in and around Dublin City and County. The short haulage distance from waste-generating sites to Hollywood Landfill has positive environmental implications in terms of traffic and vehicle emissions.

The site is approximately (as the crow flies):

**22 kilometres north of Dublin City Centre,**

**15 kilometres north of Dublin Airport**

**17 kilometres south of Drogheda**

**8 kilometres south west of Balbriggan**

The following should be noted:-

- I. The boundary of the site to which the EIS relates is outlined in red on Figure 3.5.1. The total site area is approximately 23 ha.
- II. The location of the site as shown on Figure 3.1.2 is National Grid Reference 315500 E, 257800 N.

#### 3.2 Physical Characteristics

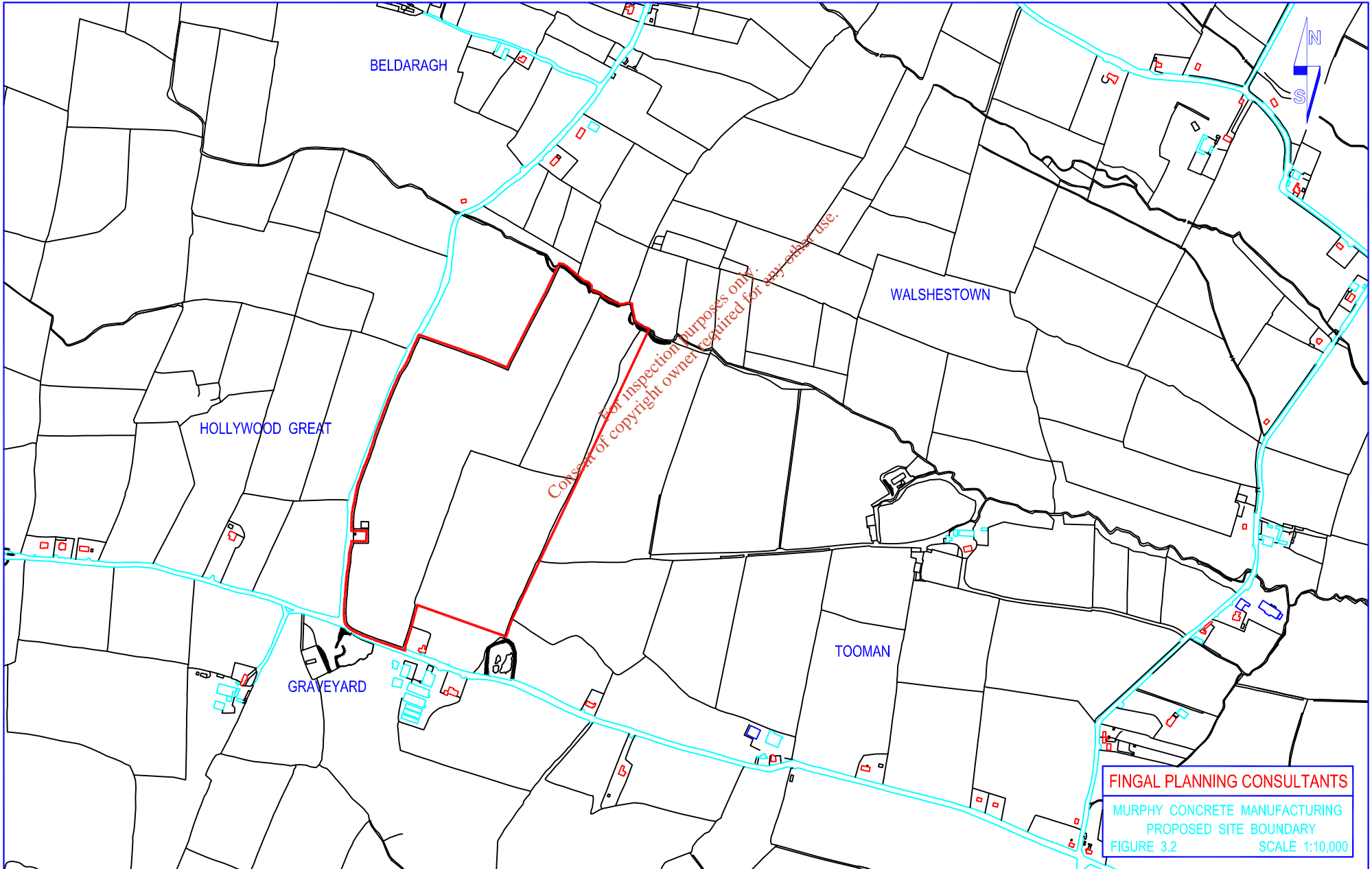
The application site for the purpose of filling and restoration is 23 Ha. At the lowest point the quarry base is at approximately 88 mOD (Malin Head). At the northern end of the quarry the excavations are deep into the native limestone units. Active extraction is actively being carried out in the middle part of the site and the northern part of the site is being filled and restored with inert waste. At the northern end the surrounding land surface is at approximately 125 mO.D. The land surface is slightly higher at the southern end where it is approximately 136 mO.D.

The calculated remaining void space of the quarry is estimated at 3.2 million cubic metres. The maximum height of the restoration contours is 148 mO.D., rising from 109 mO.D. at the northern end to 148 mO.D. around the existing site entrance area, and then dropping again to 137m O.D., at the southern end.

The site entrance, buildings and other infrastructure is located on the west side of the site.(See Drawing 07/810/1).

The quarry is being backfilled and restored in accordance with EPA Waste Licence W0129-1. Three landfill cells (Cells 1, 2 and 3) for inert wastes have







been developed since April 2003. The design and construction of the landfill cells has been in accordance with the EPA's Manual on Landfill site Design (2000) and the Waste Licence. All cells have a base and side slope liner comprising low permeability clay. The design of the cells and the subsequent CQA reports have been approved by the EPA. Cells 1 to 3 are situated in the northern part of the site. Further cells will be developed to the south and east of Cells 1 to 3.

Other features on the site include stockpiles of topsoil and subsoil at the northern end of the existing quarry and along the eastern side of the site all within the site boundary. Furthermore buffer zones exist adjacent to the site boundaries – refer to Drawing 07/810/1.

Haul roads and ramps have been constructed within the site to allow vehicular access to areas of active quarrying, landfilling and stockpiling.

### 3.3 Existing Facilities, Services and Operations

#### Facilities

Infrastructure in place is discussed in more detail in Section 3.5. The following facilities are in place on site:

- Site security, including secure entrance gate and perimeter fencing
- Site office, comprising Manager's Office, Weighbridge Office, Records Office, kitchen, toilet
- Garage building, comprising vehicle maintenance garage/workshop, canteen/mess area, toilets, storage areas
- Mobile plant and Car parking facilities
- Quarry facilities
- Landfill facilities
- Fuel Storage areas
- Waste Inspection and Quarantine Bays
- Silt Settlement Ponds and Petrol Interceptors
- Ancillary drainage piping systems and service ducting

#### Services

There is a drinking water mains connection on site and foul water is serviced by a septic tank, which is emptied regularly and sent by tanker to Ringsend Sewage Treatment Works (records are retained on site).

The facility has telephone lines in/out as well as fax, internet and email access, which is served by a separate line. Broadband was installed in 2006. Mobile telephone services are also available within the site and the surrounding area.

Electricity services are provided by ESB.

## **Operations**

### **Quarry operations**

The site is an active shale and limestone quarry. Extraction is continuing in the north and south of the quarry. Crushing and screening activities are conducted by Murphy Concrete Manufacturing Ltd. on-site.

Murphy Concrete Manufacturing Ltd and sub-contracted licensed hauliers are involved in transporting quarried materials off-site. Logistics and scheduling of haulage is controlled by the Murphy Concrete Manufacturing Ltd. offices in Gormanston, Co Meath (off-site).

A small amount of vehicle maintenance is conducted on-site in the garage building. The garage building also houses mess/kitchen/toilet facilities for all quarry personnel.

### **Landfill Operations**

Murphy Concrete Manufacturing Ltd was granted an EPA Waste Licence in December 2002. Preparatory works for waste acceptance were carried out between January 2003 and July 2003 and the first waste load was accepted on 22<sup>nd</sup> July 2003, following EPA approval.

The site is licensed to accept 340,000 tonnes per annum of inert construction & demolition and inert dredging spoils. This planning application seeks to increase the annual licensed tonnage to 500,000. This increase will also be subject to a subsequent EPA Waste Licence Review.

Restoration of the site will be completed on a phased basis and will involve the filling of adjacent cells in maximum 3-metre lifts with fill slopes no steeper than 1V:2H, to ensure the maximum slope stability. Phasing allows progressive use of the landfill area so that construction, operation (filling) and restoration can occur simultaneously. Each phase will be further subdivided into a number of engineered cells. Moreover restoration of the site will be carried out in agreement with the EPA and in line with best practice outlined in the EPA Landfill Restoration Manual.

## **3.4 Types of Activities**

Murphy Environmental (a division of Murphy Concrete Manufacturing Ltd.) is currently licensed by the EPA (Waste Licence No. W0129-01) for the operation of an inert landfill in an active shale and limestone quarry so as to effect its restoration into the surrounding landscape. The types of wastes used to backfill the Hollywood Quarry are and will be confined to inert waste arising from construction and demolition activities (e.g. soil & stones, concrete, bricks, tiles, etc.)

Murphy Environmental holds planning permission from Fingal County Council for restoration activities at the site for a 15-year timeframe, effective from October 2004. This application seeks to extend the restoration footprint and increase the rate of filling per year. The activities will be the same as those in progress since 2003 when the EPA Waste Licence became operational, as described below.

**Licensed Activities**

This activity is a waste disposal activity as defined by the Waste Management Act, (WMA) 1996, (Third Schedule) and requires a Waste Licence. The EPA, under Section 40(1) of the Waste Management Act (1996) granted Waste Licence W0129-01 (previously known as Licence Ref. No. "129-1") to Murphy Concrete Manufacturing Limited in December 2002, to carry out waste activities listed below at Hollywood Great:

<p><i>Licensed Waste Disposal Activities, in accordance with the Third Schedule of the Waste Management Act 1996</i></p>	<p><b>Class 1. Deposit on, in or under land (including landfill):</b>                  This activity is limited to the deposition of inert Construction and Demolition waste, inert dredge spoils and inert waste derived from on-site mineral extraction activities subject to the maximum quantities and other constraints listed in Schedule A: Waste Acceptance of this Waste Licence W0129-01 into a lined landfill.</p> <p><b>Class 13. Storage prior to submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where the waste concerned is produced:</b>                  This activity is limited to storage of unacceptable wastes in the waste quarantine area pending their dispatch to appropriate disposal facilities.</p>
<p><i>Licensed Waste Recovery Activities, in accordance with the Fourth Schedule of the Waste Management Act 1996</i></p>	<p><b>Class 3. Recycling or reclamation of metals and metal compounds:</b>                  This activity is limited to provide for the recovery of metal waste delivered to the facility with Construction &amp; Demolition waste. Recovered metals shall be dispatched onwards to appropriate recovery facilities. Metal waste is not acceptable for disposal at this facility. This activity shall cease upon restoration of the landfill.</p> <p><b>Class 4. Recycling or reclamation of other inorganic materials:</b>                  This activity is limited to the recovery of inert Construction and Demolition waste, inert dredge spoils and inert waste derived from on-site mineral</p>

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	<p>extraction activities at the facility for use in site development and site restoration works.</p> <p><b>Class 13. Storage of waste intended for submission to any activity referred to in a preceding paragraph of this Schedule, other than temporary storage, pending collection, on the premises where such waste is produced:</b>                  This activity is limited to the storage of wastes for recovery purposes at this facility (e.g. stockpiles of soil) and the temporary storage of unacceptable waste types such as timber and metal pending their dispatch to appropriate recovery facilities.</p>
<p><i>Licensed Waste Disposal Activities, in accordance with the Third Schedule of the Waste Management Act 1996</i></p>	<p>In addition to the above Licensed Activities under Waste Licence W0129-01, Murphy Environmental were granted the following activity in 2004:  <b>Class 5. Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment</b></p>

### Types and Quantities of Fill Materials

#### Nature of Fill

The backfill material consists of inert dry waste arising mainly from building construction, demolition and renovation projects. **Putrescible household and commercial wastes (or 'black bag' waste) are not, and will not be, acceptable at this facility.** The waste types acceptable under Waste Licence W0129-01 include materials such as stone & soils, glass, concrete, brick, tiles, ceramics, etc.

Inert waste is defined by the Landfill Directive (1999/31/EC) as: "waste that does not undergo any significant physical, chemical or biological transformations. Inert waste will not dissolve, burn or otherwise physically or chemically react, biodegrade or adversely affect other matter with which it comes into contact in a way likely to give rise to environmental pollution or harm human health. The total leachability and pollutant content of the waste and the ecotoxicity of the leachate must be insignificant, and in particular not endanger the quality of surface water and/or groundwater".

#### Fill Acceptance Procedures

Waste Acceptance Procedures are discussed in Section 3.7.

#### Restoration Levels

The site is to be restored to as close as possible to the final contours, shown on Drawing 07/810/6. It is envisaged that the site will be restored to agricultural land. The final contours have been designed to produce a landform similar to what pre-existed on the site prior to the commencement of aggregate extraction.

#### Estimated Void Space

The estimated remaining void space is 3.2 million m<sup>3</sup>.

### **Quantity and Rate of Filling**

Typically the average density of Construction and Demolition waste is in the order of 1.5 tons/m<sup>3</sup>. Based on a void space of 3.2 million m<sup>3</sup>, that would imply a capacity of 4.8 million tons. The current Waste Licence for the site sets an annual maximum tonnage limit of 340,000 pa. Murphy Environmental intends to apply to the EPA for a Waste Licence Review to increase this to 500,000 tons per annum during 2007.

### **Potential Project Life**

It is estimated that the current restoration of the quarry, i.e. landfilling the void space, will take approximately 14 more years, based on the current maximum licensed tonnage of 340,000 tons per annum.

At a proposed increased fill rate of 500,000 tonnes per annum (which will require a separate Waste Licence Review to the EPA), it will take an estimated 9.5 years to restore the site.

### **Engineered and Lined Landfill Cells**

Condition 3.12 of Waste Licence W0129-01 requires a base and side-wall lining system. It states that the liner shall comprise "*a mineral layer of a thickness of 1m with a hydraulic conductivity less than  $1 \times 10^{-7}$  m/sec or similar with equivalent protection to the foregoing*".

Three engineered cells have been constructed at the site to date. A Specified Engineering Works (SEW) proposal is submitted to the EPA for approval before commencement of construction of the landfill cells and methodologies as per the EPA Landfill Site Design Manual are followed. Fill material sourced on-site was used to provide a level surface, upon which a clay lining was laid to a thickness of over 1 meter. The clay lining material (glacial overburden till) that overlies the bedrock formations was sourced on site. This glacial material, commonly known as "blue clay", yielded a co-efficient of permeability of less than  $1 \times 10^{-10}$  m/sec.

The clay was placed in loose lifts of approximately 300mm each. Each lift was compacted by mechanical roller prior to the next lift being placed. A strict testing and engineering quality assurance regime was carried out on each layer to ensure that the mineral barrier met the specified requirements of the EPA. The side-wall liner is placed in stages of approximately 2m (vertical) on the quarry slopes.

It is proposed to repeat this clay lining procedure for all cells to be engineered on the site.

[Ref. Plates 3.4.1 to 3.4.6]

### **Capping System**

The restoration layer will comprise a 0.5m subsoil layer and 0.5m topsoil layer, in accordance with the EPA Landfill Restoration Manual. Restoration will take place progressively as the development phases are completed, in consultation with the EPA and in line with best practice outlined in the EPA Landfill Restoration Manual.



Plate 3.4.1: Engineered Cells June 2003



Plate 3.4.2: Engineered Cells May 2004



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Plate 3.4.3: Engineered Cells December 2004



Plate 3.4.4: Engineered Cells December 2005



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Plate 3.4.5: Engineered Cells May 2006



Plate 3.4.6: Testing the Clay Liner after Construction of the Cell



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### 3.5 Infrastructure & Controls

The restoration scheme includes providing the infrastructure that is required for the inert landfill site, depositing materials into the present void and restoring the site to its previous state to complement its natural surroundings. In accordance with EPA licence conditions (W0129-01) and EPA Landfill Manuals, the following infrastructure works have been completed at the site since the issue of the Waste Licence in 2002. These activities operate under existing planning permission, and the current application does not seek a change in this regime. The proposed extension to the restoration footprint and increase in the rate of filling per year will be subject to an EPA Licence Review.

#### **Site Security Arrangements**

The site entrance is located along the western boundary. The public and contractors that are not pre-registered (or spot customers) are not allowed to use the site. Members of the public can inspect the EPA licence records providing the site is pre-notified and an appointment made. All visitors must sign the visitors' book upon arrival and wear a visitors' badge whilst on site.

A heavy-duty, electric security gate was installed at the entrance to the site in 2006 to replace the pre-existing security gate. The gate is closed during non-operational hours to ensure that there is no entry during non-working hours. A concrete wall has been constructed along both sides of the entrance gate.

[Ref. Plate 3.5.1]

#### **Perimeter Fencing**

Perimeter fencing to prevent unauthorised access to the site is in place, and monthly site inspections are carried out to ensure no breaches in the boundary have occurred. Any breaches that are identified in boundary fences/hedges are repaired as soon as possible.

#### **Facility Notice Board**

The facility notice board has been erected at the site entrance, in accordance with Condition 3.3 of Waste Licence W0129-01. The board shows:

- a. That the facility is a landfill for inert waste
- b. The name, telephone number and website of the facility
- c. The normal hours of opening
- d. The name of the licence holder
- e. The licence reference number
- f. An emergency out of hours contact telephone number
- g. Where environmental information relating to the facility can be obtained

[Ref. Plate 3.5.2]

#### **Site Office**

The facility office at the site entrance is positioned such that all vehicles entering the site can be monitored, checked and weighed in. All landfill vehicles must stop at the weighbridge. Signs are in place to indicate these instructions. The Site Office has associated parking and sanitary facilities.

[Ref. Plate 3.5.3]

Plate 3.5.1: Site Entrance and Electric Security Gates



Plate 3.5.2: Facility Notice Board



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Plate 3.5.3: Site Office



Plate 3.5.4: Hardstanding Area at Site Entrance



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Plate 3.5.5: Weighbridge



Plate 3.5.6: Wheel Wash



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Plate 3.5.7: Road Sweeper



Plate 3.5.8: Groundwater Monitoring Borehole



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Plate 3.5.9: Sample Refrigerator



Plate 3.5.10: Bunded Fuel Storage Area



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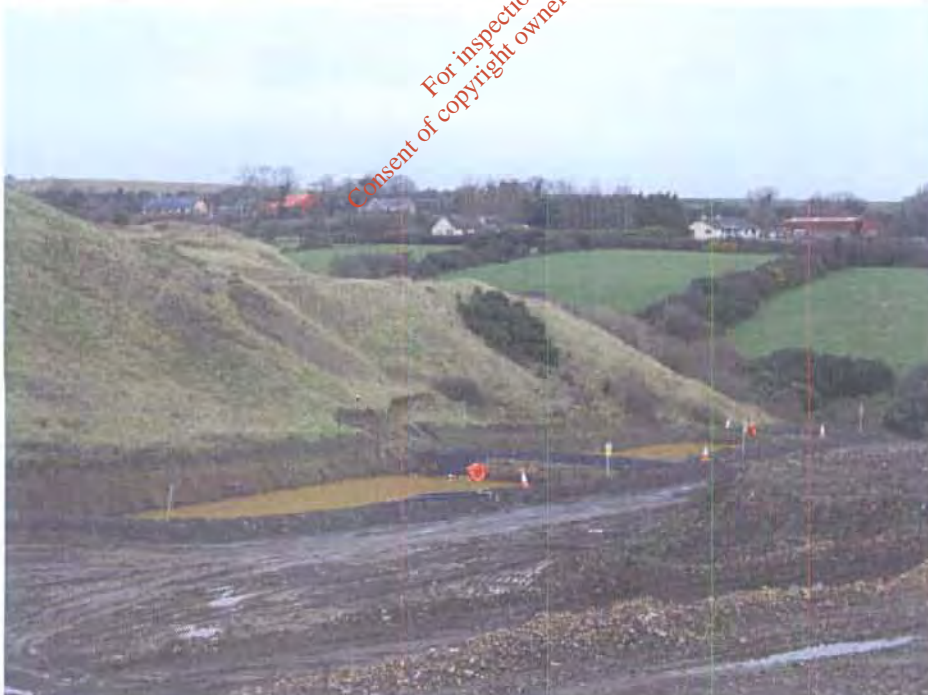
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Plate 3.5.11: Material Storage in Garage



Plate 3.5.12: Silt Settlement Pond



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Plate 3.5.13: Crushing and Screening Plant from Internal Roads



Plate 3.5.14: Crushing and Screening Plant from Floor



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### **CCTV**

Closed-circuit television cameras have been installed at the site entrance and reception area, which are monitored by the Weighbridge Operator. A split-screen system has been installed, which enables the operator to view a number of different camera views at any one time. CCTV data is recorded, stored and backed-up in conjunction with the office computer system.

### **Site Roads, Parking Areas and Hardstands**

The site roads are constructed of hard-core gravel. The entrance area and reception area has been developed as a concrete hardstand. There are designated car parking areas for staff and visitors.

[Ref. Plate 3.5.4]

### **Weighbridge**

A weighbridge has been installed below the site Weighbridge Office. The weighbridge is an Avery Berkel L2 series with precision load cell. The weighbridge is linked to a digital readout and a computer located in the office. The weighbridge system also comprises a "tally roll", which is a direct printout from the weighbridge load cell. Its purpose is to act as a verification of data on the software system. The Legal Metrology Service calibrated the weighbridge before use and re-calibrate on a regular basis.

A specialist weighbridge software system has been developed for the site by P&L Software Systems Ltd (UK). The system records the following information for each waste load:

- **Waste owner**
- **Source and origin of waste**
- **Description of the waste**
- **Waste type and EWC code**
- **Type of process producing the waste**
- **Amount of waste**
- **Existing data on the waste**
- **Physical form**
- **Colour**
- **Odour**
- **Tipping zone**

The software system has been specially adapted in order to track the testing requirements for incoming waste. Visual appearance and odour is checked and logged for each load. Only if both these characteristics are satisfactory can the transaction proceed and the load be diverted to the landfill cell. If there is suspicion of contamination, the load is directed to the waste quarantine area, where it is inspected more fully and sampled, if necessary. The software displays a "pop-up" reminder on screen whenever a random waste sample is required to be taken. The weighbridge software also has a 'reject off-site' option to track rejected loads, which are reported to the EPA, and to ensure correct records are compiled.

The weighbridge software is used to produce daily, weekly and monthly reports on types and volumes of material brought into the site. It links directly to accounting software for the purpose of invoicing. All staff have been trained on use of the software.

[Ref. Plate 3.5.5]

### **Wheelwash**

A wheelwash has been installed to ensure thorough cleansing of all lorries exiting the site. The type of wheelwash is called a "Mudblaster". The machine operates with a series of jets washing the tyre treads, the inside and outside tyre walls as well as the underside of the truck chassis removing all mud and debris, so leaving safe and dirt free vehicles for the public roads. The water used for the wheelwash is recycled rainwater from the garage roof.

[Ref. Plate 3.5.6]

### **Road Sweeper**

Murphy Environmental purchased a Johnston 600 series road sweeper, which is dedicated for use at the site.

[Ref. Plate 3.6.7]

### **Monitoring Infrastructure**

Monitoring infrastructure, including groundwater and leachate monitoring boreholes, are in place in and around the site, all of which are clearly labelled and maintained, in accordance with EPA requirements.

[Ref. Plate 3.5.8]

### **Laboratory Facilities**

No laboratory facilities exist on site. Analysis of samples of water and waste is carried out at a certified external third party laboratory, usually Alcontrol Laboratories in Ballycoolin, Dublin, as agreed with the EPA.

### **Refrigerated Sample Storage Unit**

A covered refrigerator unit is located adjacent to the site office, which was purchased to house the sample reference library of waste samples. All Level 2 "1 in 100" loads are sampled in duplicate, with 1 sample directed to the laboratory and 1 sample stored in the on-site refrigerator for a minimum duration of 3 months.

[Ref. Plate 3.5.9]

### **Bunded Fuel Storage Area**

A fuel storage tank is in place on site within a concrete bunded area, in line with the requirements of the EPA Licence. All valves, pipes and dispensers are retained within the bunded area. Bunds are subject to periodic integrity testing to ensure there is no leakage. The bunded tank area has been roofed, to prevent the ingress of rainwater. Liquid collected within the bund is tankered offsite as required.

In addition, the on-site garage is fully equipped with spill control equipment, drip trays and bunded pallets.

[Ref. Plates 3.5.10 and 3.5.11]

### **Waste Inspection & Quarantine Area**

The Waste Inspection and Quarantine areas consist of two concrete bays, which are designed to contain runoff from these areas. All loads entering the

site are visually inspected at the weighbridge and the tipping face. If required, wastes can be tipped in the Waste Inspection Area. If there is suspicion that a load is contaminated it can be stored in the Quarantine Bay pending laboratory analysis. The waste quarantine area is on a concrete hardstanding with a drainage system which is valve-controlled, and diverted through an oil-water interceptor prior to discharge to the surface water management system.

Due to the large volumes of material which may be involved, agreement was received from the EPA in July 2003 to store quarantined or material for testing on a 'sampling cell', on the active landfill cell. All material thereafter from that source site will be diverted to 'the sampling cell', until such time as laboratory analysis has been completed. Once laboratory results have been received and are acceptable, incoming material from that site will thereafter be diverted to the active tipping area. Unacceptable laboratory results will instigate a rejected load(s), which is reported to the EPA as an incident, and the waste being transferred off-site to a suitable licensed facility.

### **Traffic Control**

Traffic is controlled on site by the use of signage, speed restrictions and a one-way system. Upon entrance to the site, landfill vehicles are directed towards the weighbridge. Directional signs are in place towards the landfill cell, where the vehicle is directed where to tip the waste. Prior to exiting the site, landfill vehicles are weighed out. All vehicles must use the wheelwash before leaving the site.

### **Services and Lighting**

Water mains, telephone and power cables are on the site. Spotlights are mounted on buildings and poles in the entrance area. Portable lighting and generators are used in the quarry. Broadband was installed at the Site Office in 2006, permitting improved communication options between our Facility Managers, customers and regulators.

### **Sewerage Infrastructure**

A septic tank handles foul water from the site. This is routinely tankered to the Sewage Treatment Works in Ringsend, with records retained on-site.

### **Sheds, Garages and Equipment Compound**

Extraction operations at the site involve the use of crushing plants, which will continue to be used and are located in the central part of the site. The existing garage will be maintained and used. Servicing and maintenance of plant and equipment utilised in the landfilling operations are and will be continue to be carried out on the site.

### **Site Accommodation**

The landfill site office is in place on site and consists of a 40 feet x 12 feet "Sureguard Triple Office". The office building consists of:

- Manager's office
- Weighbridge office
- Site Files office/Visitors area
- Kitchen/dining area
- WC
- Basement area for storage of equipment, etc.

An archive unit was established at the site in 2006, for the safe and secure retention of archive site documentation and records.

There are two small compounds at the east of the site, close to the site entrance, housing telecommunications masts and other services. These services are unrelated to site activities at the Murphy Environmental facility, and are outside the site boundary.

### **Fire Control System**

A mains supply of water is available along road LP01090. A Risk Assessment report to determine the requirements at Hollywood Landfill facility for fire-fighting and firewater retention facilities was prepared by Patel Tonra Ltd. on behalf of Murphy Environmental in June 2003. The report was prepared with reference to the EPA Manual on Firewater Retention Facilities (1995). The main findings from this report were:

- a. In relation to the requirements for firewater retention facilities as per Appendix A of the EPA Manual, Hollywood Landfill does not store dangerous substances under the European Communities (Classification, Packaging, Labelling and Notification of Dangerous Substances) Regulations, 1994 nor discharge to drinking, sensitive or protected surface waters. It was deemed, therefore, that firewater retention capability at the site is not required.
- b. Site activities or materials handled/stored on site are a low fire risk. The main fire risk is associated with fuel storage on site.
- c. All fuel tanks are bunded and in the event of a fire, valves can be shut off, allowing contaminated water from the bunded area to be contained and tankered off site to a licensed facility, where necessary.
- d. Murphy Environmental are in possession of a Fire Certificate for site buildings, issued by Fingal County Council.
- e. Murphy Environmental has invested in a suitable fire safety system and fire-fighting equipment for the Hollywood facility.
- f. Over 10,000 gallons of water are stored on site, which could be used for fire-fighting in the case of an emergency.

### **Civic Amenity Facilities**

There will be no civic amenity facilities provided on the site.

### **Waste Recovery Infrastructure**

The waste recovery infrastructure is limited to mechanical separation of potentially recyclable or re-useable metals, bricks, cut stone and broken concrete by an excavator. Screening and crushing plant is utilised to produce re-useable topsoil, subsoil for lining or capping and crushed concrete for roads.

[Ref. Plates 3.5.12 and 3.5.13]

### **Leachate Management**

Rainwater that percolates through the surface of deposited materials is contained within the engineered landfill cells and may be pumped out if required, and disposed of to a licensed facility.

## Surface Water Management

Surface water runoff from hardstanding areas on site enters a surface water system, as described below. Additionally, surface water, which is pumped from operational areas of the quarry to permit ongoing extraction activities, is pumped to silt settling ponds, located in the north of the site.

### *Hardstanding Drainage*

The site entrance area has been reconstructed with a hardstanding area. Surface water run-off from the hardstand area is controlled and directed into a cross drain (a heavy duty 'Aco-drain') at the northern side of the hardstand. This surface water flows via a 150mm diameter PVC storm water drainpipe northwards to a Class 1 Bypass Separator (Klargester NSB8), a Silt Separation Tank and an Inspection chamber, as required by the EPA Licence W0129-01.

The oil chamber of the Bypass Separator is inspected regularly and when required the licensee employs a licensed haulier to export the oil off site. Records of all inspections and oil exports are kept and maintained on the site.

### *Silt Settlement Ponds*

During 2006, Murphy Environmental undertook the construction of surface water management 'settlement' ponds, located in the north of the site. The settlement ponds regulate the discharge of surface water runoff to the stream running along the northern boundary of the site. The water pumped to the ponds, and eventually discharged to surface water, is comprised only of clean rainwater from the base of the quarry, which is required to be removed for operational reasons. The settlement ponds retain the pumped water for a period of time, such that any sediment which may be suspended in the water is allowed to settle out, and falls to the base of the ponds. In this way, silt-laden water is prevented from being released into the stream. Monitoring conducted at the settlement ponds since their construction shows that they are effective in reducing the levels of suspended solids in the discharged water.

[Ref. Plate 3.5.14]

### *Wheelwash Drainage*

At the end of the wash cycle, a flush cycle directs all particles through to a submersible dirty water pump, which in turn pumps to a vertical upward flow clarifier. All solid particles settle in the bottom section of the clarifier and the cleaned water flows back to the main header tank. The settled mixture of water and solids is diverted to the landfill area.

### *Post Restoration*

Surface run-off from the fully restored quarry, will drain via overland flow to the boundaries of the site and in particular the northern hedge line and also the eastern hedge lines. Drainage and restoration proposals will be agreed in advance with the EPA, and will be in line with best practice outlined in the EPA Manual – Landfill Restoration and Aftercare.

## Landfill Gas

The types of wastes that can be accepted at the site are governed by the EPA Licence and are restricted to inert wastes. Inert waste does not biodegrade and no landfill gas is produced. Therefore, the potential for landfill gas generation at the Hollywood site is insignificant.



### 3.6 Landscaping Plan

Restoration proposals will be agreed in advance with the EPA, and will be in line with best practice, as outlined in the EPA Manual – Landfill Restoration and Aftercare. The planting proposals and restoration of the site will be undertaken in two phases. Phase 1 will be undertaken during the life of the landfill operations and will mainly consist of replanting of hedgerows when appropriate to maintain the current level of visual screening at the facility. Stage 2 will be undertaken after completion of the filling.

#### Stage 1

The main aim of Stage 1 of the landscaping plan is to continually ensure the visual screening of the site is maintained, in particular to avoid a negative visual impact of the spoil/soil stockpiles at the north-east part of the site.

#### Stage 2 of the Landscaping Plan – Final Restoration

The main aims of the final restoration plan are as follows:

##### *Grassing of Site Surface*

The site will be restored to agricultural pastureland as filling is completed within zones on the site. The proposed restoration of the site is indicated on Drawing 07/810/6. It is proposed that the final site profile will be similar in appearance to the surrounding landscape and that the final contours be similar to those prior to commencement of extraction.

##### *Woodland Copses adjacent to Townland Boundary Hedge*

It is proposed to retain the copses of woodland/scrub at the field boundaries with the townland boundary hedgerow. This woodland copse contains many mature trees and will provide a screen in the north and north east of the site.

##### *Supplementary Planting of Internal Hedgerow*

It is proposed that Murphy Environmental will continue to manage the existing hedgerows surrounding the site. In the event that supplemental planting is required (to block gaps in hedgerows) this additional planting will be carried out with a similar semi-mature plant species to allow integration into the hedgerow in as short a time as possible.

### Restoration Techniques / Guidelines

#### Soil Cultivation and Grassing

In the area of the large stockpile at the north-east part of the site it is proposed to rip the soil and topsoil and re-seed the surface within the landfilled area of the in-situ topsoil.

It is proposed that the subsoil layer in the capping system will have a minimum thickness of 900 mm. The subsoil layer will be deep ripped at depths of not less than 450 mm below surface and at intervals of 120 mm with a winged-subsoiler. A minimum thickness of 200 mm of topsoil will be cultivated and prepared for seeding. The preparation is to include for raking to encourage surface water run-off, removing stones and all foreign material, fertilising with general-purpose fertiliser and seeding with approved seed.

Soil handling will be undertaken during periods free from rain or frost and will be supervised by a landscape contractor.

### **Trees**

Any tree species chosen will be predominantly native and reflect the species composition of the adjacent hedgerows. Trees should be planted with tie and 1 No. treated stakes set in a pit. Each tree should have 70 grams of bone meal mixed with 20 litres of moss peat and good quality topsoil. Planting pits should be 350 mm wider than rootball. Bottom of pit will be broken up and turned over to a depth of 300 mm to assist drainage. A 35mm thick layer of approved and treated mulch should be applied.

### **Shrubs**

Shrub species chosen will be predominantly native and reflect the species composition of the adjacent hedgerows. Shrubs should be planted in prepared pits with backfill of topsoil mixed with 70 grams of bone meal and 20 litres of moss peat. Planting pits should be 300 mm wider than the rootball. The bottom of the pit should be broken up and turned over to a depth of 300mm to assist drainage. All shrubs should be protected by stock proof fencing to deter browsing by livestock. A 35 mm thick layer of approved and treated mulch should be applied.

### **Landscaping Programme**

Stage 1 planting will be ongoing, as required. Capping and restoration of the land surface with grass will follow the backfilling activity. Therefore, cultivation and preparation of planted areas will be undertaken on an ongoing basis over the life of the site restoration project. The Stage 2 planting and reinstatement of hedgerows will be undertaken during the first two available planting seasons following the completion of the backfilling activity in the relevant areas.

### **Landscaping Specification**

The landscaping specification prepared by P.C. Roche and Associates (Landscape architects and site planners, 120 St. Lawrence Road, Clontarf, Dublin 3) and previously submitted to Fingal County Council will be applied, as follows:

### **General**

All preparatory operations to be to B.S. 4428; topsoil operations to be to B.S. 3882, and the items stated below.

### **Finished grading**

All areas planted by the landscape contractor shall be left in a reasonably even state, with all soil dumps broken up.

### **Site access**

The landscape contractor is to consult with the developer as to the most suitable access point to undertake the works. The contractor to ensure that as little inconvenience as possible is caused to the users of the public road. In this regard arrangements will be agreed with the client as to the times for moving of material onto or about the site.

**Existing services**

The contractor is to make himself aware of the extent of the existing services in as far as they affect his contract area. The contractor to make good at his own expense and damage to services damaged, due to any cause within his control and he shall pay any costs and charges in connection with same.

The landscape contractor is to indemnify the client and the landscape architect against charge of negligence and cost of repairs caused by the landscape contractor during the course of this contract.

**Plant material**

The landscape contractor is to ensure that plants brought onto the site are grown in Ireland, written proof will be required.

**Nursery Stock**

All plant material shall be good quality nursery stock, free from fungal, bacterial or viral infection, aphids, red spider or other insect's pests and any physical damage. It shall comply with the requirements of B.S. 3936: parts 1-10: 1965 Specification for nursery stock, where applicable.

All plants shall have been nursery grown in accordance with good practice. They shall have the habit of growth that is normal for the species. The contractor will be deemed to have advised his/her suppliers of the relevant sections of this in all cases be liable to replace materials brought on site that are not in accordance with the specification.

**Species**

All plants supplied shall be exactly true to name as shown in plant schedules. Unless stipulated, varieties with variegated and/or coloured leaves not to be accepted and any plant found to be of this type upon leafing out shall be replaced by the contractor at his/her own expense.

Bundles of plants shall be marked in conformity with B.S. 3936: Part 1 1965 and B.S. 3936 Part 4: 1966. The landscape contractor shall replace any plants, which, on leafing out, are found not to conform to the labels. Definitions of all terms used in accordance with the following British Standards: - B.S. No 3936: Part 1: 1965 entitled "Nursery Stock – Trees and Shrubs" B.S. No. 3936:Part 4: 1966 entitled "Nursery Stock – Forest Trees" B.S. No. 3936: 1967 entitled "Specification for Nursery Stock"

**TREES**

All trees to be to B.S. 3936: Part 1, including orientation, pruning and root systems.

**Tree specification**

Trees shall have a sturdy, reasonably straight stem, and a well-defined straight and upright central leader, with branches growing out of the stem with reasonable symmetry. The crown and root system shall be well formed. Roots shall be in reasonable balance with the crown and shall be conducive to successful transplantation.

**Planting**

Standard and advanced standard trees planted with tie and 70 dia. treated stakes set in pit. Each tree to have 70 grams of slow releasing fertilizer mixed

with 20 litres of moss peat and good quality topsoil. Bottom of pit to be broken up and turned over to a depth of 350 mm to assist drainage.

Tree stakes to be pressure treated timber to manufactures instructions.

### **Stakes**

Round stakes shall be of peeled larch, pine or Douglas fir, preserved with a water-borne Copper chrome arsenic composition in accordance with I.S. 131. Drive stake with a wooden maul or cast-iron headed drive.

Tree ties shall be rubber, PVC or proprietary fabric laminate composition and shall be strong and durable enough to hold the tree securely in the weather conditions for a period of three years. They shall be flexible enough to allow proper tightening of the tie. Ties shall be min. 38mm wide for standard trees and upward sizes. They shall be fitted with a simple collar spacer to prevent chafing, and with a buckle for adjustment. Two ties per tree shall be applied. Nail each tie to the stake with one galvanised nail immediately behind the buckle, leaving the tie free for adjustment.

### **Tree and shrub planting Standards**

Excavate tree pits to minimum dimensions of 350 mm wider than root ball. The base of the pit shall be broken up to a depth of 350 mm below root ball and glazed sides roughened. Incorporate slow releasing fertilizer and moist moss peat to each tree pit prior to planting. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plants into position. Supply and drive the stake 800mm into the ground.

### **Containerised shrubs and herbaceous**

Excavate planting hole to a minimum depth of 350 mm wider than root ball. The base of the pit shall be broken up to a depth of 350 mm below root ball and glazed sides roughened. Apply slow releasing fertilizer and moist moss peat as directed.

### **Container grown shrubs / conifers / bare root shrubs**

Excavate planting hole to a minimum depth of 350 mm wider than root ball. The base of the pit shall be broken up to a depth of 350 mm below root ball and glazed sides roughened. Apply slow releasing fertilizer and moist moss peat as directed.

### **Protection**

Plants shall be protected from drying out and from damage in transport. All stock awaiting transport shall be protected from the wind and frost and from drying out.

### **Damage / inspection**

On completion of lifting of plants in the nursery, any broken shoots or severed roots shall be pruned, areas of damaged bark neatly pared back to sound tissue.



### **Raking off**

Upon completion of planting, all pits shall be raked over lightly to even surface and neat appearance. All stones greater than 500 mm dia. to be removed.

### **SHRUBS**

All shrubs to be to B.S. 3936, Part 1, including orientation, pruning and root systems.

### **Setting out**

All plants to be set out before planting, for approval.

### **Planting**

Shrubs planted in prepared pits with backfill of topsoil mixed with 20 litres of moss peat and 70 grams of slow releasing fertilizer. Bottom of pit to be dug over to depth of 350 mm below root ball level to assist drainage.

### **WATERING**

All bare rooted light standards and selected standards shall be soaked in water overnight, on site. Fertilisers shall conform to B.S. 5581: 1981. In the case of granular fertiliser being added to plantings, it must be mixed through and incorporated into the base of the planting hole and covered over in order to avoid roots of plants coming in direct contact.

### **GRASSING AND EARTHMOVING**

Contractor to allow for deep ripping of the sub-base with 300 mm depth at 600 mm centre rips. Sub-soil to be placed in layers not exceeding 150 mm thick.

On completion of soil spread contractor to allow for ripping of soil with deep plough at 400 mm deep and 900 mm centres. On completion of sub-soil moving the formation level shall be graded with box scraper to even, running contours.

Topsoil to be spread evenly on formation levels to achieve minimum depth of 150 mm. Topsoil to be cultivated to crumb size to a condition suitable for blade grading. When the topsoil is reasonably dry and workable grade to smooth flowing contours, with falls for adequate drainage, removing all minor ridges and hollows. Large stones and unwanted material, 50 mm and over to be picked off and removed from site.

Final contouring to be achieved with blade grader to true, flowing contours as indicated on the attached layout drawing.

The use of heavy rubber tyred vehicles shall be governed by weather conditions. All top soil to be cultivated to a depth of 150 mm prior to cultivation. Unless otherwise stated, finished levels of topsoil, after settlement, to be 32 mm minimum above adjoining pavements and kerbs.

Landscape contractors to allow for final raking to prevent the development of humps and hollows in grassed areas. Preparation to include for raking to encourage surface water run off, removing stones and all foreign material.

**Grass seed**

Grass seed mixture to be:

25% Perennial Ryegrass, Aberelf, Darius

25% Perennial Ryegrass, Bareine, Lorina

25% Chewing Fescue, Bargreen, Baroxi, Darwin, Raisa

25% Slender Creeping Red Fescue, Barcrown

or other approved.

**MAINTENANCE**

Maintenance to include; -

Grass cutting to maintain sward between 35 to 50 mm.

Fertilizing of grassed areas to commence in late spring/early summer following development of swards. Application and type of fertilizer to be agreed on site with landscape contractor, prior to application.

Replacing all plants, which die or fail to thrive, under circumstances within the contractor control, within the 18 months.

Weeding all areas, allow for supplying and spreading Simizone weed suppressing to all planted areas, to manufactures instructions.

Watering all planted areas, including shrubs and trees, allow for strand pipe connection and hoses as required.

Resetting and retying all ties to trees.

**3.7 General Operating Procedures**

Detail provided in the following section relates to operational procedures developed for the facility since the Waste Licence was issued in 2002. This application seeks to extend the restoration footprint and increase the rate of filling per year. The restoration activity will not change, and therefore the management controls and procedures currently in place will be maintained.

**Management of the Facility**

As a requirement of the Waste Licence W0129-01, Conditions 2.1 and 2.2, the facility must be managed by a competent person, and details of responsibilities, education, training and experience forwarded to the EPA. The facility has a dedicated Facility Manager and Assistant Facility Managers, all of whom have completed a recognised, competency training programme in Waste Management (FÁS/FETAC approved).

Since receiving the Waste Licence in December 2002, Murphy Environmental have put in place an Environmental Management System (EMS) at the site. This is required under Condition 2.3 of the Waste Licence. The company has gone beyond these requirements and has developed the EMS in line with the international environmental standard, ISO14001:2004. The Hollywood EMS received ISO14001 certification in December 2004, making it the first private landfill in Ireland to receive certification. Mr. Dick Roche, T.D., Minister for the Environment, Heritage and Local Government presented the ISO14001:2004 certificate to Murphy Environmental on the 29<sup>th</sup> April 2005. Murphy Environmental's Gormanston facility attained the ISO14001:2004 EMS standard in December 2005, and the Minister presented the award in April 2006.

The Environmental Management System contains the following elements:

1. General Requirements
2. Environmental Policy
3. Planning
  - a. Environmental aspects
  - b. Legal and other requirements
  - c. Objectives, Targets and Programme(s)
4. Implementation and Operation
  - a. Structure & responsibility
  - b. Competence, training and awareness
  - c. Communication
  - d. EMS Documentation
  - e. Document Control
  - f. Operational Control
  - g. Emergency Response Procedure
5. Checking and Corrective Action
  - a. Monitoring and Measurement
  - b. Evaluation of compliance
  - c. Nonconformity, corrective action and preventive action
  - d. Control of Records
  - e. Internal Audit
6. Management Review

### **Site Personnel**

The following site personnel are currently working on site:

- General Manager (1 no. full-time; between Murphy Environmental Hollywood and Gormanston)
- Facility Manager (1 no. full-time)
- Assistant Facility Manager (2 no. full-time)
- Health and Safety Officer (1 no. full-time; between Murphy Environmental Hollywood and Gormanston)
- Weighbridge Operators (3 no. full-time; 4 no. relief)
- Operations Manager (1 no. full-time)
- Quarry Manager (1 no. full-time)
- Drivers (2 no. part-time)
- Banksman (1 no. full-time)
- General Operative (3 no. full-time)
- Equipment Operator (3 no. full-time)
- Mechanic (1 no. full-time)

All staff are suitably qualified and trained for their roles. The General Manager, Facility Manager and the two Assistant Facility Managers have successfully completed the FAS/EPA Waste Management Training Course. All staff have received basic training on waste management and an introduction to Waste Licence W0129-01.

Murphy Environmental have also employed a number of experienced consultancies to assist with monitoring, environmental management and engineering – Patel Tonra Ltd., Environmental Consultants, Golder Associates,

Engineering Consultants (formerly ERML), AWN (Noise Consultants), Fingal Planning Consultants and Manahan Planners (Planning Consultants).

### **Site Opening and Operating Times**

The existing Waste Licence for Hollywood Landfill (No. W0129-01) specifies the opening and operational hours for the site, which are as follows:

Opening hours:           7.00am to 7.00pm Monday to Friday  
                                  7.00am to 5.00pm Saturday

Waste Acceptance hours:   8.00am to 6.00pm Monday to Friday  
                                  8.00am to 4.00pm Saturday  
                                  No waste acceptance on Sundays or Bank  
                                  Holidays

### **Quantity and Rate of Filling**

Typically the average density of Construction and Demolition waste is in the order of 1.5 tons/m<sup>3</sup>. The estimated remaining void space is 3.2 million m<sup>3</sup>. Based on a void space of 3.2 million m<sup>3</sup>, that would imply a capacity of 4.8 million tons. The current Waste Licence for the site sets an annual maximum tonnage limit of 340,000 pa. Murphy Environmental intends to apply to the EPA for a Waste Licence Review to increase this to 500,000 tons per annum during 2007.

### **Potential Project Life**

It is estimated that the current restoration of the quarry, i.e. landfilling the void space, will take approximately 14 more years, based on the current maximum licensed tonnage of 340,000 tons per annum.

At a proposed increased fill rate of 500,000 tonnes per annum (which will require a separate Waste Licence Review to the EPA), it will take an estimated 9.5 years to restore the site.

### **Waste emplacement and phasing of filling procedures**

The term 'cell' is often used to describe the volume of material placed in a landfill during an operational period. Waste is deposited directly into the landfill cell, as directed by the banksman. Each landfill cell is notionally sub-classified into grids, identified by a unique reference number, in order to identify the specific deposition area of each waste load and build up a 3-D model of each landfill cell. The grid location of each incoming load is saved on weighbridge software.

Waste is deposited in 5-metre lifts in each cell. Once the 5m-mark has been reached, the next cell grid is filled until the entire cell floor has been filled to a height of 5m. At this point, it is necessary to prepare the cell wall liner for the next 5m lift, and build the entire cell vertically in this fashion. Typically landfills are comprised of a series of lifts in each cell to maintain the slope stability, surface drainage and the planning of suitable haul roads to the active area, to ensure that fully laden trucks can easily deliver the material to the deposit point.

Cells which are located side-by-side and share a boundary earth bank or bund, are also operated in the same fashion as above to ensure that the vertical heights of the both individual cells, particularly at the boundary are stable. A dozer on site ensures waste is positioned and spread as required, to ensure maximum cell stability.

### **Slope Stability**

Slope stability assessments are prepared by Golder Associates (formerly ERML) annually on behalf of Murphy Environmental, in accordance with Condition 8.11 of Waste Licence W0129-01.

### **Waste Acceptance Procedures**

Detailed Waste Acceptance Procedures have been developed for Hollywood Landfill, in accordance with Waste Licence W0129-01 and Council Decision (2003/33/EC) Establishing Criteria and Procedures for the Acceptance of Waste at Landfills. This procedure is reviewed on an annual basis. A series of testing is required under Council Decision 2003/33/EC based on the following testing hierarchy:

#### *Level 1: Basic Characterisation*

This constitutes a thorough determination, according to standardised analysis and behaviour testing methods, of the short and long-term leaching behaviour and/or characteristic properties of the waste.

In the case of the Hollywood site, this testing constitutes laboratory testing for a range of parameters specified in Waste Licence W0129-01, including leachability tests. The licence also prescribes a set of limit values. If laboratory results show that waste exceeds these limit values (although a number of revisions have been agreed in writing with the Agency since the licence was issued), it is not suitable for acceptance at the Hollywood site.

#### *Level 2: Compliance Testing*

This constitutes periodical testing by simpler standard analysis and behaviour-testing methods to determine whether a waste complies with condition and /or specific reference criteria. The tests focus on key variables and behaviour identified by basic characterisation.

The Hollywood facility is required to randomly sample 1 in 100 loads over the weighbridge, which have previously undergone Level 1 Basic Characterisation. The sample is tested for a select set of parameters identified from Level 1 results. This Level 2 test acts as an independent verification of Level 1 laboratory results.

#### *Level 3: On-site verification*

This constitutes rapid check methods to confirm that a waste is the same as that which has been subjected to compliance testing and that which is described in any accompanying documents. It may merely consist of a visual and odour inspection of a load of waste before and after unloading at the landfill site.

Each and every load arriving at Hollywood Landfill is inspected visually for non-conforming waste. Visual and odour inspection are recorded as satisfactory or otherwise on weighbridge software. Where there is suspicion of non-conforming waste, the weighbridge transaction is not permitted to proceed and the load must be rejected. In this case the appropriate procedure for rejected waste loads must be followed.

Level 3 testing is conducted at the weighbridge and again at the tipping face, once the waste has been unloaded.

A summary of the waste acceptance procedures are provided below:



1. The client is requested to complete a query form detailing waste types, origin and potential contamination
2. On the basis of this information, the Murphy Environmental Facility Manager decides whether the waste is acceptable or whether a Level 1 Basic Characterisation test is required
3. Where Level 1 testing is required, results must be provided and approved prior to any waste arriving on site
4. In all cases, clients must sign a Customer Service Agreement and submit a copy of a valid Waste Collection Permit
5. Waste is received on site and relevant data is stored on the weighbridge system. The following details are recorded:
  - a. Date
  - b. Name of Carrier (and Waste Collection Permit No.)
  - c. Vehicle Registration
  - d. Waste Owner
  - e. Source and origin of waste (if appropriate name of waste facility and licence/permit number)
  - f. Description of Waste
  - g. Waste type and EWC code
  - h. Type of process producing waste
  - i. Amount of waste (tonnes)
  - j. Name of person checking load
  - k. Existing data on the waste
  - l. Physical form
  - m. Colour/Odour
6. Level 3 On-site verification is conducted for all incoming loads
7. For every 1 in 100 random loads which have been subject to Level 1, Level 2 Compliance Testing is carried out
8. If all details are satisfactory, the load is directed for disposal at the tipping face, where it is subject once again to Level 3 On-site verification.

### **Waste Placement Procedure**

A detailed Waste Placement Procedure has been developed for Hollywood Landfill. This sets out waste placement processes for the Hollywood facility and outlines the basis by which areas of the landfill site is delineated into cells and phases. This procedure is reviewed on an annual basis.

A summary of the waste placement procedure is provided below:

1. Cell construction involves:
  - a. Preparation of the cell
  - b. Laying of cell liner
  - c. Testing of the cell liner
  - d. Validation that the cell meets EPA requirements.
2. The cell to be divided into sub-grids and an appropriate referencing system assigned (e.g. C1/D1 refers to cell 1, grid reference D, level 1)

3. Incoming loads directed to cell sub-grid
4. Waste deposited by delivery contractor
5. Deposited waste compacted
6. Cell is filled to a height of 3m and then next lift of liner is constructed until entire cell has been filled
7. Upon completion of final lift, capping will be applied and the cell restored.

### 3.8 Contingency Arrangements

#### Liabilities Risk Assessment

Murphy Environmental commissioned Patel Tonra Ltd. to conduct an Environmental Liabilities Risk Assessment in 2003. The report made the following observations:

- Through the implementation of the management system and operational controls at the site, the significant possibilities for a major environmental liability appear to have been addressed appropriately.
- The only potential liability remaining would be from the spillage of diesel (during the fuelling of fixed or immobile plant – at most 2,000-3,000 litres spill capacity), with resulting impacts on surface water and perhaps groundwater with an estimated remediation cost of ca. €100,000 - €250,000.
- To control Murphy Environmental's liability, it is advised that the management system for the site includes a provision to ensure that all outside parties (architects, contractors and engineers) involved in the design, building, servicing and operation of the site (including diesel delivery) are adequately insured to cover any liabilities should they be responsible or implicated in any way in causing that liability.

#### Liabilities Risk Fund

In order to address the findings of the Environmental Risk Assessment of June 2003 and licence condition 12.2.2 of Waste Licence W0129-01, the Agency required Murphy Environmental to establish a Liabilities Risk Account for the facility for the sum of €250,000. The purpose of the fund is to cover any liabilities incurred by the licensee in carrying on the activities to which the licence relates or in consequence of ceasing to carry on the activities. Murphy Environmental has met with, and exceeded, these requirements.

#### Emergency Response Procedure

As per Condition 9.2 of the EPA Waste Licence, Murphy Environmental has submitted a written Emergency Response Procedure (ERP) to the Agency for its agreement. The ERP addresses any emergency situations which may originate at the facility and includes provision for minimising the effects of any emergency on the environment.

In addition to EPA requirements, Murphy Environmental undertook a major Health & Safety programme at its facilities during 2005-06, including the appointment of a full-time Health and Safety Officer in the company and a complete review of Health & Safety Statements and Risk Assessments, completed by an external advisor. The company has four nominated Safety

Representatives, eight First Aiders, five Occupational First Aiders, six Fire Safety Officers and four Fire Marshals.

All of our H&S representatives have been trained in their requirements, ranging from H&S Officer training, First Aid, Fire Safety and Fire Prevention training. The following additional Health and Safety training has also been conducted: Safe Pass Training, Spill Kit Training, Dump Truck Certification, Loading Shovel Certification and Defibrillator Certification.

### **Defibrillator**

A defibrillator machine was purchased and installed in both the Hollywood and Gormanston site offices in 2006. This decision was taken due to the high numbers of customers and visitors (up to and exceeding 300 people) moving through each site on a daily basis. The defibrillator is normally used immediately following a cardiac arrest, to restart the heart rhythm. 11 of our staff received accredited training in use of the defibrillator.

### **First Aid Bags**

First aid bags were installed at three strategic locations on each site during 2006: one in the offices, one in the garage/mobile mechanics unit, and one located with a machine driver. Their positioning means that, in the event of an accident at any point on the site, a First Aider and a first aid bag can with the victim within a very short period of time.

### **Occupational Noise Monitoring**

Regular Noise at Work Surveys are carried out at the Hollywood facility to determine if any of our operatives are exposed to excessive noise levels, related to working with, at or near heavy equipment/machinery. The results of the survey indicated that all cabs of machinery were sound-proofed. Staff have been provided with ear defenders for outdoor work at particular locations on site, but it is highly unusual for staff to be working outdoors at these locations.

### **ERP**

Murphy Environmental has developed an Emergency Response Procedure. This Procedure is reviewed annually. The current procedure for the site is as follows.

### **Purpose**

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

### **Responsibility**

The Site Manager 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.

**Emergency Telephone Numbers:**

Emergency Services.....	112 / 999
Balbriggan Garda Siochana.....	01 8412202
Drogheda Garda Siochana.....	041 9838777
Fingal County Council.....	01 8905000
Dublin City Council.....	01 6722222
Meath County Council.....	046 9021581
Environmental Protection Agency HQ (Wexford)	053 60600
EPA Dublin (Eamonn Merriman, Inspector).....	01 268 0100
Dept of Environment and Local Government.....	01 888 2000
Eastern Regional Fisheries Board.....	01 8379206
Health and Safety Authority (Jim Holmes).....	01 6147000
Local Doctor.....	01 8412589
Ready Mix.....	01 8411535
Don Healy.....	086 8530904

**Health and Safety Incidents**

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 General Manager and or Facility 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 is posted beside the telephone in the site office. In addition, first aid kits are available in the site offices. At least one member of staff will be trained in First Aid.

*Accidents/injuries to be reported to the Health & Safety Authority on Form F8.0.A/ACCIDENT.*

**Oil Spill/Leachate Spill**

In the event of an oil/diesel (or leachate) spill the following procedure will be followed:

- a) The source of the spill will be closed off immediately if possible. The Facility Manager or Deputy Manager will be notified immediately.
- b) Shut off valves will be closed off where appropriate.
- c) The liquid will be contained as far as is practicable by employing containment booms and absorbent mats and/or suitable absorbent

material to contain and absorb any spillage at the facility. Suitable booms and mats will be stored at the site office.

- d) A waste oil tanker (or tankers) will be contracted immediately to pump any liquid spill.
- e) The following authorities will be notified by telephone at the earliest opportunity: the EPA, Meath / Fingal County Council, the Eastern Regional Fisheries Board
- f) All oil / leachate will be removed from the surface by either pumping or use of absorbent materials. All waste oils and materials will be disposed to an appropriate facility.
- g) Once used the absorbent material shall be disposed of at an appropriate facility.
- h) All staff will be informed as to the location and use of the absorbent materials and will be proficient in their use.
- i) All such spills will be recorded on an Incident Report Form (F5.3.A/INCID).

### Breakdown of Equipment

In the event of breakdown of essential equipment, back-up equipment will be available on site, or if required, will be hired from an alternative source. The break-down of any number of machines should not affect waste acceptance at the site. Equipment will be repaired as soon as possible.

### Fire

The emergency telephone number for the fire brigade is clearly posted adjacent to all site telephones. In the unlikely event of a fire in any of the site buildings the following procedure will be employed:

- a) All staff will be evacuated from the site buildings.
- b) The fire brigade will be notified immediately.
- c) The Facility Manager will be informed immediately.
- d) If the Facility Manager confirms that there is no incident or fire on the site (i.e 'false alarm') the ERP is disengaged, the fire alarm is deactivated and reset.
- e) It may be possible for site staff to extinguish small fires using the fire extinguishers and fire hoses located throughout the facility. This procedure will be restricted to small fires only and the decision will be made by the Site Manger.
- f) All incoming vehicles will be directed to an alternative facility and the site entrance kept clear of traffic and machinery.
- g) The EPA, Meath / Fingal County Council and the Eastern Regional Fisheries Board will be notified at the earliest opportunity.
- h) *All fires will be recorded on an Incident Report Form (F5.3.A/INCID).*

### Slope Failure

Slope stability assessments to be completed annually to highlight and remedy areas of concern; this a requirement of EPA Licence W0129-01.



- a) In the event of a slippage, evacuate all personnel from the proximity and prevent access.
- b) In the event of injury contact the emergency services.
- c) Halt all machinery operation.
- d) Congregate at Assembly Point.
- e) Damage to be assessed by Quarry Manager / Engineering Geologist.
- f) Remedial action must be completed before access is permitted to affected area.
- g) *All slope failures will be recorded on an Incident Report Form (F5.3.A/INCID).*

### 3.9 Environmental Monitoring

Murphy Environmental is required, under Waste Licence W0129-01, to carry out an extensive monitoring schedule at the Hollywood facility. Monitoring locations are shown in Figure 3.9.1. The monitoring required under the Waste Licence comprises the following elements:

#### Dust

Dust is monitored at four locations on a quarterly basis.

#### Noise

An annual noise survey is conducted at 3 locations in close proximity to the site.

#### Surface Water

Surface water is monitored at 2 locations, upstream and downstream of the site. Analysis is conducted for the parameters listed in Table D.4.1 of Waste Licence W0129-01, on a six-monthly basis.

#### Groundwater

Groundwater in and around the landfill is monitored at 7 boreholes – BH4, BH5, BH6, BH8, BH9, BH10 and BH11. There are no private wells in the area abstracting water for drinking purposes. Groundwater monitoring is conducted quarterly or annually, as prescribed in Table D.4.1 of Waste Licence W0129-01.

#### Leachate

Leachate is monitored at locations within deposited waste materials at a minimum density of one monitoring borehole per 2 hectares of landfill. Currently there is one leachate monitoring point on site. Leachate is monitored six monthly, as prescribed in Table D.4.1 of the Waste Licence.

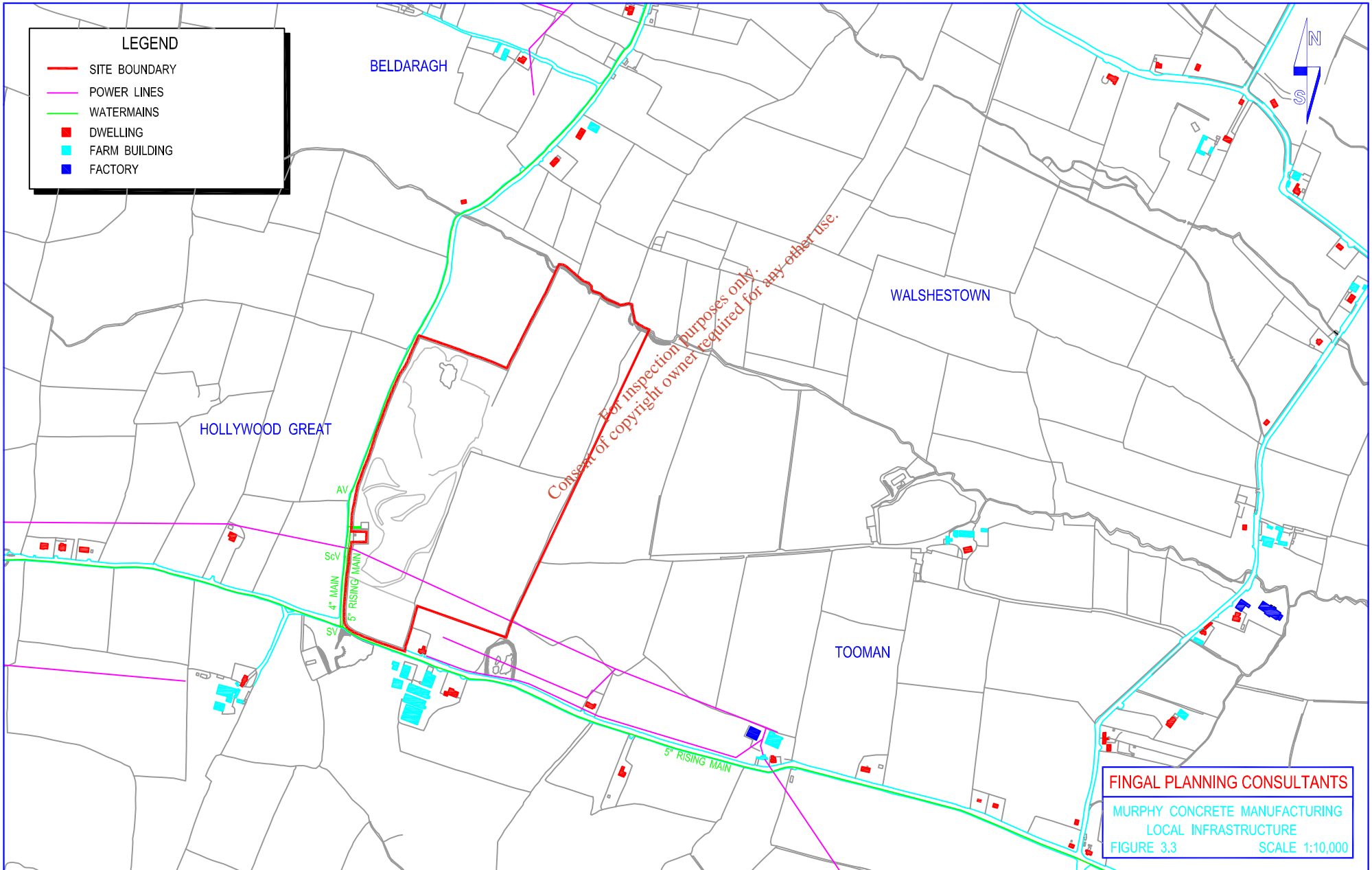
#### Landfill Gas

The licence does not require that any infrastructure for landfill gas collection or any monitoring for landfill gas is required at the site.

#### Meteorological Data

The following daily meteorological data is collected from Met Eireann records for Dublin Airport:

##### Precipitation



**Temperature (max and min)**  
**Sunshine hours**  
**Wind force and direction**  
**Evapotranspiration**  
**Humidity**  
**Atmospheric pressure**

### **Odours**

The nature of the waste significantly limits the potential for odour generation and odour impacts. No odour impact has been recorded.

### **Nuisance Monitoring**

The Facility Manager conducts weekly inspections of the facility and its immediate surrounds for potential nuisances caused by litter, vermin, birds, flies, mud, dust and odours.

### **Stability and Settlement**

A survey of the site is carried out once per year during the life of the restoration project and in each of the three years after closure of the facility. The need for continuing with an annual topographic survey will be reviewed upon completion of the third post closure survey, as prescribed in Waste Licence W0129-01.

### **Topographical Monitoring**

A topographical survey is carried out annually to measure the remaining available void space, as prescribed in Waste Licence W0129-01.

## **3.10 Restoration & Aftercare**

### **Restoration & Aftercare Fund**

Murphy Environmental, in consultation with the EPA, has established a restoration fund linked to the volume of incoming waste. The duration of the fund shall be the life of the landfill plus 30 years and 6 months.

### **Restoration**

Waste Licence W0129-01 sets conditions on Murphy Environmental for restoration and aftercare of the facility. Recommendations made in the EPA Landfill Manual for Restoration and Aftercare and any other relevant guidelines will be followed for this process.

A phased restoration approach will be applied. When finished levels have been reached for any particular phase, the restoration layer will be laid, consisting of:

1. Subsoil layer of 0.5m
2. Topsoil layer of 0.5m

Soil for cover will be sourced from site deposits and clean incoming soil for disposal.

Establishment of restoration vegetation will include:

- sowing of grass
- planting of boundary hedgerows, trees and shrubs

Figure 3.14.1 depicts a schematic of the proposed landfill cells for the site. The figure includes also the proposed restoration levels (schematic and not to scale) for the site.

### **Decommissioning**

The existing infrastructure, such as site office, weighbridge, etc. will be decommissioned upon completion of the final landfill phase.

### **Aftercare**

Aftercare of the site once the lands have been restored will include:

- Inspections and surveys of the drains and land surface
- Maintenance of hedges and the grassland
- Maintenance of existing infrastructural installations:
  - Pathways
  - Access points and signposting
  - Car parks
  - Fencing and security
  - Reporting to the Agency

Monitoring to be agreed with the EPA. Monitoring will include:

- Meteorological
- Groundwater levels
- Groundwater composition
- Leachate volume
- Leachate composition
- Topographical survey

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## 4.0 Statutory Planning Context

### 4.1 Legislative Context

The primary statute law on waste management is contained in:

- **The Waste Management Act 1996.**
- **The Environmental Protection Agency Act 1992.**
- **The Protection of Environment Act 2003.**
- **The Quarries and Ancillary Activities Guidelines for Planning 2004.**
- **The Planning and Development Act 2000.**
- **EU Landfill Directives 1999 and 2003.**

#### **Waste Management Act 1996**

The Waste Management Act, 1996 (No. 10 of 1996), is a framework legislation designed to cover all aspects of waste pollution. It sets out a procedure for the regulation of waste activities. Under the Act the term waste is defined as;

1. any substance or object belonging to a category of waste specified in the first schedule of the Act for the time being included in the European Waste Catalogue, and
2. any substance which the holder discards or intends to or is required to discard- anything which is discarded or otherwise dealt with as if it were waste shall be presumed to be waste until the contrary is proved.

The Waste acts sets out the responsibilities and functions of various persons in relation to waste. The Act –

- **Prohibits** any person from holding, transporting, recovering or disposing of waste in a manner which causes or is likely to cause environmental pollution.
- **Requires** any person who carries on activities of an agricultural, commercial or industrial nature to take all such reasonable steps as are necessary to prevent or minimize the production of waste.
- **Prohibits** the transfer of waste to any person other than an authorized person.
- **Requires** the Environmental Protection Agency (EPA) to make a national plan in relation to hazardous waste.
- **Imposes** certain obligations on local authorities to collect household waste and to provide facilities for the recovery and disposal of such waste.
- **Enables** the Minister for the Environment and Local Government to make Regulations for various purposes to promote better waste management.
- **Provides** for substantial penalties for offences.

The Act establishes a framework for waste planning in Ireland. Local Authorities are obliged to make a plan in respect of their functional area.

The Waste Management (Amendment) Act 2001 (s4) provides that all development plans are deemed to include the objective contained in



the Waste Management Plan in force in relation to the area. It sets out procedural matters relating to development which is in accordance with the Waste Management Plan but contravenes any other objective of the Development Plan.

### **The Environmental Protection Agency Act 1992**

The EPA is responsible for –

- The making and regular review of a National Hazardous Waste Management Plan (NHWMP),
- Integrated licensing of all significant waste recovery and disposal activities, including all landfills,
- The establishment and maintenance of a National Waste Database (1992 Act).
- Development of criteria and procedures for the selection, management, operation and termination of use of landfill sites (1992 Act),
- Authorization of waste imports.

Local Authorities are responsible for –

- The making and regular review of waste management plans (WMPs) in relation to non-hazardous wastes,
- Authorization and control of commercial waste collection activities (under forthcoming Regulations and using existing By-law powers),
- Authorization of waste exports (TFS) and monitoring of internal movements of hazardous wastes,
- Authorization of waste permitting of small scale recovery and disposal activities,
- Ensuring adequate waste collection, recovery and disposal arrangements in their functional areas,
- General enforcement of 1996 Act.
- Monitoring and inspection of waste activities generally, and
- Application of nutrient management planning requirements.

### **Protection of the Environment Act 2003**

The Protection of the Environment Act 2003 brings the Environmental Protection Agency Act 1992 and the Waste Management Acts fully into line with the Integrated Pollution Prevention and Control Directive.

It also updates and improves in a number of respects the legislation governing the Integrated Pollution Control licensing regime (including greater consistency with the provisions of the later Waste Management Act 1996) and provides a statutory basis for incorporating improved groundwater protection requirements into that regime. The Principal waste-related provisions of the Act provide for

- The review, variation or replacement of a waste management plan to be an executive function
- The introduction of explicit new powers for local authorities to make charges for waste services, as an executive function,
- The introduction of a presumption, for the purposes of prosecutions, that the carrying on of a waste activity other than

under and in accordance with any requisite authorisation shall be deemed likely to cause environmental pollution, unless the contrary can be shown,

- The removal of the obligation on local authorities to collect household waste from a person if that person has failed to pay a relevant waste charge,
- The EPA to determine that, where a waste activity is carried on in a facility connected or associated with an IPPC licensable activity, a licence under either the Environmental Protection Agency Act 1992 or the Waste Management Act 1996, but not both, shall be required.
- The Act also proposes a strengthening of provisions in the Litter Pollution Act 1997 by increasing litter fines, giving local authorities wider powers to make anti-litter bye-laws for their functional areas and imposing greater restrictions on advertising material in public places.

### **Quarries and Ancillary Activities - Guidelines for Planning Authorities April 2004** - issued by **Department of the Environment, Heritage and Local Government**

#### **Purpose and status of 2004 guidelines**

These Guidelines are intended to:

- offer guidance to planning authorities on planning for the quarrying industry through the development plan and determining applications for planning permission for quarrying and ancillary activities (Part A);
- be a practical guide to the implementation of section 261 of the Planning and Development Act, 2000 (Part B).

The Guidelines state that

*“Aggregates are a significant natural resource. The extractive industries make an important contribution to economic development in Ireland. However, the operation of quarries can give rise to land use and environmental issues which require to be mitigated and controlled through the planning system. These Guidelines seek to identify those issues and to suggest best practice in dealing with them. It is important that planning authorities should recognise that quarries (including sand-and-gravel pits) vary greatly in size, with varying environmental impacts, and that the planning response to proposed developments should be tailored accordingly.”*

These Draft Guidelines are published by the Minister for the Environment, Heritage and Local Government under section 28 of the Planning and Development Act, 2000 which requires both planning authorities and An Bord Pleanála to have regard to them in the performance of their functions.

The Guidelines state that many of the quarries operating today have a history of operation from before the introduction of the Local Government (Planning and Development) Act, 1963 on 1 October 1964, whether permanently or on a seasonal or occasional basis. The recent growth in the economy has led to a rise in the number of quarries being worked on a permanent basis and an expansion in the

size and activity of these quarries. Local concerns about the impact of quarries' operations on communities have as a consequence increased.

### **The Guidelines allude to the Economic importance of quarries**

**The Draft Guidelines state** *"Construction aggregates and dimension stone are basic materials for the construction industry. Aggregates are an essential input to the construction industry, which is worth about €20 billion to the Irish economy each year. Over 100 million tonnes are used annually in the manufacture of concrete products, road materials, and other ancillary products. For example, it is estimated that an average of over 300 tonnes of aggregates are consumed in the construction of an ordinary single house. About 70% of aggregates is obtained from hard rock quarries by drilling and blasting, and about 30% is extracted by direct digging from sand and gravel pits. In addition, Irish dimension stone operators produce approximately 250,000 tonnes of cut stone annually, about half of which is exported to Europe."*

*"According to industry sources, there are about 400 pits and quarries in Ireland, of which about one-third are major operating quarries; many of the smaller sites operate on an occasional or low-output basis. There are about 100 concrete block plants and 200 readymix concrete plants. Employment in the concrete industry exceeds 10,000. Building output grew by over 33% between 1998 and 2002 or by an average of 6.5% per annum. The annual growth rate moderated to 3% in 2002 and is predicted to decline by around 1% in 2003. The ESRI Medium Term Review, July 2003, predicts modest growth in output of 0.2% and 3.4% in 2004 and 2005 respectively"*

*"By their nature, aggregates can only be worked where they occur. Sand and stone have a low value-to-weight ratio, and therefore it is generally neither economically nor environmentally sustainable to transport them any great distance to their market due to increased transport costs. Many pits and quarries tend to be located within 25 km of urban areas, where most construction takes place."*

According to the Strategic Planning Guidelines for the Greater Dublin Area (1999), which assumed a high in-migration scenario, there could be a need for between 65 and 80 million tonnes of aggregates in the period up to 2011 to meet housing demand alone, with additional demand arising from the construction of other buildings and infrastructure.

### **Restoration of quarries – The Guidelines state**

*'Quarry restoration can not only replace, but may even add to, the diversity of plants and wildlife. There are many options for restoration that enable land to be returned to an attractive and useful form. Site-specific restoration options should be evaluated as part of a site restoration plan. On the other hand, natural habitats can be damaged or lost entirely as a result of quarrying and extraction, and features such as hedgerows, stone walls and trees can be removed. Extraction and quarrying activities have the potential to impact on areas of valuable habitat, including (Habitats Directive) Annex I priority habitats such as limestone pavement, or orchid-rich grassland on eskers, where they are in the vicinity of such habitats. Habitats outside the quarry site can be*

impacted on indirectly by dust deposition, alteration to groundwater or surface water supplies, or as a result of run-off or siltation. In each case, it is imperative that the developer has given appropriate consideration to designated habitats, and has designed the workings in an environmentally sensitive manner."

"The method of extraction, together with proposed restoration schemes, where properly planned and implemented, can minimise potential adverse impacts".

- Where possible, existing landscape features (such as hills and trees) should be used to screen new extractive industry development. Native species of trees and shrubs can be planted to create food reserves for wildlife.
- Landscaped mounds, sometimes using topsoil and overburden from the aggregate workings, can be constructed to screen unsightly excavations, plant or storage ponds. Topsoil and subsoil should be stored separately after surface clearance to facilitate re-use and should also be seeded. Once work has started, it may be possible to move equipment and structures to well within the site and in some cases to locate plant in the deepest part, so as to lessen the visual, noise and dust nuisance impacts on adjoining properties. Suitable selection of colours and finishes for buildings and plant may help lessen the visual impact.
- Restoration is a process that will enable the worked-out quarry or sand pit to be used for its original purpose (such as agriculture) or adapted for a new use (such as amenity). Restoration includes design, initial landscaping works, soil spreading, final landform construction and aftercare. Aftercare is the work done after the replacement of the soil and includes fertilising, planting, construction of pathways, vegetation maintenance and an ongoing long-term commitment to the restored land. For successful restoration, steps must be taken at every stage, from design through operation to decommissioning of the facility, to ensure that restoration is integrated into the process.
- All proposed extractive development proposals must be accompanied by detailed restoration and after-care plans (although in the case of sites with a long working life, it may be appropriate to establish the need for such plans at the outset, while leaving the details to be agreed either on a phased basis or towards the end of the extractive process). Progressive restoration should be employed where relevant and practicable, e.g. for sand and gravel pits.
- All buildings, plant, internal roads and paved areas should be removed when extraction is completed, unless otherwise agreed as part of the restoration plan. Depending on the terrain, the existing character of the area, and the nature and scale of the aggregates extraction, a variety of after-uses may be possible, including farming, forestry, recreation/amenity uses, nature conservation, or industry. Where the excavated area will be below the water table, a landscaped pond or lake may be possible. It is important that the acceptability of the proposed after-use be discussed with the planning authority at the pre-application stage. The aspirations of the local community should be taken into account in this regard.

The proposed development will comply fully with these Draft Guidelines

### **Planning and Development Act, 2000 in relation to quarrying states**

The Act contains both mandatory and discretionary development plan objectives. Mandatory objectives (section 10) of most relevance to quarries include:

- The conservation and protection of the environment including, in particular, the archaeological and natural heritage and the conservation and protection of European sites and any other sites (such as Natural Heritage Areas - NHAs) which may be prescribed;
- The preservation of the character of the landscape where and to the extent that, in the opinion of the planning authority, the proper planning and sustainable development of the area requires it, including the preservation of views and prospects and the amenities of places and features of natural beauty or interest.

Relevant discretionary objectives in the First Schedule of the Act include:

- Regulating, promoting or controlling the exploitation of natural resources;
- Protecting and preserving the quality of the environment, including the prevention, limitation, elimination, abatement or reduction of environmental pollution and the protection of waters, groundwater, the seashore and the atmosphere;
- Securing the reduction or prevention of noise emissions or vibrations;
- Preventing, remedying or removing injury to amenities arising from the ruinous or neglected condition of any structure or from the objectionable or neglected condition of any land.

In attaching conditions the Guidelines also recommend possible planning conditions which may be imposed by planning authorities. In relation to extraction limits the Guidelines state :

*'avoid attaching conditions which limit the quantity of material which may be extracted annually, except where this is strictly needed to regulate environmental impacts, e.g. where traffic movements, amount of blasting, etc. have been linked in the EIS to anticipated annual extraction rates, and the acceptability of the development has been decided on that basis'*

## **4.2 National Policies**

### **Sustainability - A Strategy for Ireland**

The Government set out the policies on sustainability in their 1997 publication "Sustainability - A Strategy for Ireland." And 'Making Ireland's Development Sustainable', 2002

Sustainable development means meeting the needs of the present generations without reducing the capacity of the environment to sustain future generations. This involves living in such a way as to respect the limits of the natural system upon which life depends. At



the heart of sustainability is the need to achieve a balance between human activity, development and protection of the environment. The fundamental idea is that to maintain and develop a good quality of life for all relies on sound long term appropriate economic development, which can only be supported by a healthy and diverse environment.

The infill and restoration of quarries must be carried out in accordance with the principles of sustainability.

## **Regional Planning Guidelines**

### **Waste Management Plan for 2005-2010**

The Waste Management Plan for the Dublin Region has been developed jointly by Dublin City Council, South Dublin County Council, Fingal County Council and Dun Laoghaire- Rathdown County Council. The Dublin Region adopted a Regional Waste Management Strategy in 1997, which set out to replace a system that over-relied on landfill disposal with a new approach based on integrated waste management over a 20 year period. The first Regional Waste Management Plan became effective in 2001 and the first formal review of the Plan has recently taken place during 2004-2005, culminating in this replacement Plan which was formally made by the four Dublin Local Authority Managers on 11<sup>th</sup> November 2005.

In relation to C&D Waste, the Waste Management Plan states;

*Large volumes of C&D waste are generated from road construction, general excavation and landscaping works. A significant proportion of this material does not enter the controlled waste stream; it is typically reused as fill material on site, used for land reclamation or fill material on other non-permitted sites.*

*Sites with a waste permit where material may be deposited are the largest outlet for C&D waste from the Dublin Region. The permitted material is primarily soil/stones, however some inert C&D waste may also be permitted. Significant volumes of this material originating from the Dublin Region is sent to neighbouring counties. This material was predominantly recorded as soil and stones. It is possible that significant quantities of concrete and other C&D waste was deposited in these sites without authorisation in contravention to the waste permits under which they operate.*

### **In relation to Licensed Landfills the Waste Management Plan states**

*"The vast majority of the C&D material being sent to landfills from the Dublin Region is being used for landfill engineering/site restoration works. The disposal of C&D waste to residual landfill space has decreased dramatically in the period since the introduction of the previous Waste Management Plan.*

*Several facilities have recovery operations on site which can process the material and enable them to consign it to other permitted sites and divert the material from residual landfill disposal."*

**In relation to Material Deposited at Permitted Sites the Waste Management Plan states**

*“Currently soil/ stones deposited on land under Permit is mainly regarded as a ‘recovery’ operation and the sites are nominally using the soil for beneficial agricultural use. Arguably a better approach (and a more sustainable land-use) would be to have a smaller number of C&D waste management points, for example situated in old quarries. Mixed C&D waste could be screened and materials, such as concrete, brick and stones, could be used to produce granular material suitable for engineering fill.*

*The soil could be used to reinstate and restore the quarry. Fewer sites would be easier to regulate and permitted sites for C&D waste are demanding on Local Authority resources and closely inspecting a large number of sites is challenging. The Region needs to consult with the NCDWC and the CIF to encourage the establishment of a number of additional large scale processing facilities e.g. in old quarries or other areas in the Dublin Region to screen out recyclable materials before deposition in permitted sites.”*

### **4.3 The Fingal County Development Plan 2005 - 2011**

**The Fingal County strategy states:** *“ In formulating policies to control the physical environment the Council’s aim is a social and ecological one. It seeks to protect the environment on a County basis, and to create a good physical environment in which the residents of the County can live, work and play in harmony with nature, and where communities can evolve and develop in an ecologically, socially and economically sustainable fashion.”*

**Strategy for Rural Areas**

Fingal County contains a large area of rural lands which form over half of the county area. This part of the county has a number of important roles - economically for the agricultural and horticultural industry; as an amenity for the Greater Dublin Area, and as a landscape and heritage resource which defines the edge to the Metropolitan area of Dublin. The rural area is under strong development pressure for residential and economic uses emanating from urban areas and from within the rural community itself. The rural strategy for the county seeks to:

1. manage this important resource by channelling development into appropriate locations,
2. protect the rural area from urban sprawl by meeting the majority of rural generated housing demand and local service need in rural areas in rural villages and settlement clusters and not permitting urban generated housing demand in rural areas,
3. sustain the rural character of the villages, settlement clusters and open countryside, and
4. support the continuing viability of agriculture and horticulture as a key part of the rural economy which is also vital for the management of the rural area.

Strategy RAS1

To protect rural villages and rural clusters by means of appropriate sustainable development, which will preserve the character of the villages and rural clusters and to support local services.

Strategy RAS2

To channel housing demand in rural areas into the villages and clusters and to strictly limit the development of new housing in the countryside by ensuring only essential functionally related housing is permitted. All new housing in rural areas will have to comply with the Rural Housing Policy of the Plan.

Strategy RAS3

To ensure the continuing viability of agriculture and horticulture within rural areas and to encourage farm diversification and agri-business at appropriate locations, while sustaining the rural character of the countryside as a valuable resource.

The policies and objectives for rural areas are set out in Part V of the Written Statement, and the zonings applicable to such areas are shown on the Development Plan maps.

**Extraction and Aggregates**

High quality aggregate reserves exist within the County. Such aggregates are scarce natural resources which require careful management. The Council will seek to ensure that development which would sterilise these aggregate reserves or prevent their efficient or effective recovery is not facilitated. The extraction and aggregate industry is land intensive and can have significant impacts. It is important both to minimise the impact of these types of development both during and after use and to encourage the recycling of building materials.

**ObjectiveREO17**

To carry out a baseline study of all the existing quarries, extraction pits and other aggregate sources within three years, which may result in variations to the existing policy.

**ObjectiveREO18**

To consider proposals for extraction only where the Council is satisfied that environmental quality and amenity will be fully protected and appropriate provision for the restoration of the landscape is being made.

**ObjectiveREO19**

To encourage the recycling of builders rubble to reduce the need for extraction. The suitability of any aggregate enterprise shall be assessed on the basis of the sensitivity of the local environment to the predicted impacts, the scale of the development proposed and the capacity of the road network in the area to accommodate associated traffic. The Council will not permit extractions which would result in a reduction of the visual amenity of areas of high scenic or recreational amenity or damage to areas of scientific importance or of geological, botanical, zoological and other natural significance. All workings shall be subject to landscaping requirements, and worked out quarries, pits and spoil heaps shall be rehabilitated to suitable land

uses. The use of landfilling with waste other than topsoil, subsoil and builders rubble is not considered to be an acceptable method of rehabilitation of pits. Bonds or levies will be required by the Council as a condition of any planning permission granted to ensure satisfactory reinstatement on completion of extraction.  
Formatting below.

The proposed site is zoned Objective HA in the Fingal Development Plan.

### **Table No. 5.5 Zoning Objective "HA" High Amenity**

**Objective:** To protect and improve high amenity areas.

**Vision:** The zoning objective seeks to protect these highly sensitive and scenic locations from any inappropriate development. Only agricultural uses and low impact amenity uses will be considered, when it can be shown that the special qualities of these areas will not be eroded by any proposed development. In recognition of the amenity potential of these areas, opportunities to increase public access will be sought.

### **Use Classes Related To Zoning Objective**

**Permitted** In Principle Agricultural Buildings, Agri-Tourism, Bed & BreakfastC, Boarding Kennels, Burial Grounds, Community Facility, Crèche/NurseryC, Doctor/DentistC, Utility Installations, Golf Course, Traveller Accommodation, Health Centre, Home-Based Economic ActivitiesC, Open Space, Sports Clubs, ResidentialG, Veterinary Surgery, Woodland/Urban Forestry.

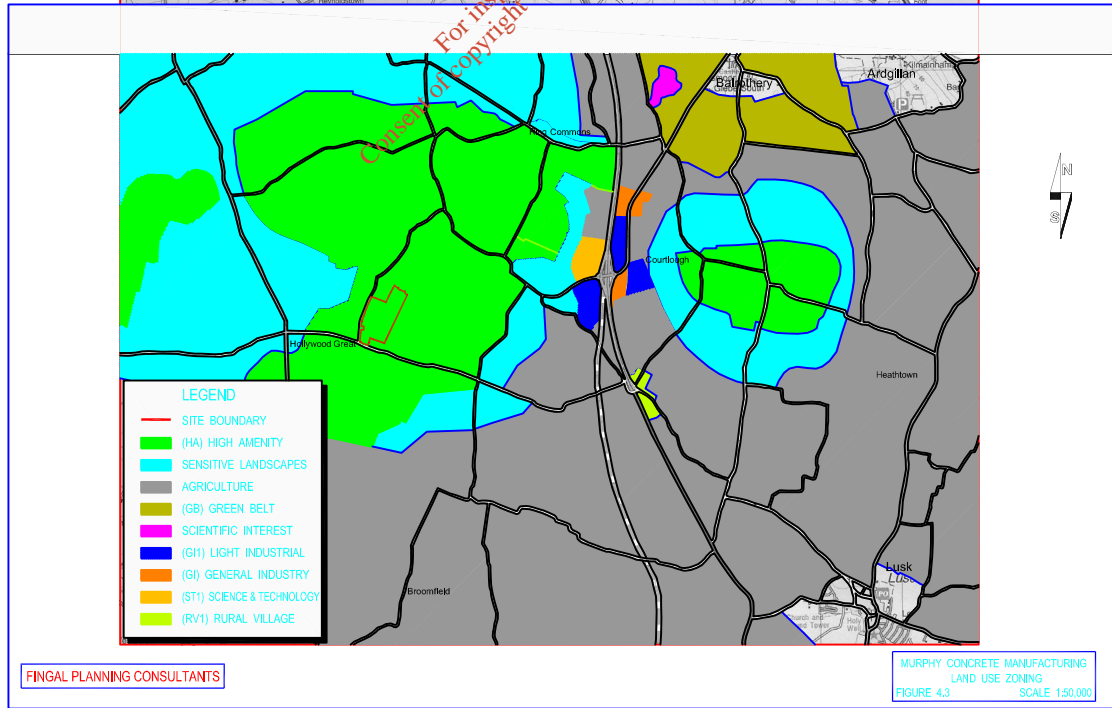
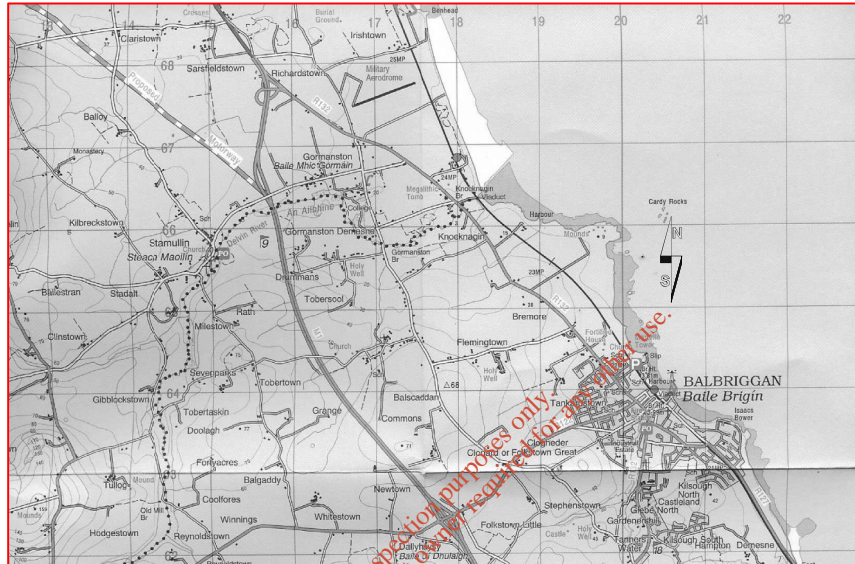
**Not Permitted** Abattoir, Advertisements/Advertising Structures, Agricultural

Machinery Sales Outlet, Aerodrome/Airfield, Alternative Energy Installations, Agri-Business, ATM, Boarding Kennels, Betting Office, Car-Park (Commercial), Concrete/Asphalt Plant, Holiday Caravan Park, Residential Caravan Park, Cash & Carry Outlet, Casual Trading, Places of Worship, Enterprise/Training Centre, Dancehall, Funeral Home, Nightclubs, Heavy Good Vehicle Park, Garden Centre, Hospital, Holiday Homes, Hotel, Household Fuel Depot, Special Industry, Extractive Industry, Light Industry, General Industry, Offices, Extraction/Quarrying, Logistics, Major Waste to Energy Uses, Motor Sales Outlet, Offices Park'n'Ride, Residential Care Home, Refuse Transfer Station, Residential Institution, Retail Warehousing, Recreational Building (Commercial), Restaurant/Cafe, Science and Technology Campus, Scrap Yard, Service Garage, Retail Shops, Take-Away, Tele-Services, Transport Depot, Warehousing.

### **Policy on sustainable development**

The Development Plan, as the Council's principal policy statement on land use, has been drawn up to reflect sustainable development objectives. A number of sustainable development criteria have been identified and the policies and proposals of the Plan are designed to facilitate their achievement. These seek to:

- a. Minimise the consumption of natural non-renewable resources,
- b. Protect and enhance natural heritage and biodiversity,
- c. Protect and enhance built and cultural heritage and material assets,
- d. Encourage sustainable forms of transport,



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MURPHY CONCRETE MANUFACTURING  
LAND USE ZONING  
FIGURE 4.3  
SCALE 1:50,000



- e. Protect the quality of the landscape,
- f. Encourage energy efficiency,
- g. Protect the environment, minimise waste and pollution,
- h. Promote the involvement of the local community in decision making and encourage social inclusion.

### **Landscape character areas.**

High Amenity Zoning (Zone HA) has been applied to areas of the County of high landscape value. These are areas which consist of landscapes of special value or sensitivity in which inappropriate development would contribute to a significant diminution of landscape amenity in the county. These landscape areas meet one or more of the following criteria:

- Contain scenic landscape of high quality
- Afford expansive or interesting views of surrounding areas
- Are components in important views and prospects
- Are unique or special within the county
- Are important elements in defining the coastal character of the county
- Act as a backdrop to important coastal views
- Contain important groups of trees or woodland
- Are elevated or ridge sites on which development would be obtrusive
- Provide public access to interesting attractive landscapes or to semi-natural areas

High amenity landscapes include the coastal zone, river valley areas (Liffey, Delvin, Ward and Tolka) and the Naul Hills area. In addition areas of sensitive landscape have been identified which generally adjoin the High Amenity Areas. These have some of the qualities of the High Amenity Zone but to a lesser degree. They are support areas to the High Amenity Areas in which development is difficult to integrate. In some cases they have been identified because inappropriate development in these areas may have a detrimental effect on the landscape quality of the high amenity areas and thus the county as a whole. Sixteen (16) Landscape Groups are also identified and described below. These are areas where interrelationships between particular areas of landscape give rise to particular sensitivities when considering development proposals. The Landscape Character Assessment also identified important views and prospects in the County, which are shown on the development plan maps. The coastline has been divided into 9 visual compartments which are indicated on the Landscape and Natural Heritage sheet. The coast is, among other things, particularly vulnerable to visual intrusion. Development occurring within a visual compartment has the capacity to visually affect the whole compartment and therefore must be sited and designed appropriately. Ridgelines and other elevated sites in the county are sensitive to development because structures on these sites can be seen over a wide area and may be obtrusive.

### **High lying character area**

This is an area of upland, rising to a high point of 176 metres at Hillfort Mound, to the south east of the Naul Village. These hills while not significant on a national scale are of regional importance and afford panoramic views of the Mourne Mountains to the north, the coastline

to the east and the Wicklow Mountains in the South. This landscape character area includes Landscape Groups 2, 3 and 4.

There are a number of important visual ridges on these uplands, which are visible over a wide area of Fingal and Meath. Almost the whole county can be seen from the more elevated roads.

The character of the uplands is very attractive in its own right with a mixture of pasture and arable farming combined with strong hedgerows in a rolling landscape.

### Principles for Development

- New development should be located well below the skyline.
- The use of existing housing stock should be maximised and existing houses should be refurbished in preference to replacement by new houses.
- Ridgelines should be protected from development.
- Listed views and prospects should be protected.
- Field and roadside hedgerows should be retained. Proposals necessitating the removal of extensive field and roadside hedgerows will not be permitted.
- A number of areas have been identified as particularly sensitive to the development of forestry; they include Landscape Groups 2, 3 and 4.
- Houses should be located further back from roads in order to reduce the scale of development as seen from the road and so minimise visual impact.
- Sites necessitating the removal of excessive hedgerows or trees are not suitable.
- Strong planting schemes, using native species, to integrate development into these open landscapes, will be required.
- Clustering with existing farmhouse and/or farm buildings is generally preferable to stand-alone locations.
- Along the coast of Fingal there are three large sand spits which have created protected estuarine and saltmarsh habitats of great ornithological and ecological interest at Rogerstown, Swords/Malahide and Baldoyle. These are all designated European Sites (Special Protection Areas or Proposed Special Areas of Conservation) under the European Communities (Natural Habitats) Regulations 1997 and any development

## 4.4 Planning History

There is a long history of quarrying on this site.

Quarrying on this site commenced in the late 1940's which was pre the 1963 Planning and Development Act. Permission was initially granted in 1998 to infill, restore and reinstate that portion of the quarry which had been excavated.

The planning application was lodged with Dublin County Council dated 15<sup>th</sup> January 1988 for a proposed infill and land reclamation works at an existing quarry at Hollywood Great, Naul, Co. Dublin. The Register Reference was 88A/32. Notification of Decision to Grant Permission was dated 13<sup>th</sup> June 1988. The Final Grant of Permission was dated 27<sup>th</sup> July 1988. The Decision to Grant Permission was subject to a total of 17 conditions.

An application for an extension of duration of planning permission was lodged on the 19<sup>th</sup> June 2003. The Register Reference was 88A/0032/E1. That extension of permission related to the same site location and site area for which planning permission was previously granted for infill in 1988.

A Decision to extend the life of the permission was granted dated 19<sup>th</sup> June 2003. The life of the permission was extended for a period of 18 months up to and including 31<sup>st</sup> December 2004.

A planning application was lodged by Murphy Environmental dated 18<sup>th</sup> March 2004 (Register Reference F04A/0363) to infill with inert material the existing quarry of 13.56 hectares as part of the restoration and reinstatement of that quarry. Permission was sought for a further period of 15 years to continue to infill the quarry at a maximum rate of 340,000 tonnes per year in accordance with the limits set in the EPA licence. A Decision to Grant Permission was made by Fingal County Council dated September 1<sup>st</sup> 2004 and a Final Grant was issued on October 7<sup>th</sup> 2004.

A Waste Licence was issued to Murphy Concrete (Manufacturing) Limited by The Environmental Protection Agency under The Waste Management Act 1996. The reference for the EPA license is WO129-1

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## 5.0 Material Assets

### 5.1 Introduction and Study Area

The following section comprises the results of an archaeological desk survey in the area of the proposed Landfill, and a field inspection of the area around the existing quarry in which the proposed landfill is planned. The proposed development entails back filling an existing quarry, but is close to areas in which archaeological remains have been preserved. Thus an assessment of the archaeological/historical potential of the site was warranted. An area covering a 3 km radius from the quarry site was studied for this report. The results indicate that there is a significant density of archaeological sites in the area. However, the nature and design of the proposed development is such that interference with these sites should be kept to a minimum.

### 5.2 Archaeological and Historical Background

Refer to Figure 5.1.1 for the locations of the sites and monuments referred to in this text.

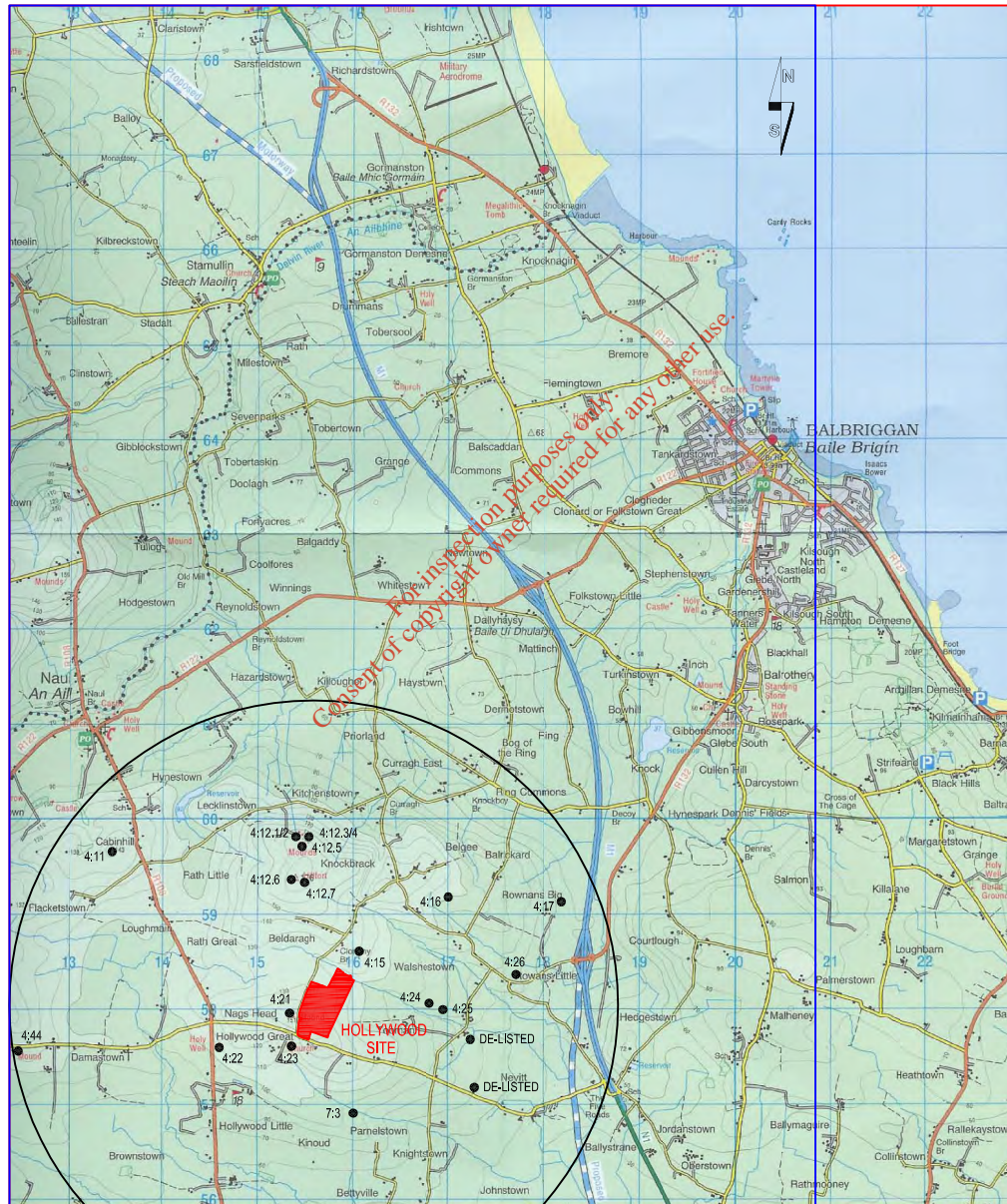
#### The Prehistoric Period

There is evidence that this area was inhabited as early as the Neolithic Period (c. 4,000-2,300 BC), in the form of a porcellanite stone axe fragment found to the north of the proposed development in the town of Naul (NMI E551:769f). In addition, over 80 flint and quartz pebbles and flakes were found in Walshestown (NMI 1973:93-187), including a large flint pebble core (NMI 1973:93). Continued activity through the Bronze Age (c. 2,300-600 BC) is attested to by the discovery of several funerary urns, found when levelling a hill in Hollywood (Waddell 1990), and by a copper cake found at Damestown (NMI 1962:258). The earliest recorded archaeological monuments in the area date to the Iron Age (c. 600 BC-400 AD), and consist of a hill-fort and barrow cemetery of four tumuli and two barrows, in the townlands of Knockbrack and Kitchenstown, described in detail by Keeling (1983). Knockbrack (Du004:012.6) is one of the largest of Irish hill-top enclosures, and falls into Raftery's (1972) Class I group of univallate hill-forts. This type of hill-fort tends to occur in the east of Ireland. The general design of the fosse and bank are similar to the royal sites of Navan Fort (Emáin Macha), Co. Armagh, Ráth Na Ríogh, Tara, Co. Meath and Knockaulin, Co. Kildare, which are referred to in Irish mythology as places of inauguration and assembly.

#### The Early Christian Period

Evidence that the area was also inhabited during the Early Christian period is attested to by two 'possible' ringforts at Loughmain (Du004:011), Balrickard (Du004:016) and Rowans Big (Du004:017). The enclosure sites at Walshestown (Du004:025) and Rowans Little (Du004:026) may also date to this period.





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MURPHY CONCRETE MANUFACTURING  
 ARCHAEOLOGICAL SITES  
 FIGURE 5.1 SCALE 1:50,000



### The Medieval and Post-Medieval Periods

The closest large town in the area is Naul, to the north of the proposed development on the border of counties Dublin and Meath. Sited on the River Delvin, on the main Old Drogheda Road, there is evidence that this was an important town from Medieval times onwards. The word 'Naul' means 'The Cliff' or 'Rock', and is derived from the Gaelic word 'An Aill'. The name arose from the large cliff on which the foundations of Black Castle was built in the late 12th century by Richard Cruise, Lord of Naul Manor. When the Cruise family participated in the Rebellion of 1641, they were dispossessed of their Castle and lands. The castle was destroyed by Cromwell in 1649, and it is believed that

Oliver Plunkett, who was a frequent visitor to the Castle, was arrested there.

## 5.3 Baseline Survey

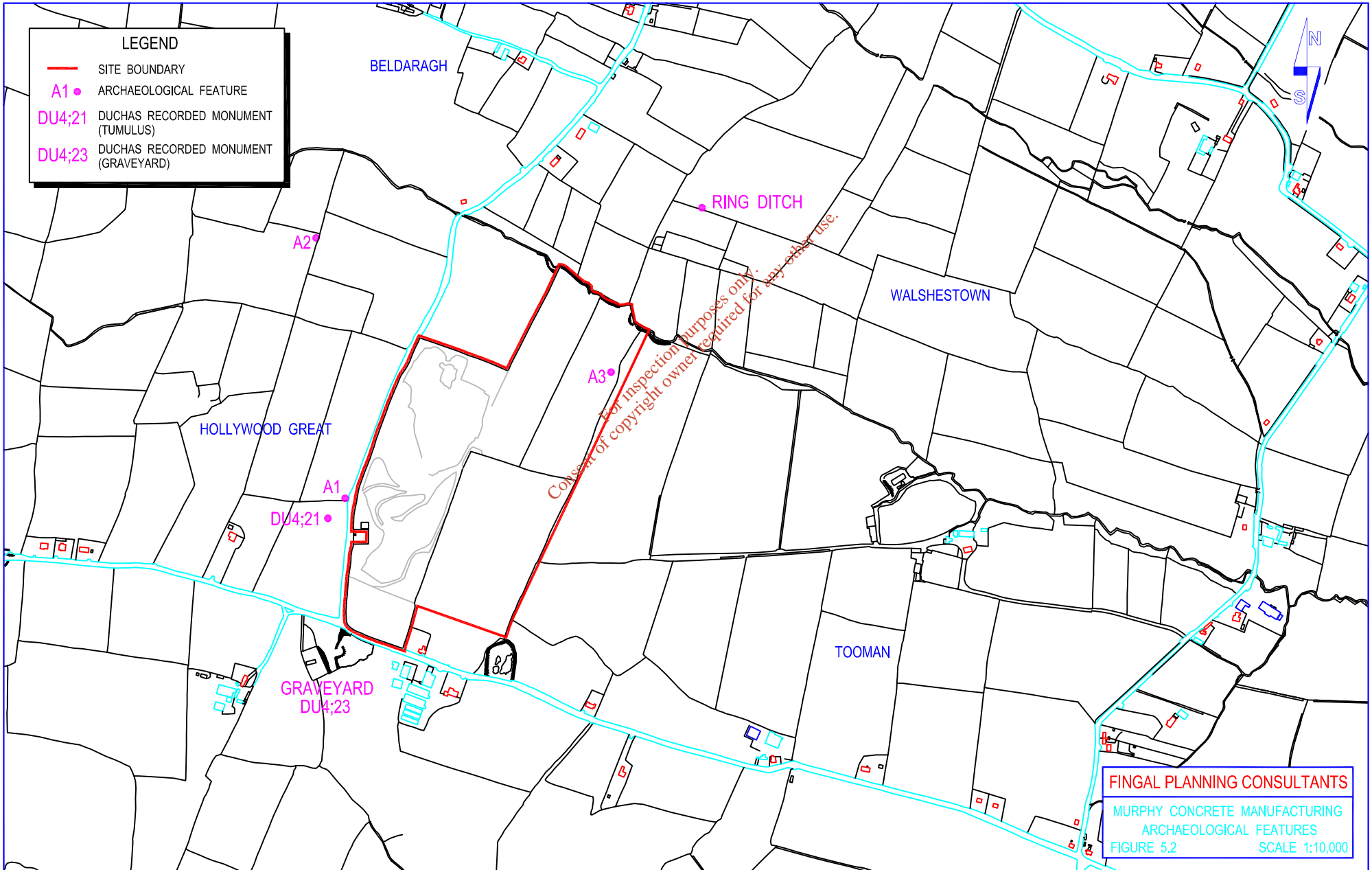
The *Record of Monuments and Places for County Dublin* was consulted for Co. Dublin Ordnance Survey 6" Sheet no. 4. All sites within a distance of 3 km of any part of the proposed development were identified. The relevant files for these sites, which contain details from aerial photographs, early maps, OS memoirs, OPW Archaeological Survey notes and other relevant publications, were then studied in the Sites and Monuments Records Office. These monuments are listed in Appendix 1. Figure 5.1.1 shows the approximate locations of the recorded Sites and Monuments at a scale of 1:50,000. Copies of the original 6" = 1 mile sheets indicating the locations of the sites and monuments are on file. The topographical files in the National Museum of Ireland were consulted to determine if any archaeological artefacts had been recorded from the area. Other published catalogues of prehistoric material were also studied: Raftery (1983 - Iron Age antiquities), Eogan (1965; 1993; 1994 - bronze swords, Bronze Age hoards and goldwork), and Harbison (1968; 1969a; 1969b - bronze axes, halberds and daggers). A list of recorded finds from the area are given in Appendix 1.

Aerial photographs of the site were studied to determine whether any previously unrecorded archaeological monument or feature could be identified. High level photographs from 1972 were examined in the Geological Survey of Ireland, and low level photographs dating to 1997 were examined through the Ordnance Survey. It should be noted that the 1997 low level photographs for the area were not continuous, and showed coverage of c. 85% of the site.

## 5.4 Field Walking Survey

Archaeological fieldwalking survey was undertaken in the area proposed for development. In addition the twelve fields surrounding the area proposed for development were investigated and the two closest monuments Du004-021 (tumulus) and Du004-02301/3 (church, graveyard and stoop) visited. In total the area surveyed covered approximately 45 hectares.

Rock quarrying is still ongoing on this site and has resulted in the total removal of all topsoil over an area of approximately 13.5 hectares.



**LEGEND**

- SITE BOUNDARY
- A1 • ARCHAEOLOGICAL FEATURE
- DU4:21 DUCHAS RECORDED MONUMENT (TUMULUS)
- DU4:23 DUCHAS RECORDED MONUMENT (GRAVEYARD)

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**FINGAL PLANNING CONSULTANTS**  
 MURPHY CONCRETE MANUFACTURING  
 ARCHAEOLOGICAL FEATURES  
 FIGURE 5.2 SCALE 1:10,000

Over the greater part of the site, excavation has been carried out up to the field boundaries which divide the quarry from the adjacent properties and only on the north-eastern portion of the site, where the topsoil/subsoils have been dumped, is there any possibility of the original pre-quarry topography surviving.

However, fieldwalking within the area of the quarry did not reveal any archaeological remains, neither in the area of the stockpiles or in the sections of the quarry sides. Of the twelve fields surrounding the site, some were covered by stubble. The remaining seven were in use for pasture and appear to have been so for the last few years at least, i.e. there was no signs of recent disturbance or ground-breaking (Figure 3.3.2). Three features in these fields were noted and investigated:

**Feature 1** (A1), at the southeastern corner of field 12 consists of a stretch of curving drystone walling and appears to represent a more formal entrance to the field, possibly built with larger shale slabs and blocks found either in the field itself or quarried from the adjacent outcrop deposits.

**Feature 2** (A2), which from the depiction on the Ordnance Survey map appears as if it may be the remains of a monument, proved to be just a shallow depression on the western side of field 11, possibly where soil was removed to build the bank which forms the adjacent western field boundary.

**Feature 3** (A3) is a possible site in field 4, visible on the high altitude aerial photographic prints. It consists of a sub-circular feature approximately 50m in diameter. No visible surface trace of this possible site was seen during field-walking. This possible site is located in the remaining area of the registered quarry but is not within the area the subject of the current or earlier planning application. No works are planned in this area.

With the exception of a few shards of modern glazed pottery found on the surface of fields 3 and 4, no other finds or features were visible.

## 6.0 Impacts of Proposed Development

### 6.1 Human Beings

The site is located within a rural and agricultural area where residential dwellings are dispersed through the surrounding area. Dwellings are generally individual detached houses, very often single storey houses, located close to the road network. Some of these houses are associated with adjoining farm business, but in many cases the occupiers have no economic ties to the rural area.

The enclosed map outlines the location and distribution of these dwelling houses relative to the quarry itself. The houses are coloured in red while the individual farm buildings are coloured blue. The extent of the quarry is outlined in red. The map also shows the location of the various monitoring stations.

The residents in these houses already live in proximity to a quarry where extraction has been going on for the past 40 years and where restoration has been going on in recent years. The question for this section of the EIS is how the continued restoration works in the coming years at an increased rate will impact on human beings living in the vicinity.

It is submitted that human beings are potentially adversely impacted upon in the following ways.

1. Visual amenity.
2. Traffic.
3. Noise.
4. Dust.

These are considered in turn.

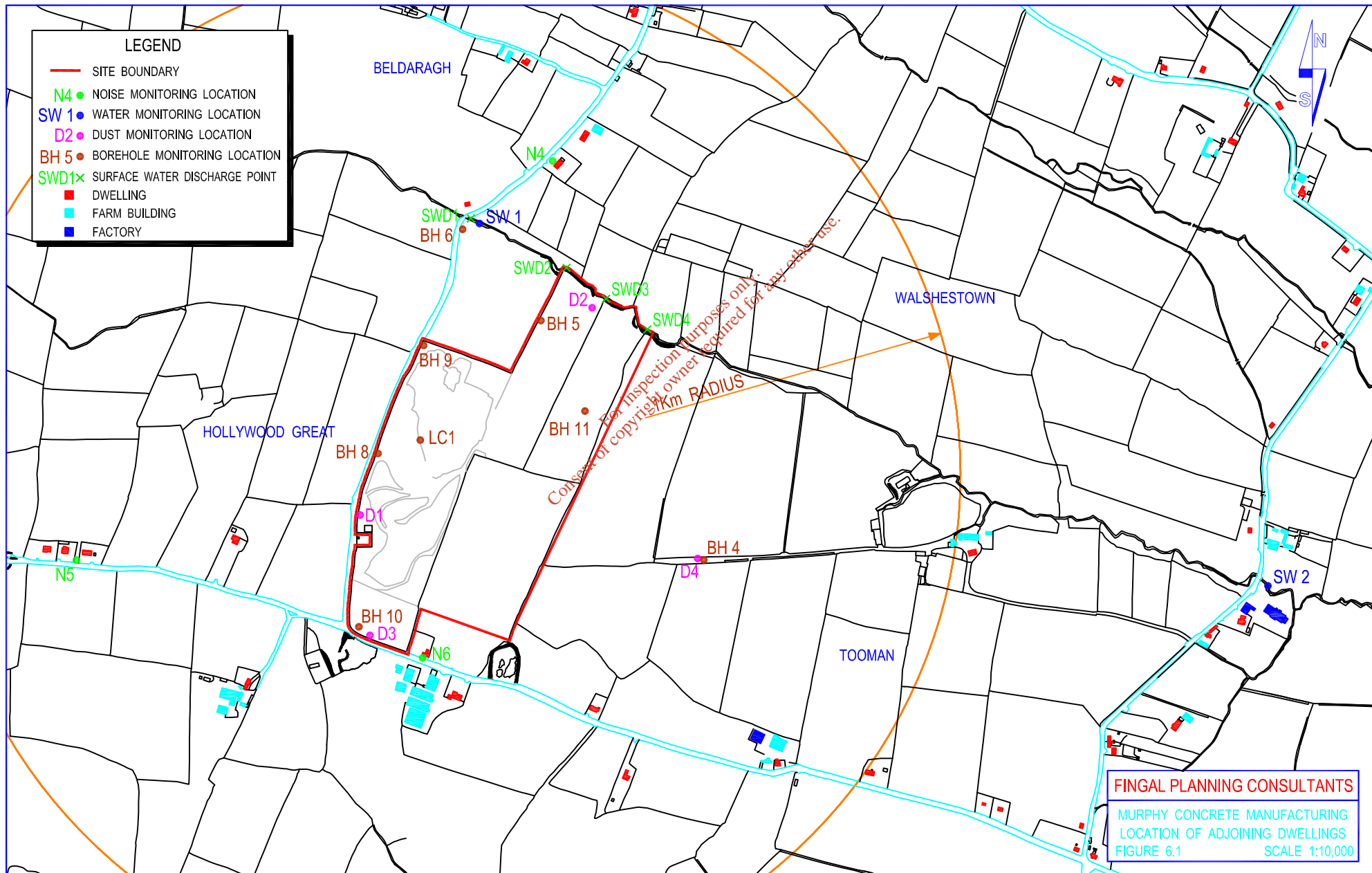
#### 1. Visual Amenity

One of the ways in which people can be visually affected by a proposal is if it is visible to them from within their home or garden or when driving to their house.

In this case, the activity is the filling in of a deep depression, the insides of which are not visible to adjoining houses or passersby. The houses in the area are sufficiently far set back from the void that activity within this space can have no visual impact on the surrounding area.

It is only when the last levels of sub soil and top soil are being laid down that work within this site may become visible to the surrounding area.

In broader terms, the restoration and reinstatement of these lands as agricultural fields will obviously re-integrate this site into the surrounding rural and agricultural landscape. This will have a positive impact on the visual amenity of the area.





## 2. Traffic

The site is close to the newly opened M1 Motorway and the old N1 roadway. It has been estimated that the majority of traffic going to and from the quarry will use this route. Thus the houses along the LP01080 roadway will be impacted upon by traffic traveling from the M1 and N1 to the site. These houses on the LP01080 between the site and Naul will experience less impact.

The accompanying Traffic Impact Section of this EIS and its accompanying Appendices have surveyed the existing levels of traffic (i.e. cars and LV's and HGV) traveling along the roadways approaching the site and projected future flows with the development the subject of this application in place.

The houses on the LPO 1080 are already subject to traffic from the Murphy Quarrying and restoration operations as well as traffic for the Baldarragh and Lecklinstown operations. Permissions exist for these operations and the impact on houses on the LPO1080 has not been considered so unacceptable as to merit a refusal of permission.

The Baldarragh and Lecklinstown operations are due to cease within the next 12 months while the Murphy Quarrying operation will decline in the coming years. In this context the increase in traffic for restoration at an increased rate will not result in significant volumes of extra traffic passing the houses on the LPO1080.

The existing and expected flows are a low percentage of the capacity of this road which is presently in good structural condition with no signs of surface distress, pot-holing or rutting. The level of traffic proposed is unlikely therefore to damage this roadway in the foreseeable future. Thus local residents will not suffer from a diminution of their access roadway as a consequence of this development.

It is possible to conclude therefore that the traffic impact on residential amenities will not be significantly worsened as a consequence of granting permission to allow restoration to continue at an increased rate per year.

## 3. Noise

In terms of noise, the surveys have shown (a) the noise contribution from the landfill activity will be insignificant in comparison to the existing noise from the quarrying activity and (b) there will be no increase in the overall ambient noise level as a consequence of the landfill activity.

The surveys undertaken have shown that noise from the quarry does not appear as a feature in adjoining houses. The main impact on noise is from passing traffic.

Thus adjoining neighbours will not suffer as a consequence of noise generated within the quarry and as shown above the level of traffic noise will not significantly increase above that at present on the grounds of restoration traffic.

#### 4. Dust

The EPA License requires that dust levels be kept below a limit of 350mg/sq.m./day. The monitoring in the vicinity of the site shows that this level is not being exceeded.

The main dust sources are considered to be quarrying operations and vehicle movements. Increased or continued landfilling on site should not increase dust levels, although additional vehicles for infill may generate an increase in dust, especially in the weighbridge area.

The mitigating measures already undertaken by Murphys (purchase of a road sweeper, installation of a wheelwash, a mobile water browser, sprinkles in the entrance reception area and a concrete hardstanding area at the entrance, all serve to reduce and contain dust.

The potential difficulties from dust and their containment are largely confined to the immediate vicinity of the site. The houses in the vicinity of this site are sufficiently far removed from the site so as not to injure residential amenities.

In conclusion, it is considered that there will not be an adverse impact on human beings living in the vicinity of this site by way of injury to visual amenity, increase in traffic, noise or dust as a consequence of granting permission to allow the continued restoration of this quarry. There is therefore no need to suggest further mitigating measures on this account.

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## 6.2 Traffic

### Introduction

T.J. O'Connor & Associates were retained by Manahan Planners, Chartered Town Planners, to prepare a transport assessment forming part of a planning application on behalf of Murphy Environmental, to vary a previous planning permission (Planning Ref: F04A/0363) dated 7<sup>th</sup> October 2004.

This permission approved the infill with inert building material of a Quarry at Hollywood Great, North County Dublin, by Murphy Environmental over a period of 15 years. The current application seeks permission to infill an extended quarry area, at an increased rate per year in order to complete the restoration project within 15 years as per the Grant of Permission on 7<sup>th</sup> October 2004.

Pre-planning discussions were held with the Transportation Department of Fingal County Council on the 19<sup>th</sup> December 2006, the minutes of which are presented in Appendix A, to ascertain any specific requirements of the Transportation Department in respect of this development.

This report includes a brief description of the site and its environs, the characteristics of the project and an assessment of the transportation impacts of the proposed expanded Landfill Operation.

### Receiving Environment

The Murphy Environmental site is located in a rural area of north County Dublin. Previously, the main activity on site was a quarry operation. In recent years quarrying activity has been scaled back as the Quarry is coming to the end of its life cycle. The main activity on site is now the infill of the quarry. The existing Murphy Environmental Landfill Operation is located adjacent to the intersection of local primary roads, LP01090 and LP01080, in the townland of Hollywood Great, Naul, County Dublin as shown on Figure 1.1.

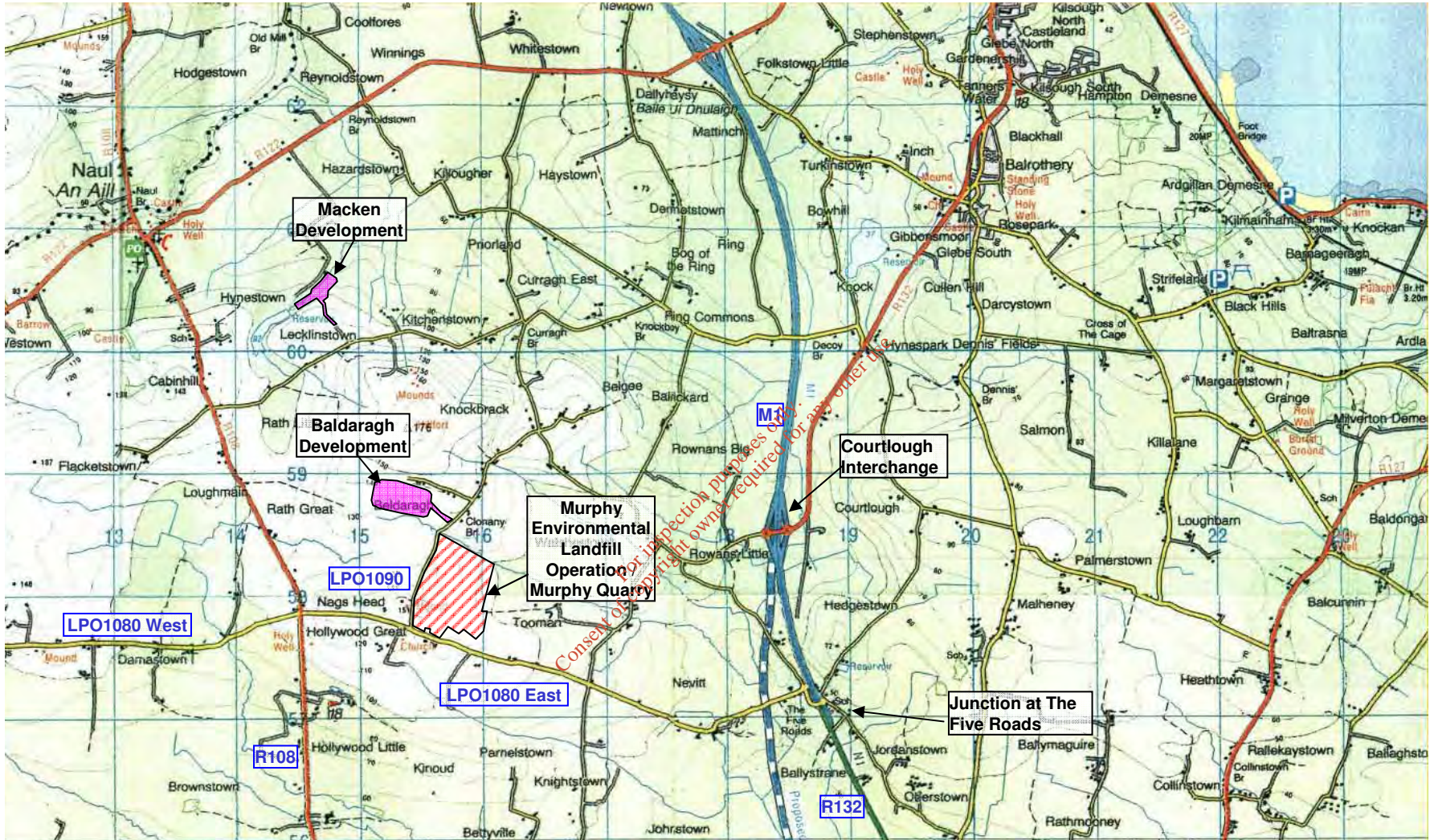
### Existing Road Network

The LPO1080/LPO1090 intersection is approximately 1km east of the Nag's Head crossroads on the Naul Road (R108) and some 3km west of the R132 (previously the N1) intersection at the Five Roads and the Courtlough Interchange on the M1. The N1 was downgraded from a National Primary Road to a Regional Road in July 2003 following the opening of the M1 motorway from Lissenhall to Balbriggan (Courtlough Interchange), which links into the M1 Balbriggan Bypass.

The access to the Landfill Operation is off the LP01090 some 280m from its intersection with the LP01080. This section of the LP01090 i.e. from the T-junction to the site access has a steep gradient rising from the T-junction to the site access and various warning signs have been erected to warn road users of the steep gradient and the site access.

The LP01080 is an east-west local primary road, which links the R132 (to the east) with the R108 Naul Road (to the west). There is an overbridge over the M1 Motorway just to the west of the Five Roads Intersection. The LP01080 generally has a minimum cross-section of 6m along its length between the R132 and





OSI Licence No: DI0044

Figure 1.1

Site Location



LP01090 junction. There are some residential properties and farm service roads with direct frontage onto the LP01080.

### Future Road Network

The "Courtough Action Area Plan" refers to some 66ha surrounding the Courtough Interchange. An M1 Business Park development is planned surrounding the interchange. To accommodate the increased traffic generated by the development and to increase the road capacity a number of improvements to the Courtough Interchange have been proposed within the Courtough Action Area Plan. These are detailed below:

- Construction of a 2-lane bridge over the existing M1 Motorway adjacent to and immediately south of the existing 2-lane overbridge.
- The roundabouts immediately east and west of the existing overbridge will be enlarged.
- The northwest and southeast slip roads will be widened to accommodate two running lanes.

### Fingal Landfill

Fingal County Council proposes to locate a new landfill in north County Dublin. The proposed Fingal Landfill development will comprise of a new fully engineered landfill at Nevitt on the LPO1080 as shown on Figure 2.1. It is proposed to construct the following infrastructure as part of the access route for landfill vehicles.

- A new single carriageway of 8m width located to the east of Tooman Road from Rowans' Little to the Nevitt Road. This is referred to as the 'County Road'. A roundabout junction will be provided at either end of this road. This will be a public road constructed within the Fingal Landfill site.
- As part of the Compulsory Purchase Order for Fingal Landfill the LPO1080 (Nevitt Road) is to be extinguished from the new County Road until the M1 overbridge. All traffic that currently uses the LPO1080 is to be diverted to the new County Road. As a result the M1 overbridge will no longer be in use.

The planning permission for Fingal Landfill is due to be decided in February 2007. If permission is granted the landfill will be open in 2009.

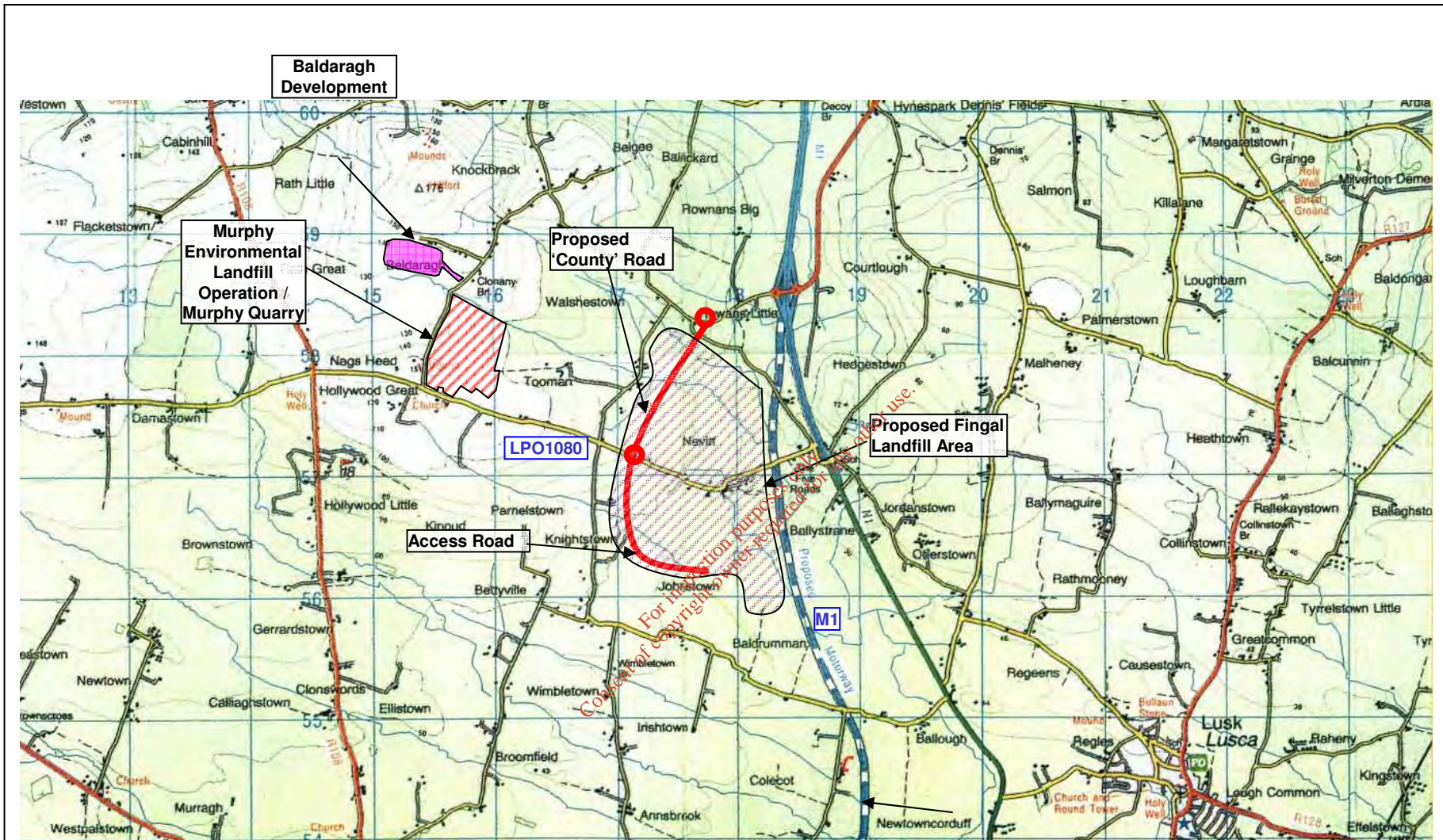
### Existing Development in the area

In addition to the Murphy Environmental Landfill Operation, there are currently two other infill operations at Baldaragh and Lecklinstown. Access to the Baldaragh Development is off the LPO1090 and is located some 750m north of the access to the Murphy Environmental Operation.

In 2005 planning permission (F04A/1197) was granted to carry out a land recovery operation with inert soil and topsoil. This permission was to infill 288,750m<sup>3</sup> of soil within 36 months of February 1<sup>st</sup> 2005 using vehicles no larger than 22 tonnes. This equates to an average of 25 trucks per day accessing this facility. There was no specific condition regulating the number of truck movements although the numbers are regulated by its permit.

The operation at Lecklinstown, Naul, Co. Dublin, is referred to as the Macken Development in this report. This development is located some 2km to the north of





OSI Licence No: DI0044

**Figure 2.1**

**Fingal Landfill Site Location**



the Murphy Environmental Operation. In 2004 planning permission (F04A/0756) was granted for the reclamation of 2.828Ha with a total amount of fill of 75,000 tonnes. The permission was for a period of 3 years and was on the condition that there would be no more than 3-4 trucks per day or 6-8 movements.

In 2005 planning permission (F05A/1467) was sought to increase the number of trucks to the facility per day to 15. Permission was granted on the condition that the maximum daily number of return trip movements on the site shall be 7 and no vehicles greater than 22 tonne shall be used and that the development would cease and be reinstated within 3 years of the date of the order.

### Current Operation of the Facility

The current operation consists of the restoration of the existing quarry by means of filling the quarry void with inert construction and demolition (C&D) waste. At present, the void is being filled at a rate of 340,000 tonnes per year under the conditions of the 2004 planning permission. The limits and conditions of the infill of the quarry are set out in the EPA Licence No. WO129-1.

In October 2006 the infill operation was significantly scaled back for the remainder of the year as the infill weight limit had almost been reached.

The current EPA Licence states that waste may only be accepted at the facility between the hours of 8.00am and 6.00pm Monday to Friday inclusive and 8.00am to 4.00pm on Saturdays. Occasionally the EPA grants earlier opening hours of 07.30am where a particular case is made to support such request. The current planning permission states that the site shall operate only between the hours of 7.00am to 7.00pm Monday to Friday and 7.00am to 5.00pm on Saturdays. This is to allow for preparation, cleaning etc. of the facility. The site does not operate on Sundays or Bank Holidays.

The general public carrying waste in cars, vans or small trucks are not permitted to access the facility. Therefore the only vehicles carrying waste to the site are HGVs. As part of the existing operation, a wheel wash and concrete hardstand is provided. All trucks leaving the Landfill Operation are required to go through the wheel wash. In addition a vacuum brush is used to clean the entrance road and the LPO1090 on a regular basis. This will continue for the duration of the land restoration project.

### Existing Landfill Traffic

To establish the changes in traffic flow on the LPO1080 since 2003, a manual traffic count was undertaken to the east of Hollywood Great junction on the LPO1080. This count took place on Thursday February 1<sup>st</sup> 2007 from 8.00 to 9.00 and 16.30 to 17.30, with details presented in Appendix B. On the day of the count queuing at the site entrance was observed in the morning before 8.00am but not in the evening. A similar count was undertaken on Wednesday 10<sup>th</sup> December 2003 at the same site for the previous planning application.

**Table 0-1 Summary of 2007 Manual traffic Count**

Site: Hollywood Great		<u>West bound</u>		<u>East bound</u>	
Date: Thursday February 1st 2007		Cars &LV's	HGV's	Cars &LV's	HGV's
AM Peak	8.00-9.00	26	42	22	44
PM Peak	16.30-17.30	35	27	53	21

**Table 0-2 Summary of 2003 Manual Traffic Count**

Site: Hollywood Great		<u>West bound</u>		<u>East bound</u>	
Date: Wednesday	December 10th 2003	Cars &LV's	HGV's	Cars &LV's	HGV's
AM Peak	8.00-9.00	46	12	43	10
PM Peak	16.30-17.30	45	13	43	11

Comparison of the two different years shows a significant increase in the number of HGV's. This can be attributed to the increase in landfill operations in the area; i.e. Murphy Environmental, Baldaragh Development and the Macken Development since 2004.

As part of the EPA licence obtained by Murphy Environmental for the operation of the facility, it is required that a record be kept of the vehicles associated with the present operation of the infill. These records are referred to as P&L reports and contain the time, date, weight, company, location of site and registration of truck, all of which are recorded at the weighbridge. A day report was obtained for February 1<sup>st</sup> 2007, the day of the manual traffic count.

To ascertain the proportion of trucks on the LPO1080 associated with the Murphy Environmental development the P&L report from February 1<sup>st</sup> was compared with the manual traffic count. From the P&L data it is known that 28 trucks entered the facility in the AM Peak and 3 trucks entered in the PM Peak. It is therefore evident that trucks associated with other uses travel on these routes. However, it was not possible to estimate which trucks were associated with the Murphy Quarry Operation, the Murphy Environmental Landfill Operation, the Macken operation or any other purpose.

### **Trip Distribution**

Two week P&L reports were obtained for July 2006 and October 2006. These represent peak and off-peak periods of operation. The origin of all the trucks using the facility during each two-week period was mapped and a route to the Landfill Operation was assigned from each location. From this it was possible to ascertain the existing proportions of landfill traffic on each route. The trip proportions are shown on Drawing No. SK-01, Appendix C.

From SK-01 it is shown that 74% of trips came from the Dublin City Centre. 23% of trips travelled on the M50 and 1% came from the North. The majority of trips (98%) arrive via the M1/R132 and travel west along the LPO1080. The R132/LPO1080 junction at The Five Roads offers a more direct access to the site; on this basis a 50/50 split has been assumed between the R132 and the M1. The remainder (2%) arrive from the west and travel east along the LPO1080.

### **Characteristics of the Proposed Development**

The area of the entire land holding at Hollywood great is 39.2ha. The extended fill area for which an EPA licence will be sought is approximately 23ha.

At the time of the previous planning application the void size was 2.7million cubic metres. Due to slope stability concerns a further portion of the site is required to be excavated. Ultimately, the void size will increase to approximately 3.2million cubic metres.

Assuming the density of the waste is 1.5 tonnes/m<sup>3</sup> the lifetime of the facility can be estimated at 14 years at the current infill rate of 340,000 tonnes per annum. This



would exceed the 15 year period granted in the 2004 planning permission. The lifetime of the facility is reduced to 10 years when the infill rate is increased to 500,000 tonnes per annum.

This planning application seeks to increase the weight of infill permitted to 500,000 tonnes per annum. Apart from this, the facility will continue to operate under the existing conditions.

### **Potential Impacts of the Proposed Development**

In general, landfill developments of this nature have various impacts in transportation terms. However, this application seeks only to increase the weight limit of an existing landfill operation and therefore the infill impacts in terms of transportation are as follows:

#### **Traffic Volumes**

As it is proposed to increase the weight of infill more trucks will be required to transport the waste to the site. This will lead to an increase in the number of HGVs on the network per annum, which could reduce the level of service of the routes, resulting in increased queuing and delay. There will be no increase in the number of cars and LVs due to the development, as the general public are not permitted to use the facility.

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## Transportation Access Routes

Given the high proportion of HGV traffic associated with developments of this nature the suitability of the routes used to access the development must be considered.

## Pavement Condition

An increase in the number of HGVs on a route may increase the rate of pavement deterioration due to the increased HGV loading. In general pavement design is based on AADT or equivalent Single Axel Load, and therefore the increase in AADT is the critical factor for assessing the impact.

## Noise/Dust

This impact will be dealt with separately in the Environmental Impact Statement for the development.

## Predicted Impact of the Proposed Development

The main impact of the proposed development will be the increase in traffic volumes. All the other impacts such as the suitability of the access routes and the pavement condition are a function of traffic volumes.

## Traffic Volumes

An AADT analysis was considered to be the best approach to quantify the increase in traffic volume and the effect it will have on the pavement condition, access routes etc. Due to the relatively low flows at the LPO1080/LPO1090 junction it is considered that junction modelling is not necessary.

## AADT- Murphy Operation Only

Within the Fingal Landfill EIS, traffic analysis was undertaken on the LPO1080 based upon 2005 traffic data. For consistency this data will be used for the analysis of the proposed increase in weight limit. The future AADT is derived as follows:

During 2005 extensive traffic counts were carried out in the area for a proposed Fingal Landfill and an AADT of 1757 was determined for the Nevitt Road, LPO1080. Applying National Roads Authority (NRA) growth factors to this gives an AADT of 1828 vehicles for 2007.

These counts were undertaken in April 2005 during which time the Murphy Environmental and Baldaragh Development infill facilities were in operation. Therefore, the AADT estimated can be validly applied for this analysis.

To transport the additional 160,000 tonnes of waste some 8,000 20 tonne trucks would be required over the year. Based on the current operation this equates to some 26 extra trucks per day, with a net increase in AADT of 52 vehicles.

Given that in October 2006 the operation was scaled back as the annual weight limit was being approached, the perceived impact of an increase in trucks would not be significant relative to the 2006 operation as the landfill will be able to operate to a later time in the year as opposed to significantly adding to daily traffic in the area.



The NRA maintains a network of traffic counters on National Roads throughout Ireland. This data is readily available from the NRA website and AADT figures were obtained for haul routes such as the M1 and the M50. To assess the impact of the increase in traffic new trips were assigned to the network in proportion to existing truck movements. (see SK -01) The increase in traffic attributed to the Murphy Environmental infill operation is detailed in Table 5.1 below.

**Table 5.1 Murphy Operation Only 2007**

Route	2007 AADT on Route	% HGV	Current ME Infill AADT	Change in AADT (ME)	2007 AADT with Dev	Change in % HGV	% Change in AADT due to ME <sup>1</sup>
M50 - N7/N4	86455	10	12	3	86458	0.035	0.003
M50 - N3/N2	94110	10.4	18	5	94115	0.051	0.005
M50 - N2/N1	101144	8.1	48	12	101156	0.146	0.012
M1 – Dunleer	29757	12.1	2	1	29758	0.028	0.003
M1 - Drinan	72450	8.5	204	50	72500	0.812	0.069
M1 – Courtlough	51412	8.3	102	25	51437	0.586	0.049
R132 –Courtlough	5560	23	102	25	5585	1.955	0.450
LPO1080 East	1800	55	206	51	1851	5.152	2.833
LPO1080 West	928	14	4	1	929	0.770	0.108
LPO1090 to ME Ent	528	53	210	52	580	18.582	9.848

The greatest increase in traffic is on the LPO1080 and the LPO1090 where the AADT increases by 1.5 % and 5% respectively. The increase in AADT on National Routes, the M50 and M1 and regional route, R132 is negligible.

#### AADT – Baldaragh Development

This development will cease operation in February 2008. This will result in a reduction of some 50 vehicles AADT on the access routes of this development. As the Baldaragh Development is located in close proximity to the Murphy Development it is expected that the same access routes would be used. The expected decrease in traffic is shown in table 5.2 below.

**Table 5.2 Baldaragh Development 2008**

Route	2008 AADT on Route	% HGV	Current ME Infill AADT	Change in AADT (ME)	2008 AADT with Dev	Change in % HGV	% Change in AADT due to closure BD <sup>23</sup>
LPO1080 East	1877	60.152	257	-49	1828	-4.34	-2.611
LPO1080 West	946	14.770	5	-1	945	--0.716	-0.106
LPO1090 to ME Ent	587	71.582	262	-50	537	-11.899	-8.518

2 As above

3 Due to changes in Beldaragh

### AADT – Macken Development

As previously stated, the lifetime of this facility is 3 years after the date of grant of planning permission, i.e. November 2008. This will result in a reduction of some 14 vehicles AADT on the access routes of this development. The access routes to this development are not available, but it is expected that vehicles from the south will travel via the LPO1080 and the R108 and that vehicles from the north will travel via the R122 and R108. The decrease in AADT on the LPO1080 is shown in the Table 5.3 below.

**Table 5.3 Macken Development 2008**

Route	2007 AADT on Route	% HGV	Current ME Infill AADT	Change in AADT (ME)	2007 AADT with Dev	Change in % HGV	% Change in AADT due to closure MD <sup>2</sup>
LPO1080 East	1828	55.812	257	-7	1821	-0.686	-0.383
LPO1080 West	945	14.054	5	-1	944	-0.753	-0.106

<sup>1</sup> Due to closure of Macken Development

### AADT – Fingal Landfill

Fingal County Council is seeking permission for a Landfill near the junction of the M1 and the LPO1080. This would have an impact on traffic patterns in the area, and the cumulative impact must be considered.

The proposed Fingal Landfill will cater for a maximum annual tonnage of 500,000 tons of waste. Based on the Fingal Landfill report this results in an increase in AADT of 394 vehicles on the M1, as all Fingal Landfill traffic will be restricted to this route. The Fingal Landfill report states that 100% of this traffic will exit the M1 from the Courtlough Interchange and travel to the landfill site via the new "County" Road, described in Section 2 of this report. A private access road will be provided to access Fingal Landfill from the termination point of this new road.

On this basis the Fingal Landfill EIS claims that no landfill related HGV traffic will travel on the LPO1080 west of the landfill development. Based on the experience of the Murphy facility, and the random nature of sources of waste, it is considered that some proportion of landfill traffic will travel on roads other than the M1, National Primary Route.

If planning permission is granted for Fingal Landfill it is expected that all of the Murphy Environmental landfill Operation trucks that currently use the R132 and M1 overbridge will divert to the M1 and exit via the Courtlough Interchange. This is due to the change in the road layout as a result of the Nevitt Road closure.

To assess the impact of the Fingal Landfill development all existing R132 traffic has been removed from the R132 and re-assigned to the M1. All new Landfill

Operation traffic is also assigned to the M1. The increase in traffic on the haul routes attributed to the two developments is detailed in Table 5.2 below.

**Table 5.4 Fingal Landfill 2009**

Route	2007 AADT on Route	% HGV	Current ME Infill AADT	Change in AADT (ME)	2007 AADT with Dev	Change in % HGV	% Change in AADT due to FL <sup>34</sup>
M1 – Dunleer	32139	12.128	3	39	32178	0.001	0.121
M1 - Drinan	78300	9.312	254	355	78655	4.869	0.453
M1 – Courtlough	55552	8.886	127	482	56034	9.764	0.868
R132 –Courtlough	5794	24.955	127	-127	5667	-8.784	-2.192
LPO1080 East	1857	55.126	257	0	1857	0	0.000
LPO1080 West	963	13.301	5	0	963	0	0.000
LPO1090 to ME Ent	548	59.683	262	0	548	0	0.000

The main increase in traffic volumes is again on the LPO1080 and LPO1090, which is entirely as a result of the Murphy Environmental Landfill Operation. The increase in traffic on the M1 is less than 1%, which is negligible. The opening of Fingal Landfill will benefit the R132 as the proportion of HGVs on this route will be significantly reduced.

#### Impact on AADT

Based on the above, the increase in traffic volumes as a result of the proposed development is small and is not likely to have an effect on the level of service on the national routes. Therefore it is not expected that there would be an increase in queuing and delay on the routes.

The operations at the existing quarry operation will scale down before ultimately ceasing in the coming years, which will have a positive impact on the volume of HGVs on the local road network.

Due to the low volume of traffic at the junction of the LPO1080 and the LPO1090, an increase in queuing and delay is not expected on these routes.

#### Transportation Access Routes

The LPO1090 has a steep gradient from the LPO1080 to the site access. Analysis of the P&L reports obtained for July and October 2006 show that traffic volumes throughout the day fluctuate. This data is presented in graphical format in Appendix D.

As stated previously queuing was observed at the site entrance in the morning before the site starts accepting waste. The steep gradient is not ideally suited to landfill operation traffic as the trucks are fully laden travelling up the hill. This situation was the opposite for the quarry operation as trucks accessing the site would have been empty. It may be necessary to consider a more suitable entrance location with improved visibility and a more suitable gradient to the site access.

<sup>3</sup> Due to opening of Fingal Landfill and associated changes in road network.

<sup>4</sup> As above

The majority of Landfill Operation traffic travels the site via the M1, M50 and the R132. The M1 and the M50 are high quality national routes, which are designed to cater for HGV traffic, and are therefore suitable for the existing volume of Landfill Operation traffic. The convenient location of the Landfill Operation site in close proximity to the M1 reduces the need for trucks to travel on poorer quality roads. As a result, HGV traffic is only present on the LPO1080 for some 3km.

### **Pavement Condition**

The increase in AADT of 28 vehicles is not likely to significantly increase the rate of pavement deterioration on the national routes, the M1, M50 and R132. As the LPO1080 and the LPO1090 have a large proportion of HGVs for roads of their type the impact of the increased traffic volumes would be more significant on such routes.

Any deterioration of pavement condition as a result of traffic increases would be expected to occur on the LPO1080 and LPO1090. As per condition 9 of the previous planning permission Murphy Environmental paid Fingal County Council the sum of €500,000 in respect of remedial and maintenance works associated with the road network in the area. Given the minor increase in AADT due to the proposed development it is considered that the levies from the existing application would be sufficient.

Fingal County Council have advised that Pavement Condition Surveys are not necessary for this application.

### **Monitoring**

A video survey of the routes associated with the Landfill Operation was submitted in 2004 as part of the previous planning application. In February 2007, as agreed with Fingal County Council Transportation Department, a further video survey of the transportation access routes was undertaken. A map showing the routes surveyed is presented in Appendix E. This survey has been submitted directly to the Transportation Department to aid in the monitoring of the road surface condition.

### **Summary**

Based on analysis of existing truck movements to the site it is estimated that the net increase in traffic will be an average of 26 twenty tonne trucks per day.

Taking cognisance of the closure of the Baldaragh and Macken Developments in 2008 there will be an estimated net increase in traffic of 2 vehicles AADT on the LPO1090 and a net decrease of 5 vehicles AADT on the LPO1080 East.

As the quarry operation is scaled down the associated traffic will reduce.

There will be no increase in the duration of the infill and restoration operation.

The majority of trucks travel to the site via the M50, the M1 and the R132. These are high quality National Roads.

If Fingal Landfill is granted planning permission all Murphy Environmental traffic will divert from the R132 to the M1 as a result of changes to the road layout. According to the Fingal Landfill Environmental Impact Statement there will be no increase in traffic on the LPO1080 and LPO1090 attributed to Fingal Landfill.

Any deterioration of pavement condition would be expected to occur on the LPO1080 and LPO1090. Murphy Environmental has contributed a sum of €500,000 in respect of this.

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## Appendix A – Minutes of meeting with Fingal County Council

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**Hollywood Great Quarry: Proposed Expansion of Infill Operations**  
**Meeting with Fingal County Council Roads, Blanchardstown – 19<sup>th</sup> December 2006**

**Present:** Seán McGrath-Fingal County Council Transportation (FCC)  
 Eoin Gillard -T.J. O'Connor & Associates (TJOC)  
 Aoife Long -T.J. O'Connor & Associates (TJOC)

<u>Item</u>	<u>Action</u>	
<b>Background</b>	To discuss current proposals to expand the infill operation at Hollywood Great Quarry from 340,000 tonnes <b>(Ref: F04A/0363)</b> per year to 500,000 tonnes per year and identify any specific requirements of FCC.	
<b>Fingal Landfill</b>	FCC are currently proposing to develop a landfill between the M1 and the Tooman Road/Nevitt Road(LPO1080) junction. The Oral Hearing took place in October 2006 and a decision is awaited. Should the Fingal Landfill project obtain permission it will have a significant impact on both the road network and traffic generation in the area.	
<b>Traffic Counts</b>	TJOC requested from FCC traffic count data for Junction 1 of Fingal Landfill undertaken in April 2005 to compare with a 2003 traffic count undertaken as part of the previous application. FCC to obtain this information, if available.  TJOC have obtained from Murphy Environmental records of all trucks leaving the quarry for a fully operational two week period in October 2006. This will be used to assess the likely increase in traffic. These records are taken in compliance with a condition of the existing EPA Licence No. 129-1.	<b>FCC</b>
<b>Video Survey</b>	A video survey was required as part of the Further Information Request for the previous application. FCC requested that a further survey be carried out on the same routes and other routes as necessary, taking into account any new road layouts in the area. i.e. N2 upgrade etc.	<b>TJOC</b>
<b>Pavement Condition Surveys</b>	For the previous planning application FCC had advised that Pavement Condition Surveys for the area had already been undertaken. The extent of new surveys to be carried out would be advised to Murphy Environmental. To date Murphy Environmental have not undertaken any additional Condition surveys. However, it was noted that Murphy Environmental had made a contribution to FCC of the sum of €500,000 in respect of remedial and maintenance works associated with the road network in the area of the development as per Condition 9 of the Planning Permission. <b>(Ref: F04A/0363)</b> FCC to advise on any requirement for Pavement Condition Survey to accompany this application.	<b>FCC to advise.</b>

**Access** TJOC advised FCC of Murphy Environmental's proposal to provide a new entrance to the development off LPO1080. FCC acknowledged the benefits of relocating the access given the limited visibility at the LPO1080/LPO1090 junction and the steep gradient up to the existing access. TJOC advised that it is likely that any application for the revised entrance would be separate to this application, given that there are other planning considerations.

**Current Operation** TJOC advised that since mid-October Murphy Environmental has scaled down the infill operations as they were approaching the 340,000 tonne limit under their existing permit.

---

**T.J. O'Connor & Associates**

- cc.** All Present  
Tony Manahan – Manahan Planners  
Patricia Rooney – Murphy Environmental Ltd.  
Michael Moriarty – T.J.O'Connor & Associates

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## Appendix B – Manual Traffic Count

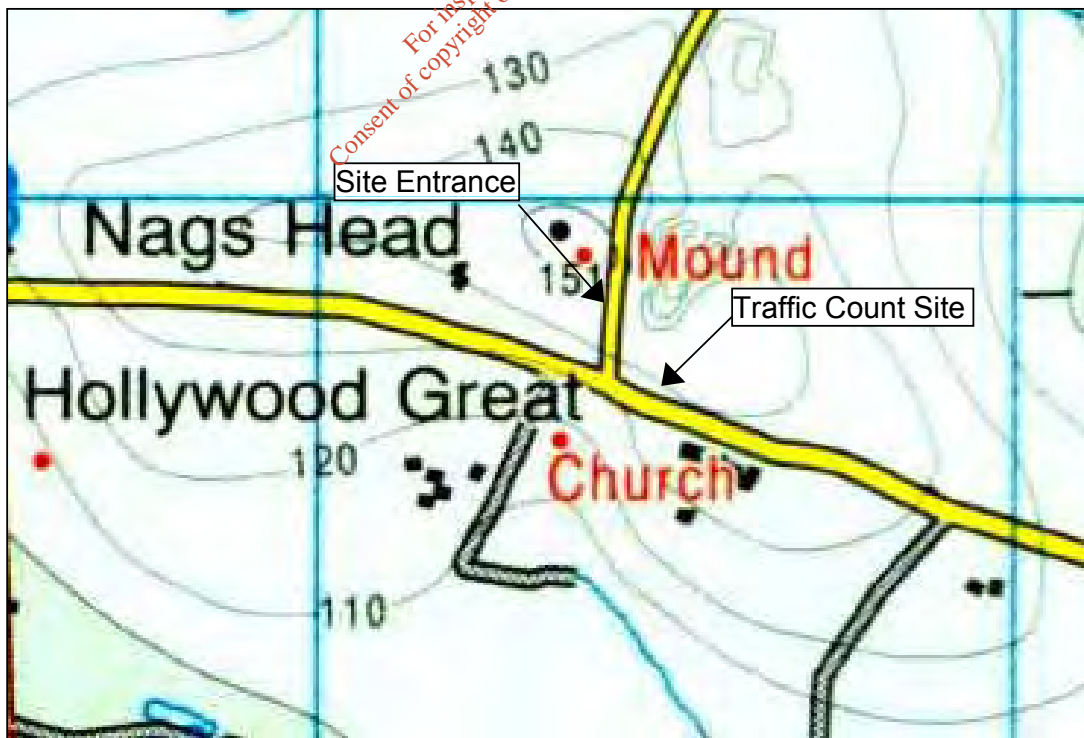
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Site: Hollywood Great

Date: Thursday February 1<sup>st</sup> 2007

AM Peak	West Bound		East Bound	
	To Quarry		From Quarry	
	Cars &LV's	HGV's	Cars &LV's	HGV's
8.00 - 8.15	6	12	3	9
8.15 - 8.30	4	15	6	11
8.30 - 8.45	10	13	3	10
8.45 - 9.00	6	2	10	14
9.00 - 9.15	5	11	7	3

PM Peak	To Quarry		From Quarry	
	Cars &LV's	HGV's	Cars &LV's	HGV's
	16.15 - 16.30	7	11	7
16.30 - 16.45	13	8	8	11
16.45 - 17.00	10	5	12	5
17.00 - 17.15	8	8	12	2
17.15 - 17.30	4	6	21	3
17.30 - 17.45	9	1	14	10



Site Location

OSI Licence No: DI0044



## Appendix C – Drawing SK-01: Truck Movements to the Landfill

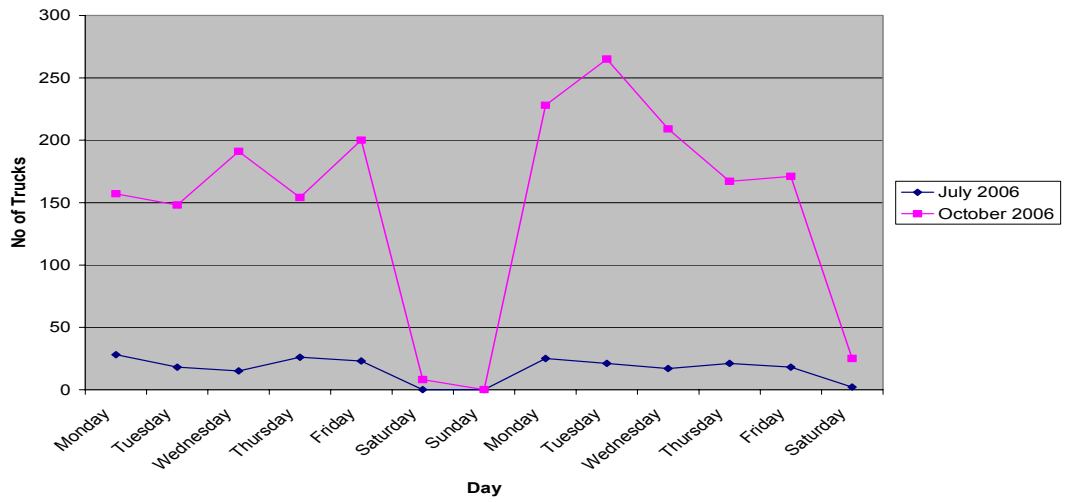
See Map attached to back of Report

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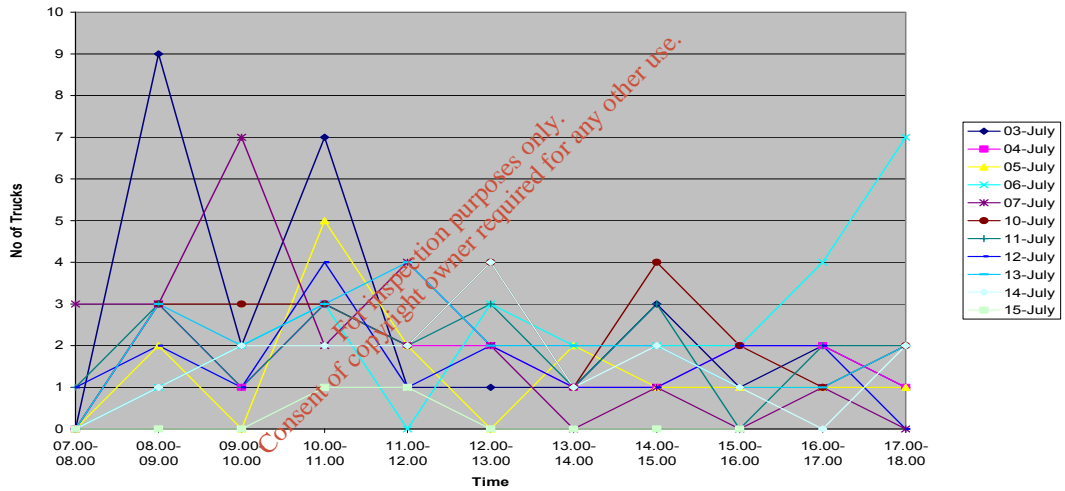
## Appendix D – P&L Report Traffic Patterns

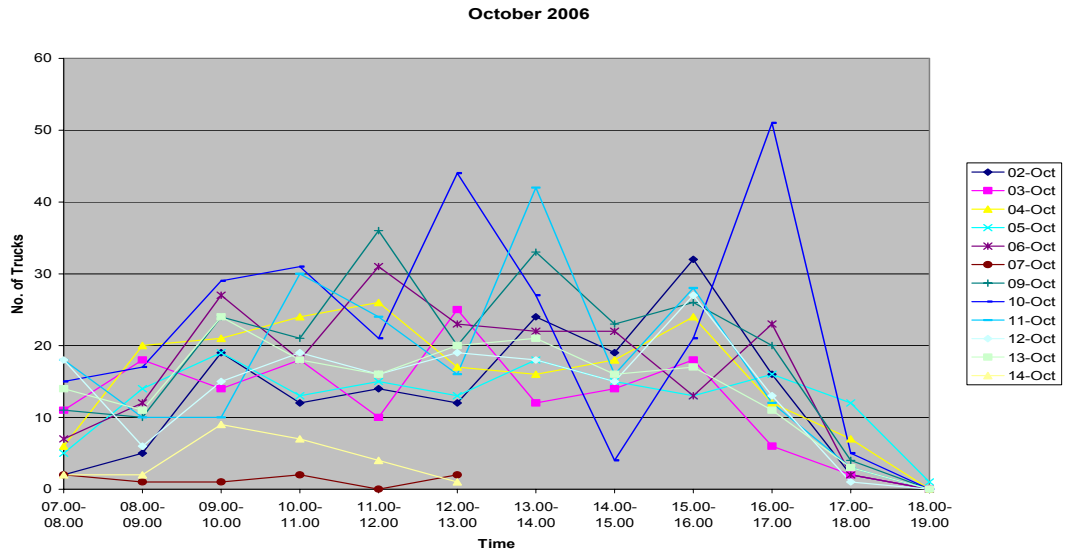
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Comparison of two week landfill traffic



July 2006



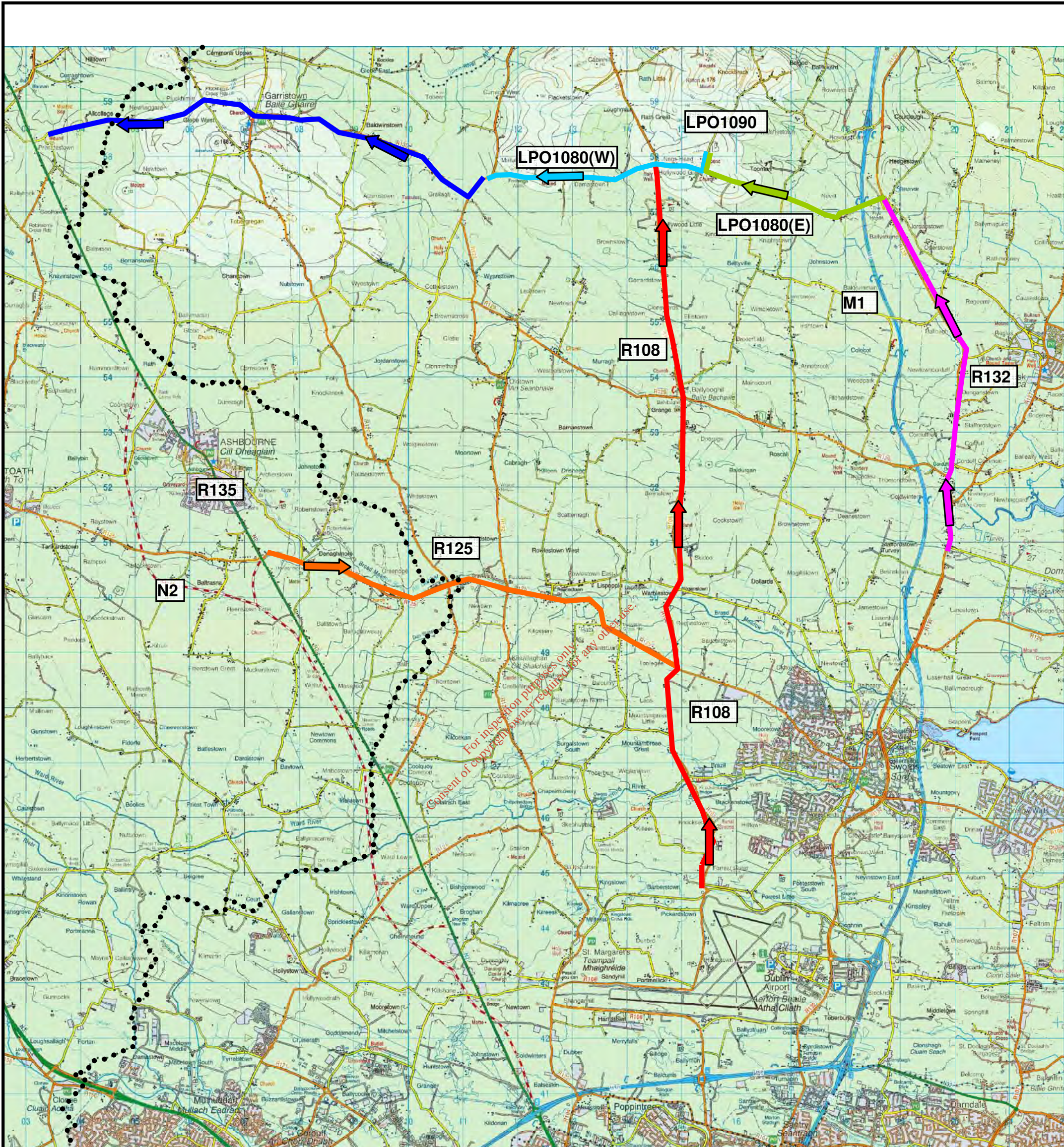


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## Appendix E – Sections of Road Network covered by the Video Survey

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Ordnance Survey of Ireland Licence Number: DI0044

Figure D.1

Location of Video Surveys  
 – February 2007





## 6.3 Landscape and Visual Impacts

### Introduction

The site is located in an area deemed sensitive in terms of landscape, due to its position at a high point within its surroundings. The visual impact during the operational stages of landfilling is deemed to be insignificant as the site is not highly visible from surrounding areas. Only during the final stages of operations, when works are at or near ground level is there a potential for a notable visual impact.

Overall, the restoration of the existing quarry will have wholly positive impacts on the landscape and visual impact, by restoring it to its former levels and to agricultural use. Filling and restoration will be conducted such that contours similar to the pre-quarry condition will be achieved.

### Description of Existing Landscape

This landscape assessment broadly focuses on two areas:

1. Impacts of the proposed development on the character of the existing landscape. This examines the responses that are felt towards the combined effects of the proposed development.
2. Visual impacts of the proposed development, i.e. the extent to which the development can be seen.

The site is an existing shale and limestone quarry situated in a rural setting, approximately 4 km south east of Naul and 4 km north of Ballyboghil in North County Dublin. The site is bounded to the west and south by third class roads. The Regional Road, R108, runs in a north south direction approximately 1 km west of the site. The M1 runs in a north south direction, approximately 3 km east of the site.

The site is located in an area of open agricultural land. The topography of the surrounding area to the west and north is hilly. To the south and east the land is relatively flat, sloping down to the coast on the east. A map of the area and its greater environs, showing contour lines is enclosed. See Drawing 07/810/1.

The site is situated on the east slope of a gently sloping hill. The hill on which the site is located is 150 m O.D, with an additional hill at 176 m O.D., approximately 1 km to the north. There are three masts located outside the western boundary of the site, none of which are controlled by Murphy Environmental. The predominant land use in the immediate vicinity of the proposed site is agricultural. To the north and south it is mainly pasture type agriculture. There is an operational permitted recovery facility located to the north-west of the Murphy facility, which has been in operation since January 2005.

To the south-east, east and west the land is predominantly used for tillage. On the east of the site, the land dips gently in a southeast direction. A wooded valley runs in a north east/south west direction, approximately 2 km from the site. Along this eastern boundary of the

site, there are unimpeded views to the Irish Sea. Balbriggan is visible to the north-east and Rush is visible to the south-east.

The site is bounded on all sides by hedgerows. A small stream runs along the northern boundary of the site. The land on both sides of the stream slopes down to the stream and is quite densely vegetated on both sides. There is a graveyard approximately 100 m to the south of the site.

Field sizes directly adjacent to the site vary appreciably, from 0.71 ha to 7.76 ha. Within 0.5 km of the site there are twelve private residences and three farms. There are a number of private dwellings along the 3<sup>rd</sup> class road to the south of the site [LP01080], the closest of which is located directly adjacent to the southern boundary of the site. There are a number of private dwellings north of the site along the 3<sup>rd</sup> class road [LP01090], running north-south, the nearest one being approximately 200 m from the north-east boundary of the site.

### Physical Characteristics

The application site for the purpose of filling and restoration is 23 Ha. At the lowest point the quarry base is at approximately 88 mOD (Malin Head). At the northern end of the quarry the excavations are deep into the native limestone units. Active extraction is actively being carried out in the middle part of the site and the northern part of the site is being filled and restored with inert waste. At the northern end the surrounding land surface is at approximately 125 mO.D. The land surface is slightly higher at the southern end where it is approximately 136 mO.D.

### The Site

The site consists of five main elements:

- (i) the entrance;
- (ii) excavated quarry;
- (iii) the landfill area, Phase 1;
- (iv) soil stockpiles at the north of the site;
- (v) access roads and areas for storage of machinery;

### Vegetation

There is very little vegetative cover on the site. The two main areas of vegetative cover are:

- (i) the hedgerows around the perimeter of the site
- (ii) vegetation on stockpiles, quarry walls and ledges

The hedgerows surrounding the site have an average height of 2 – 4 m. Earth banks are associated with the hedgerows along the western boundary of the site. There are very few mature standard trees in the hedgerows. Hawthorn (*Crataegus monogyna*) is the dominant canopy species. Elder (*Sambucus nigra*), blackthorn (*Prunus spinosa*) and gorse (*Ulex europeaus*) occur in smaller numbers.

The stockpiles and undisturbed ledges within the quarry are sparsely vegetated with grass and weed species including the following: willowherb (*Epilobium* sps.), coltsfoot (*Tussilago farfara*), groundsel (*Senecio vulgaris*), *Rumex* sps., clover (*Trifolium repens*), dandelion

(*Taraxacum officinale*), daisy (*Bellis perennis*), thistle (*Cirsium* sps.) and knotgrass (*Polygonum aviculare*).

### **The Site Entrance**

The entrance to the site is along the 3rd class road [LP01090] running along the western boundary of the site. The entrance is set back in from the road by approximately 4 m. The entrance is approximately 9 m wide and the gate is of metal fabrication. The entrance is bounded on both sides by a block wall.

### **Visibility**

Because of its location on a hill, the site has panoramic views in an easterly, southerly and north-easterly direction. Views to the west are obscured by the hedgerow on the western side of the adjacent third class road and to the north by Knockbrack hill. The site has potential to be viewed from the north, east and south. The site is obscured from the west by the slopes of the hill on which it is located. The main element of the site that is visible from the surrounding area is the stockpiles of soil at the north of the site and exposed ground in the east of the site. The maintenance garage is also visible from surrounding land. The excavated quarry areas are only visible to the north and north-west of the site. The masts, adjacent to the quarry, are also visible over relatively long distances from the site.

### **Visual Ambience**

The existing site, and proposed extending restoration footprint area, is composed of 8 main visual areas within the site.

#### **AREA 1**

This compartment is located at the entrance gate on the western boundary of the site. It comprises the entrance, the shed and the access roads into the site. This compartment has unimpeded views in an eastern and north-eastern direction into the quarry. From this area it is possible to see into area No. 5. Knockbrack is visible to the north and the Irish Sea is visible to the north-east. There is a view to the 3rd class road [LP01090] along the western boundary of the site from the gate. The mobile phone masts are also visible from this area.

#### **AREA 2**

This area is located in the south-west part of the site and comprises a deep excavation. There are no views out of this area in any direction except the mobile phone masts in a westerly direction.

#### **AREA 3**

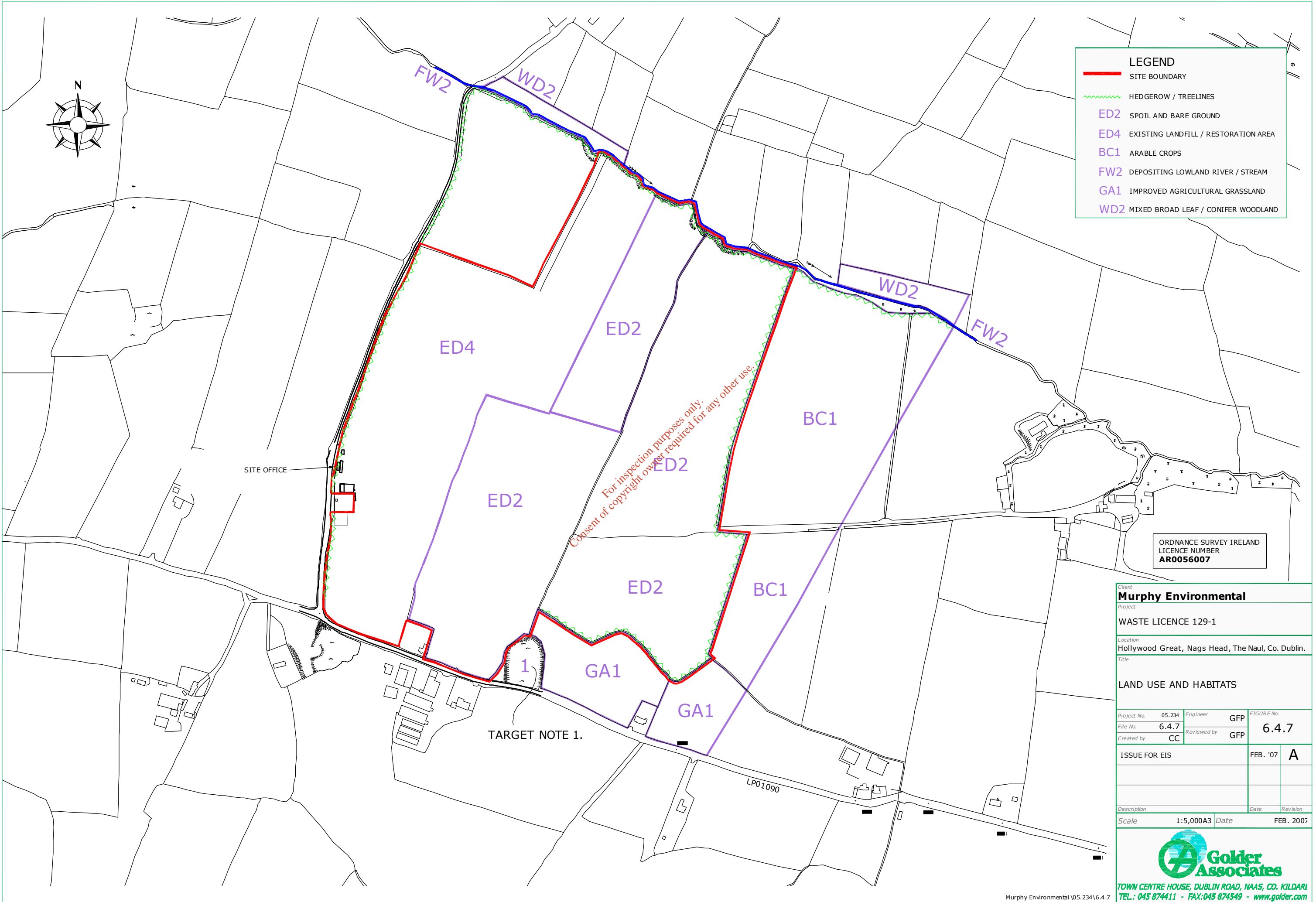
This area is located at the southern boundary of the site. It comprises stockpiles of soil. There are unimpeded views in all directions from this compartment. There is a 180° view from east to west from this compartment to the low-lying land. The Dublin Mountains are just visible in the distance. Shenicks Island and Lambay Island are visible in an east and south-east direction respectively. There are views into areas 2 and 4 and the top of area 5 from this position.

#### **AREA 4**

This area is located at the south-east corner of the site. It comprises a deep excavation. There are no panoramic views out of the area. All that is visible from here is the mobile phone mast and top of the shed in a westerly direction.



LEGEND	
	SITE BOUNDARY
	HEDGEROW / TREELINES
	ED2 SPOIL AND BARE GROUND
	ED4 EXISTING LANDFILL / RESTORATION AREA
	BC1 ARABLE CROPS
	FW2 DEPOSITING LOWLAND RIVER / STREAM
	GA1 IMPROVED AGRICULTURAL GRASSLAND
	WD2 MIXED BROAD LEAF / CONIFER WOODLAND



ORDNANCE SURVEY IRELAND  
LICENCE NUMBER  
**AR0056007**

Client <b>Murphy Environmental</b>			
Project WASTE LICENCE 129-1			
Location Hollywood Great, Nags Head, The Naul, Co. Dublin.			
Title LAND USE AND HABITATS			
Project No.	05.234	Engineer	GFP
File No.	6.4.7	Reviewed by	GFP
Created by	CC	FIGURE No.	6.4.7
ISSUE FOR EIS			FEB. '07
			A
Description		Date	Revision
Scale	1:5,000A3	Date	FEB. 2007



TOWN CENTRE HOUSE, DUBLIN ROAD, NAAS, CO. KILDARE  
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Murphy Environmental \05.234\6.4.7



**AREA 5**

This is the largest compartment in the site and comprises a pond, access roads, stockpiles of soil and stone. From this compartment it is possible to see sections of hedgerow in a north and westerly direction along the top of the quarry and the masts in a south-westerly direction. There are also views from here into most of Area 6. The stockpiles of soil form a local visual ridge line along the eastern boundary.

**AREA 6**

This area is located along the east of the site and comprises a deep excavation. There are views in a north west direction back into Area 5. There are no views out of the Area in an easterly, southerly or northerly direction. The views in a westerly direction are back to Area 5.

**AREA 7**

This area is located along the eastern edge of the site and is composed of stockpiles of soil and 'benching' areas, i.e. where the quarry side-walls have been stepped back to achieve improved slope stability. There are views from this area to the east and south.

**AREA 8**

This area is located at the northern edge of the site and comprises stockpiles of soil. There are views from here in a north and north-west direction.

**Characteristics of the Proposal**

This application seeks to extend the restoration footprint and increase the rate of filling per year. The following features are relevant to landscape and visual issues:

**Vegetation**

The existing quarry is bounded by hedgerows. A number of internal hedgerows were removed to allow for the excavation of the existing quarry. However, it is not proposed to remove any further hedgerows to allow for the continued landfill development.

**Facility Construction and Operation**

In visual terms, the operational stage will consist of the arrival and departure of waste trucks, and the operation of site-based machinery in the construction, management and filling of inert landfill cells.

Whilst the facility will generally operate in daylight hours (8:00 a.m. to 18:00), low-level lighting may be required in the entrance area and within the quarry from late autumn to early spring.

**Potential Effects****Impact Assessment**

Visual Impacts of the development are classified into four categories taking into account the following: degree, duration and nature of impact;

**Little/None** Where the proposal is adequately distanced or screened from the surrounding area by existing landform, vegetation or built environment

**Low** Where the views affected by the proposal form only a small element in the overall panorama or where screening or distance prevents intrusion or open viewing of the development

**Moderate** Where the presence of the development is distinctly noticeable, where screening is ineffective or where there is an intrusion into the foreground

**High** Where the view is significantly affected, obstructed or so dominated by the proposal as to form the focus of attention

Given the proposed landscape designations outlined in the Fingal County Development Plan, this area is considered high amenity in terms of landscape. The visual impact of the proposed landfill is moderate to high from areas within 1km north of the site. From here there are clear views into the site, with views of the existing excavation, the site building and soil stockpiles. From domestic residences north of the site, visual impacts are moderate to high. From the south and west of the site, the visual impacts are low. From the east of the site, the visual impacts are moderate to low.

The existing hedgerows provide some screening particularly along the south-east and west. The hedgerows along the north and north-east boundaries afford little screening.

However, the potential negative visual effects will only be evident during the construction and operation phases. The greatest visual impacts will be experienced during the final phases of the restoration project, once the machinery is working at ground level. Upon closure, the site will be returned to its original land use – agricultural land with contours similar to the pre-quarry condition, with little/no visual impact.

### **Mitigation Measures**

There are no additional mitigation measures required for the extension of the restoration footprint or increased rate of filling per annum. The restoration plan for the site will be agreed in advance with the EPA. The landscaping plan below complies with that previously proposed (2004 EIS) for the site.

### **Landscaping Plan**

The planting proposals and restoration of the site will be undertaken in two phases. Phase 1 will be undertaken during the life of the landfill operations and will mainly consist of replanting of hedgerows when necessary to maintain the current level of visual screening at the facility. Stage 2 will be undertaken after completion of the filling.

#### **Stage 1**

The main aim of Stage 1 of the landscaping plan is to continually ensure the visual screening of the site is maintained, in particular to provide screening of the spoil/soil stockpiles at the north-east part of the site.

#### **Stage 2 of the Landscaping Plan – Final Restoration**

The main aims of the final restoration plan are as follows:

*Grassing of Site Surface*

The site will be restored to agricultural pastureland as filling is completed within zones on the site. It is proposed that the final site profile will be similar in appearance to the surrounding landscape and that the final contours be similar to those prior to commencement of extraction.

*Woodland Copses adjacent to Townland Boundary Hedge*

It is proposed to retain the copses of woodland/scrub at the field boundaries with the townland boundary hedgerow. This woodland copse contains many mature trees and will provide a screen in the north and north east of the site.

*Supplementary Planting of Internal Hedgerow*

It is proposed that Murphy Environmental will continue to manage the existing hedgerows surrounding the site. In the event that supplemental planting is required (to block gaps that may appear in hedgerows) this additional planting will be carried out with a similar semi-mature plant species to allow integration into the hedgerow in as short a time as possible.

**Restoration Techniques / Guidelines****Soil Cultivation and Grassing**

In the area of the large stockpile at the north-east part of the site it is proposed to rip the soil and topsoil and re-~~seed~~ the surface within the landfilled area of the in-situ topsoil.

It is proposed that the subsoil layer in the capping system will have a minimum thickness of 900 mm. The subsoil layer will be deep ripped at depths of not less than 450 mm below surface and at intervals of 120 mm with a winged-subsoiler. A minimum thickness of 200 mm of topsoil will be cultivated and prepared for seeding. The preparation is to include for raking to encourage surface water run-off, removing stones and all foreign material, fertilising with general-purpose fertiliser and seeding with approved seed.

Soil handling will be undertaken during periods free from rain or frost and will be supervised by a landscape contractor.

**Trees**

Any tree species chosen will be predominantly native and reflect the species composition of the adjacent hedgerows. Trees should be planted with tie and 1 No. treated stakes set in a pit. Each tree should have 70 grams of bone meal mixed with 20 litres of moss peat and good quality topsoil. Planting pits should be 350 mm wider than rootball. Bottom of pit will be broken up and turned over to a depth of 300 mm to assist drainage. Tree stakes should be pressure treated timber to manufacturer's instructions. Stakes should have Sadolin finish applied, to selected colour. Plastic mesh guards should be used on all trees to protect them from livestock and wildlife. A 35mm thick layer of approved and treated mulch should be applied.

**Shrubs**

Shrub species chosen will be predominantly native and reflect the species composition of the adjacent hedgerows. Shrubs should be planted in prepared pits with backfill of topsoil mixed with 70 grams of bone meal and 20 litres of moss peat. Planting pits should be 300 mm

wider than the rootball. The bottom of the pit should be broken up and turned over to a depth of 300mm to assist drainage. All shrubs should be protected by stock proof fencing to deter browsing by livestock. A 35 mm thick layer of approved and treated mulch should be applied.

### **Maintenance**

Maintenance work will include the following:

Replacing all plants which die or fail to thrive.  
Weeding all areas, allow for supplying and spreading of appropriate weed suppressant to all planted areas, to manufacturers' instructions.  
Watering all planted areas, including shrubs and trees.  
Resetting and retying all ties to trees.  
Fertilising of all grassed areas with general-purpose fertiliser. The type and quantity should be agreed following soil analysis.

### **Landscaping Programme**

Stage 1 planting will be ongoing, as required. Capping and restoration of the land surface with grass will follow the backfilling activity. Therefore, cultivation and preparation of planted areas will be undertaken on an ongoing basis over the life of the site restoration project. The Stage 2 planting and reinstatement of hedgerows will be undertaken during the first two available planting seasons following the completion of the backfilling activity in the relevant areas.

### **Landscaping Specification**

The landscaping specification prepared by P.C. Roche and Associates (Landscape architects and site planners, 120 St. Lawrence Road, Clontarf, Dublin 3) and previously agreed with Fingal County Council will be applied, as detailed in Section 3.6.

### **Likely Significant Effects**

During the operating period of the landfill and with the mitigation measures in place, likely significant effects will be a moderate to low visual impact. Upon completion of the restoration work there will be little or no negative visual impact. There will be a net positive visual impact and improvement on the local amenity value of the area.

### **Monitoring**

No specified monitoring requirements; ongoing maintenance will be provided as detailed above.

### **Reinstatement**

Not applicable.

### **Forecasting Methods**

Not applicable.

### **Difficulties in Compiling Specified Information**

Not applicable.

### **Interactions**

The existing Flora & Fauna Section is pertinent in terms of proposing landscaping/planting measures which correspond with the existing environment at and around the site.

There are cross-references to the Traffic Section, in terms of the road network adjacent to the site.

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## 6.4 SOILS/GEOLOGY/HYDROGEOLOGY/SURFACE WATER

### 6.4.1 Study Area

The regional area of study generally incorporates the land from Naul in the northwest to Portrane and the Rogerstown Estuary in the southeast. The local or site-specific area of study incorporates the Quarry and the immediate surrounding lands.

### 6.4.2 Soils

The Gley group of soils cover most of the remaining parts of the region in which the Murphy site is located, with the exception of Knockbrack Hill/ Nags Head area and the Palmerstown townland area where the soils are of the Brown Earth Group. A small isolated area of peat occurs around the Ring Commons area. Hollywood Great Quarry is located in the Knockbrack Hill/ Nags Head area and is therefore characterised by the Brown Earth Group soils.

The Brown Earths are a relatively mature soil; they are generally well drained mineral soil. The typical profile is uniform with little or no differentiation into horizons. These soils are not extensively leached or degraded and thus there is little evidence in the soil profile of removal and deposition of iron oxides, humus or clay. The soils of this group are generally good arable soils although sometimes low on nutrients; they have good drainage and structure characteristics with medium textures.

Much of the naturally occurring soils on-site have been stripped and stockpiled to allow excavation to take place. These stockpiled soils will be stored for later restoration and capping of the quarry.

### 6.4.3 Quaternary Geology

The Quaternary data is scarce for this area; a map compiled from pre-existing data was produced to accompany an investigation for the location of landfill sites by the Geological Survey of Ireland for Dublin County Council (1979). This provides a guide to the depth and type of Quaternary sediment. The map classifies all the tills as limestone dominated. It does not differentiate the textural variations between till types which are directly related to the complex interaction of transport and deposition of the tills by ice. However, the map does show the absence of major sand or gravel deposits in the area. Bedrock crops out frequently in the area to the east of the quarry.

The Quaternary deposits on the site and in the immediate surrounding areas consist of a till. This varies in thickness and texture but is generally less than 5m thick and has a clay/silt matrix with dispersed pebble clasts. The till contains weathered clasts of Namurian shale and sandstone, with some limestone. Where the till cover is thin it tends to have a coarser texture, being more silty to sandy. The ice depositing the tills was most likely extending from the Irish midlands, southwards and eastwards across the area and may contain some far travelled limestone clasts. This till deposit is quite common in this region and is typical of the till dominated by clasts of Namurian lithologies, found in north county Dublin.

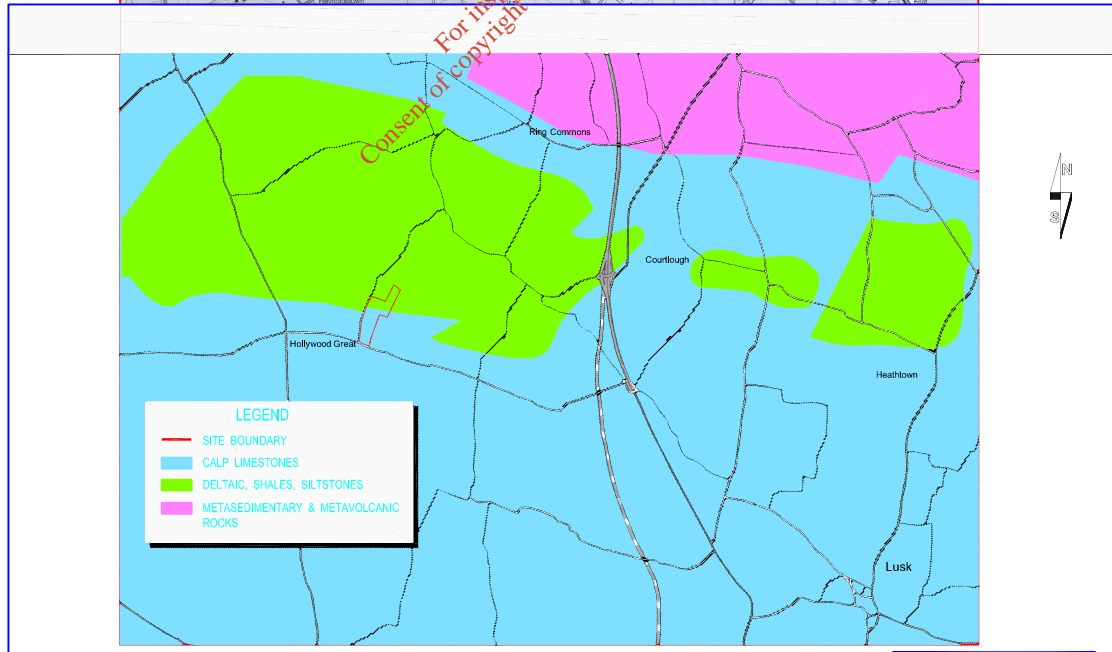
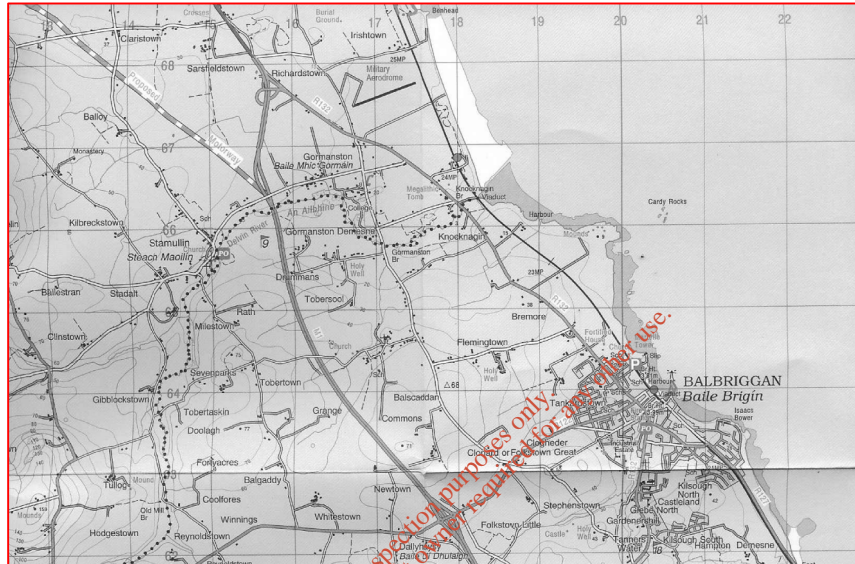
A deposit of 'Blue Clay' has been found in the subsoil in the northern and eastern parts of the site. Recompacted samples of this material have been tested by Geotesting Ltd. and was found to have permeabilities as low as  $8.6 \times 10^{-11}$  m/s in U100 samples.

#### **6.4.5 Bedrock Geology**

Several lithologies are reported from the area around Hollywood (Geological Survey of Ireland – Geology of Meath, 2001). Data has been taken directly by the GSI from the excavation at Hollywood, and Murphy's Site has been assigned the Mineral Location Number 2902.

Bedrock encountered towards the North of the excavated quarry is thought to belong to the Walshestown Formation. These rocks are described by the GSI as consisting of black shales, with ironstone, and subordinate siltstone and rippled fine sandstone bands, calcareous mudstone and biosparite. Underlying the Walshestown Formation is the Balrickard Formation (Figures 6.4.2 and 6.4.3). These rocks outcrop on-site as thinly bedded black shales and sandstones appearing yellow where weathered. The heavy weathering by groundwater of the sandstone rocks allows the development of jointing and probably allows good secondary permeability for groundwater movement. The shale horizons, although fissile, are unlikely to be very permeable to groundwater flow. The limestones of the Loughshinny formation are exposed towards the south of the quarry. These rocks conformably underlie the sandstones and shales of the Balrickard Formation and are composed of evenly bedded (0.3-0.5m thick) turbiditic dark grey limestones with some fine shale intercalations. Excavations also reveal that these limestones do not tend to be extensively weathered, implying that groundwater movement is likely to be restricted to fractures. Limited folding and faulting in the centre of the site has been exposed through excavations.

The bedrock occurring at Hollywood Great has been dated by Dr. T. de Brito as belonging to the Brigantian time stage (de Brito, 1989). This puts them as belonging to a group of rocks generally classed as the "Calp". The sequence



LEGEND	
	SITE BOUNDARY
	CALP LIMESTONES
	DELTAIC, SHALES, SILTSTONES
	METASEDIMENTARY & METAVOLCANIC ROCKS

FINGAL PLANNING CONSULTANTS

MURPHY CONCRETE MANUFACTURING  
REGIONAL GEOLOGY  
FIGURE 6.4A  
SCALE 1:50,000

of sandstones and shales also found at Hollywood Great would normally be taken as Namurian in age.

A detailed bedrock geology assessment carried out by Tara Prospecting Ltd. (1985) deals with the rocks in the immediate vicinity of the site and is based on their borehole database and local investigations. The assessment indicated a complex sequence of lithologies in the area, ranging from Namurian and Brigantian shales to Asbian limestones and volcanics to the north. The Namurian shales dominate the eastern part of the area and the Brigantian shales surround these on all sides. The rocks are faulted through the middle of the quarry and limestones occur to the east and to the west of the area with a small unit faulted in to the north, close to the area (Figure 6.4.2 & Figure 6.4.3).

#### **6.4.6. Hydrogeological Assessment**

##### **Regional Hydrogeology**

The GSI divides the North County Dublin / Meath area into four principal hydrogeological regions (Figure 6.4.3):

1. The Lower Palaeozoic rocks to the North. These rocks are generally classified as Poor Aquifers;
2. The Kingscourt Outlier. These rocks consist of karstified Carboniferous Limestone (classified as Regionally Important Aquifers) and Permo Triassic rocks (classified as Locally Important Aquifers);
3. The Balbriggan area. These rocks consist of Carboniferous- age sandstones, shales and limestones and are classified as moderately good (Locally Important Aquifers).
4. The Carboniferous Lowlands. Two main aquifers are (1) the Calp Limestone (Boyne Formation, Lucan Formation, Loughshinny Formation, Walshestown Formation) and (2) the Dinantian Limestones are encountered in the region. The Calp Limestones are more productive in Meath than elsewhere and are classified as Locally Important Aquifers. The Dinantian Limestones are classified as Regionally Important Aquifers. The Murphys site is located on the Walshestown, Balrickard and Loughshinny Formations.

There are limited Quaternary-age gravel aquifers located near Rush, but similar aquifers are rare throughout the rest of the region.

### **Groundwater Vulnerability**

The vulnerability of groundwater to contamination is determined by the thickness and type of overburden that overlies the aquifer. *The Geological Survey of Ireland* categorise groundwater vulnerability into four groups: *Extreme; High; Moderate; Low* as detailed in Table 6.4.1. As there is no overburden to protect the open quarry, the bedrock that is exposed has an Extreme (E) vulnerability. Excavations to the immediate east of the site have revealed that there is little or no natural overburden present there. However, to the immediate north of the quarry there is a veneer of dark-coloured glacial clay ("Blue Clay") up to 6m thick overlying the sandstones and shale. In turn there is a more extensive deposit of low permeability clay/silt till overlying the Blue Clay also towards the north of the site. These Quaternary deposits would tend to protect the bedrock aquifer from surface discharges.

These physical characteristics combined with the results from the permeability test in BH5 suggest that the aquifer vulnerability is moderate in the area surrounding the open quarry.

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**Table 6.4.1. Vulnerability mapping Guidelines (Source: Groundwater Protection Schemes – Dept. of the Environment, EPA & GSI 1999)**

VULNERABILITY RATING	HYDROGEOLOGICAL CONDITIONS				
	SUBSOIL PERMEABILITY (TYPE) AND THICKNESS			UNSATURATED ZONE	KARST FEATURES
	HIGH PERMEABILITY (SAND/GRAVEL)	MODERATE PERMEABILITY (E.G. SANDY SUBSOIL)	LOW PERMEABILITY (E.G. CLAYEY SUBSOIL, CLAY, PEAT)	(SAND/GRAVEL AQUIFERS ONLY)	(<30M RADIUS)
EXTREME (E)	0 - 3.0M	0 - 3.0M	0 - 3.0M	0 - 3.0M	-
HIGH (H)	>3.0M	3.0 - 10.0M	3.0 - 5.0M	>3.0M	N/A
MODERATE (M)	N/A	>10.0M	5.0 - 10.0M	N/A	N/A
LOW (L)	N/A	N/A	>10.0M	N/A	N/A

**STRATIGRAPHY**

WL	WALSHESTOWN FORMATION
BC	BAUBICKARD FORMATION
LO	LOUGH-SHINN FORMATION
NA	NALC FORMATION
LU	LUCAN FORMATION



SECTION LINE A-A' SEE FIGURE NO. HOL/45

BH06  
BH09  
BH08 (DEEP)  
BH08 (SHALLOW)  
BH10  
BH05  
BH11

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GSI 2925SEW018 SILTSTONE

RPS11  
RPS10  
RPS12

RPS05  
RPS08  
RPS04  
RPS08  
RPS09  
RPS07  
RPS03  
RPS21

RPS01

**LEGEND**

- SITE BOUNDARY
- ⊕ RPS BOREHOLES
- ⊕ GSI BOREHOLES
- ⊕ MURPHY ENVIRONMENTAL DEEP BOREHOLES
- ↗ 10 IMPLIED DIP AND STRIKE OF BEDROCK
- IMPLIED FAULT IN BEDROCK

<b>Murphy Environmental</b>			
WASTE LICENCE 129-1			
Hollywood Great, Nags Head, The Naui, Co. Dublin.			
<b>BEDROCK GEOLOGY</b>			
Client	05-234	Client	AS
File No.	HOL/44	Contract	T/M
Contract	AS	Project	HOL/44
FOR CLIENT REVIEW		date	17
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Scale	1:10,000 @ 1:15,000 @ 4	Date	JANUARY 2007

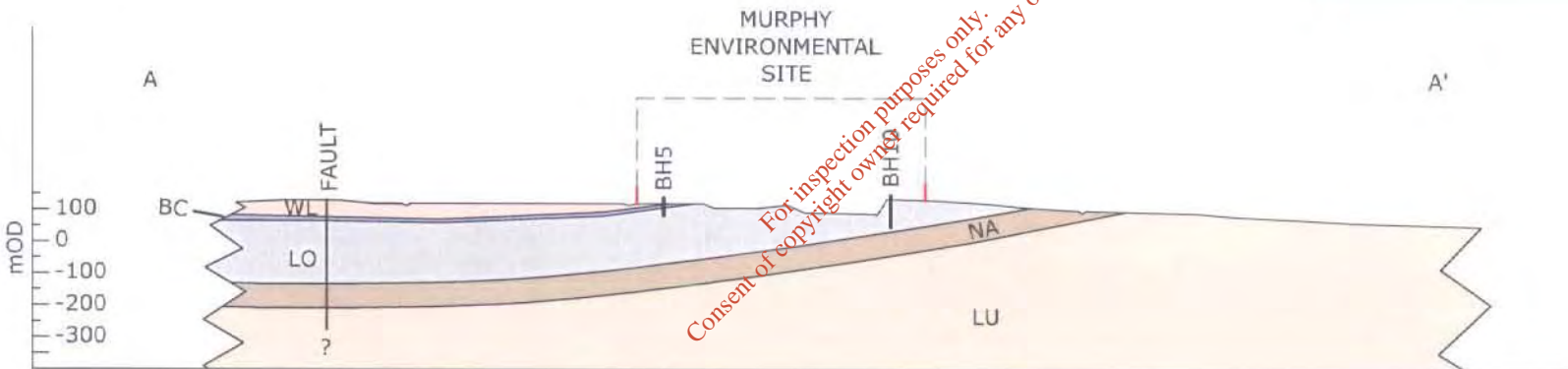


**LEGEND**

- SITE BOUNDARY
- MURPHY ENVIRONMENTAL DEEP BOREHOLES

**STRATIGRAPHY**

- WL WALSHESTOWN FORMATION
- BC BALRICKARD FORMATION
- LO LOUGHSHINNY FORMATION
- NA NAUL FORMATION
- LU LUCAN FORMATION
- ? IMPLIED FAULT IN BEDROCK



<b>Murphy Environmental</b>			
WASTE LICENCE 129-1			
Hollywood Great, Nags Head, The Naul, Co. Dublin.			
<b>BEDROCK GEOLOGY</b>			
<b>SECTION A-A'</b>			
Drawn: 05.234	Checked: AS	Project: HOL/45	
Title: HOL/45	Author: T/M	Date: JAN 07	
Scale: 1:1000	Client: AS	Rev: A	Issue: JANUARY 2007



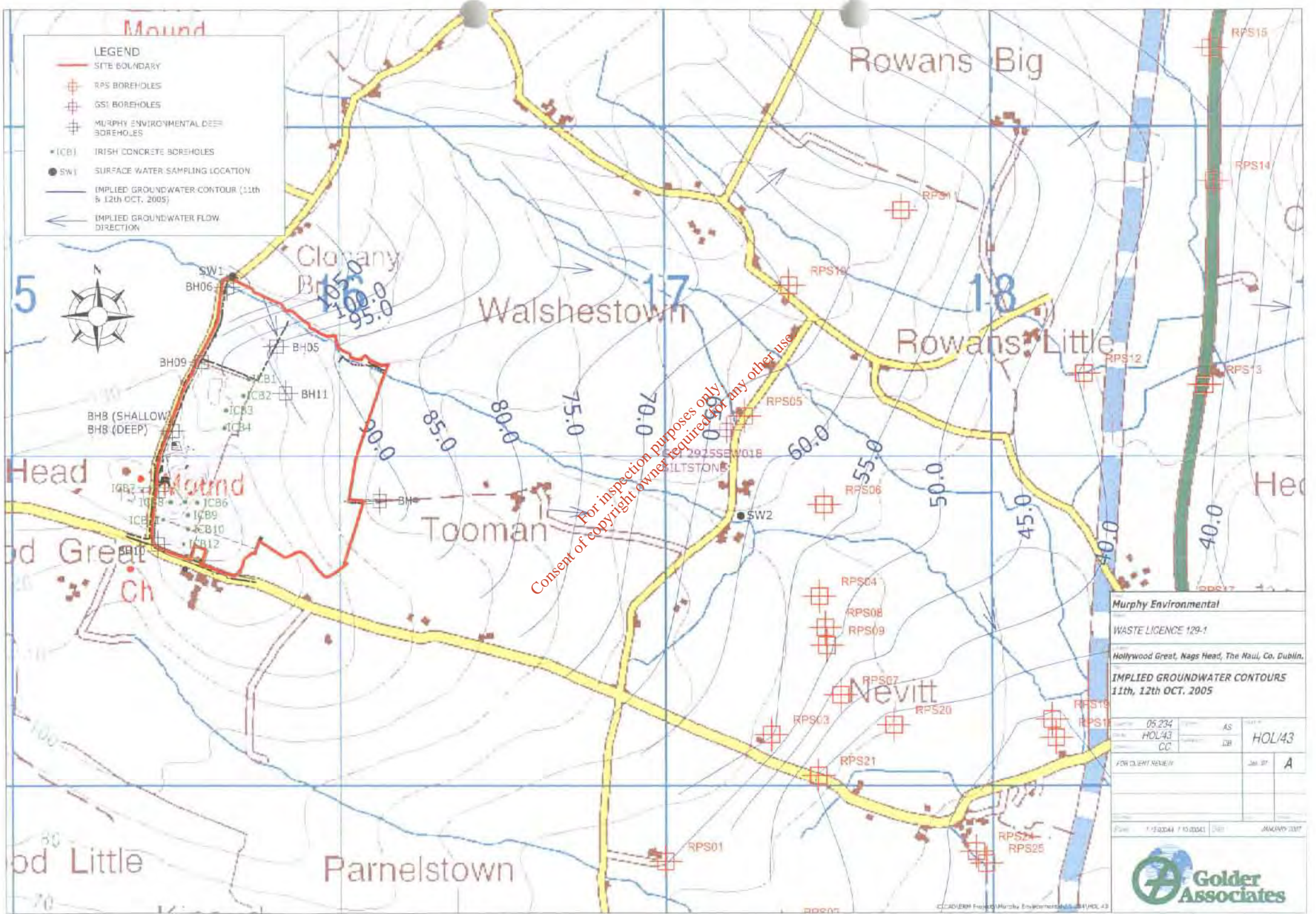
### Aquifer Classification

The rock formations of the area around The Naul and their hydrogeological importance are outlined below and are illustrated in Figure 6.4.4.

**Table 6.4.2. Geological Formations at The Naul. (Source: GSI, 2001)**

Age	Formation	Description	Aquifer Classification
Dinantian/ Namurian	WALSHESTOWN FORMATION (CALP)	Black shales with ironstone, and subordinate siltstone and rippled fine sandstone bands, calcareous mudstone and biosparite	Main aquifer used for public supply in Co. Meath. Classified as Locally Important
Dinantian	BALRICKARD FORMATION	Feldspathic micaceous sandstone with shale and argillaceous fossiliferous micrite	Moderately good (Locally Important)
	LOUGHSHINNY FORMATION	Dark grey micrites, turbiditic calcarenites and interbedded shales	Moderately good (Locally Important)
	NAUL FORMATION	Calcarene and calcisiltite with minor chert and occasional thin shales	Moderately good (Locally Important)
	LUCAN FORMATION (CALP)	Dark grey, well bedded, cherty, graded limestones and calcareous shales	Main aquifer used for public supply in Co. Meath. Classified as Locally Important





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WASTE LICENCE 129-1

Hollywood Great, Nags Head, The Naui, Co. Dublin.

**IMPLIED GROUNDWATER CONTOURS**  
11th, 12th OCT. 2005

Drawn: 05.234	Scale: AS	Sheet: 1 of 1
Checked: HOL/43	Author: CB	Project: HOL/43
Client: CC	Revision: 01	Date: 26.07.05
FOR CLIENT REVIEW	Scale: 1:10,000	Date: JANUARY 2007

**Golder Associates**



The following sources were used to describe and assess the existing hydrogeological conditions in the Hollywood Great Quarry area:

- The Groundwater Section of the Geological Survey of Ireland in November 1998;
- Groundwater quality and hydrostatic data from monitoring boreholes installed during September 1998 and August 2001 in connection with this land restoration project.

The quarry is situated within a local topographic high and possibly in the catchment of a small stream that drains towards the southeast into the Rogerstown Estuary. The limits of the local catchment are unconfirmed as there are no strategically placed regional boreholes. Groundwater flow from this topographic high is likely to be in an easterly direction (Figure 6.4.5).

### **Permeability of the Geologic Deposits**

The glacial deposits overlying the bedrock are generally consolidated and have a fine matrix. Permeability tests carried out on these deposits showed very low permeability values.




The shale bedrock is a fine-grained rock which probably has a low intergranular permeability to water but they are finely jointed and fractured, which would suggest a relatively high transmissivity. Where the bedrock is more highly weathered it appears to be less siliceous than in other parts and has weathered to a soft clay, these may act as local aquacludes limiting paths for water movement. Water movement in the unsaturated zone is indicated by patterns of dark and light coloration in the exposed faces, which probably result from differential oxidation.

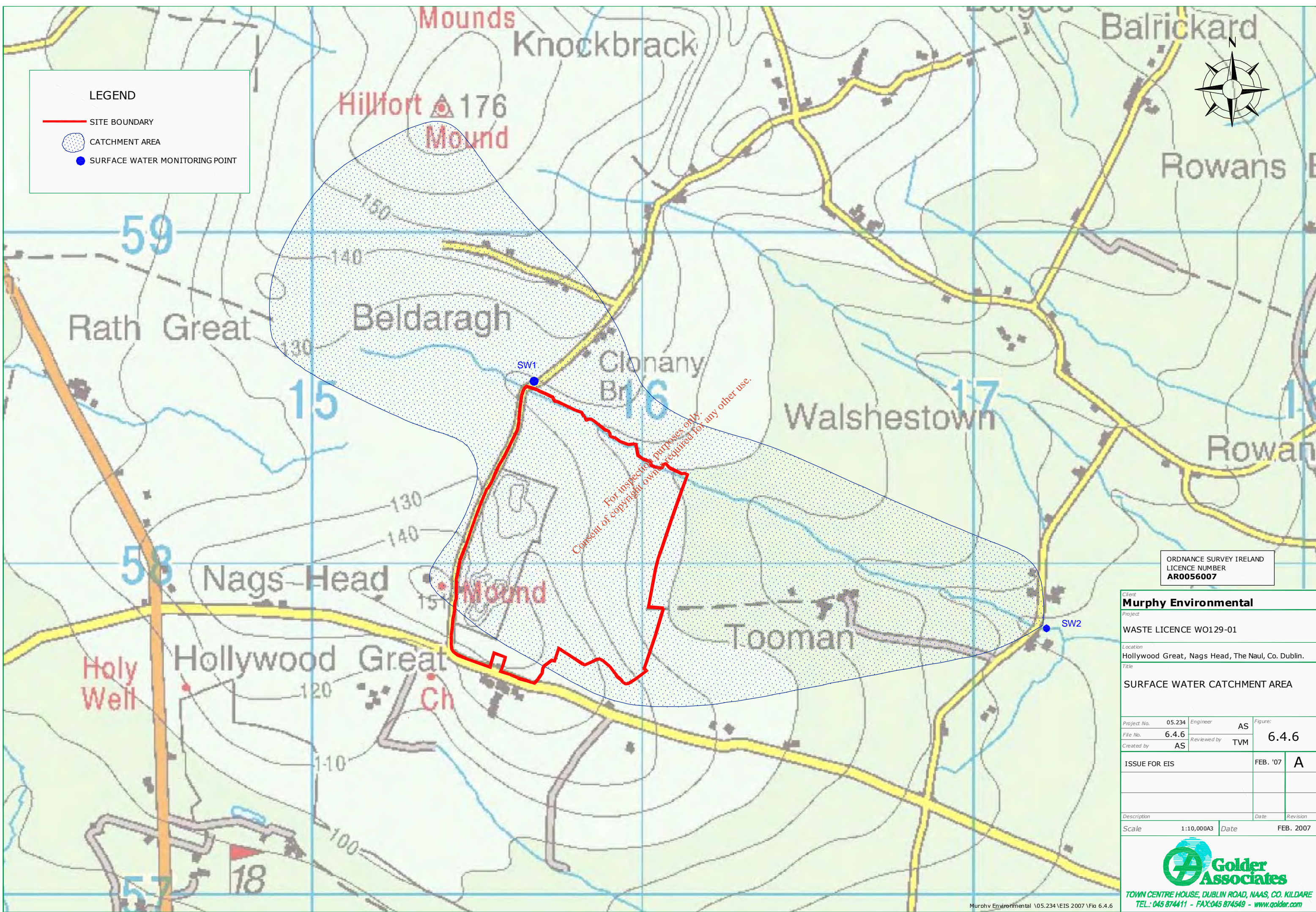
The limestone bedrock which also has a low intergranular permeability to water may be more permeable than the shale rock resulting from fissure and fracture flows. Permeabilities and well yields in these lithologies can be very variable and depend largely upon the presence of fractures.

Rising and falling head tests were carried out on three of the boreholes to measure the permeability of the bedrock. Satisfactory results were obtained from only one borehole (BH5). The permeability measured from this borehole was  $1.3E-06$  m/sec suggesting a moderate permeability for the shale.



**LEGEND**

-  SITE BOUNDARY
-  CATCHMENT AREA
-  SURFACE WATER MONITORING POINT



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ORDNANCE SURVEY IRELAND  
LICENCE NUMBER  
**AR0056007**

Client  
**Murphy Environmental**

Project  
WASTE LICENCE WO129-01

Location  
Hollywood Great, Nags Head, The Naul, Co. Dublin.

Title  
SURFACE WATER CATCHMENT AREA

Project No.	05.234	Engineer	AS	Figure:	
File No.	6.4.6	Reviewed by	TVM		6.4.6
Created by	AS				

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		FEB. 2007



TOWN CENTRE HOUSE, DUBLIN ROAD, NAAS, CO. KILDARE  
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### Groundwater Flow

There are 5 No. boreholes on-site which function as groundwater monitoring points (BH4, BH5, BH6, BH9 and BH11). BH10 is dry or damaged, BH8 (deep) is dry and BH8 (shallow) appears to intercept a perched aquifer. In order to create a regional picture of the groundwater flow regime, groundwater well data from the 11<sup>th</sup> of October 2005 was combined with groundwater well data from a nearby site investigation by RPS at Toomin, recorded on the 12<sup>th</sup> of October 2005. An inferred groundwater flow model for these groundwater monitoring wells is presented here in Figure 6.4.5. The regional groundwater flow direction appears to be from the West to the East. It should be noted that without groundwater monitoring data from the south of the site, it is difficult to infer groundwater movement direction within the southern half of the quarry.

### Groundwater Use

The groundwater is not currently used on the site, nor as drinking water in local domestic wells. A number of these wells (Table 6.4.3) are recorded by the Groundwater Section of the Geological Survey of Ireland, but often the best information on their exact location is merely a townland name.

**Table 6.4.3 Incidence of Groundwater wells in locality of Facility**

Townland	No. of wells
Naul	5
Dermotstown	2
Balscadden	1
Damastown	1

### **Description of Existing Groundwater Quality**

Groundwater monitoring is carried out at the site in compliance with Schedule D of Waste Licence W0129-01. Refer to Drawings for locations.

Groundwater analytical results are compared against the Groundwater Directive (80/68/EEC) and the Drinking Water Directive (98/83/EC) and also trigger levels as specified by the EPA for this site.

The water was generally found to be in compliance with the EC 2000 SI 439 Drinking Water limit values, though there were some non-conformances for certain parameters. It must be noted, however, that groundwater in or around the Hollywood site is not used for the purpose of human consumption. In addition it should be noted that borehole BH10 was dry during all sampling rounds and is not included in the analysis.

#### **6.4.7 Potential Effects on Soils, Geology and Groundwater**

The potential effects of the project on the existing soils and geology will be associated with the lining of the landfill cells and the final capping and reinstating of topsoil to the site. The lining of the cells is not significant as native on-site materials will be used. Reinstatement of the site with topsoil will have a positive effect on soils.

There are several aspects of the development that have a potential to have an impact on the quality of groundwater:

(i) Excavations below the water table

There have been previous excavations below the water table. Excavations below the water table will be backfilled with native shale or overburden to return the quarry floor level to 104.5mOD.

(ii) Waste disposal in, on and under the ground

Leachate is produced in landfills from infiltrating rainwater interacting with and extracting substances from the deposited waste. However the materials that are deposited in the site are as outlined in the EPA waste licence (W0129-

01) and include materials such as subsoil, concrete etc. These materials are rigorously tested prior to waste acceptance to prove that they will not generate harmful leachate.

(iii) Discharge of clean surface water runoff from roads and hardstands into the ground.

All surface water runoff from paved areas, wheelwash, quarantine areas, etc. will be filtered through a silt trap and oil interceptor prior to discharge.

(iv) Direct discharge of treated sewage effluent into the ground

Domestic sewage from canteens and toilets is handled by a septic tank which is routinely pumped out and disposed of to Ringsend Sewage Treatment Works.

(v) Accidental spills

Potential spills such as fuel spills will be immediately managed by containment of liquids and excavation of the soil for disposal off site. All fuel tanks are bunded and spill kits are dispersed around the site for use in an emergency.

#### **6.4.8 Mitigation Measures**

The mitigation measures include:

(i) Backfilling all excavations below the water table with inert native materials.

(ii) Controlling the type of wastes landfilled

(iii) Construction of an engineered, lined and capped landfill

(iv) Removal of sewage off-site to an approved facility and bunding of fuel tanks and the provision of spill kits to be used in the case of an emergency

Groundwater is protected at this site by the natural geological/hydrogeological conditions.



There is groundwater flow in the rock that will tend to dilute and disperse contaminants entering the groundwater flow regime. However, the first line of defence beneath fill areas will be an engineered lining system. The second line of defence will be to minimise the amount of leachate generation during filling and after completion of the landfill, by including a clay barrier in the capping system.

#### **6.4.9 Impacts after Mitigation Measures**

The likely significant effects of the project on the soils and geology of the area is considered to be positive, given that the soils will be reused and the quarry will be finally restored with its former landscape characteristics.

Emissions to groundwater in terms of quantities are controlled by the rate of recharge through the capping layers and the hydraulic gradients vertically through and beneath the deposited materials. No significant effects on the quality or use of groundwater downgradient of the site are anticipated.

#### **6.4.10 Surface Water**

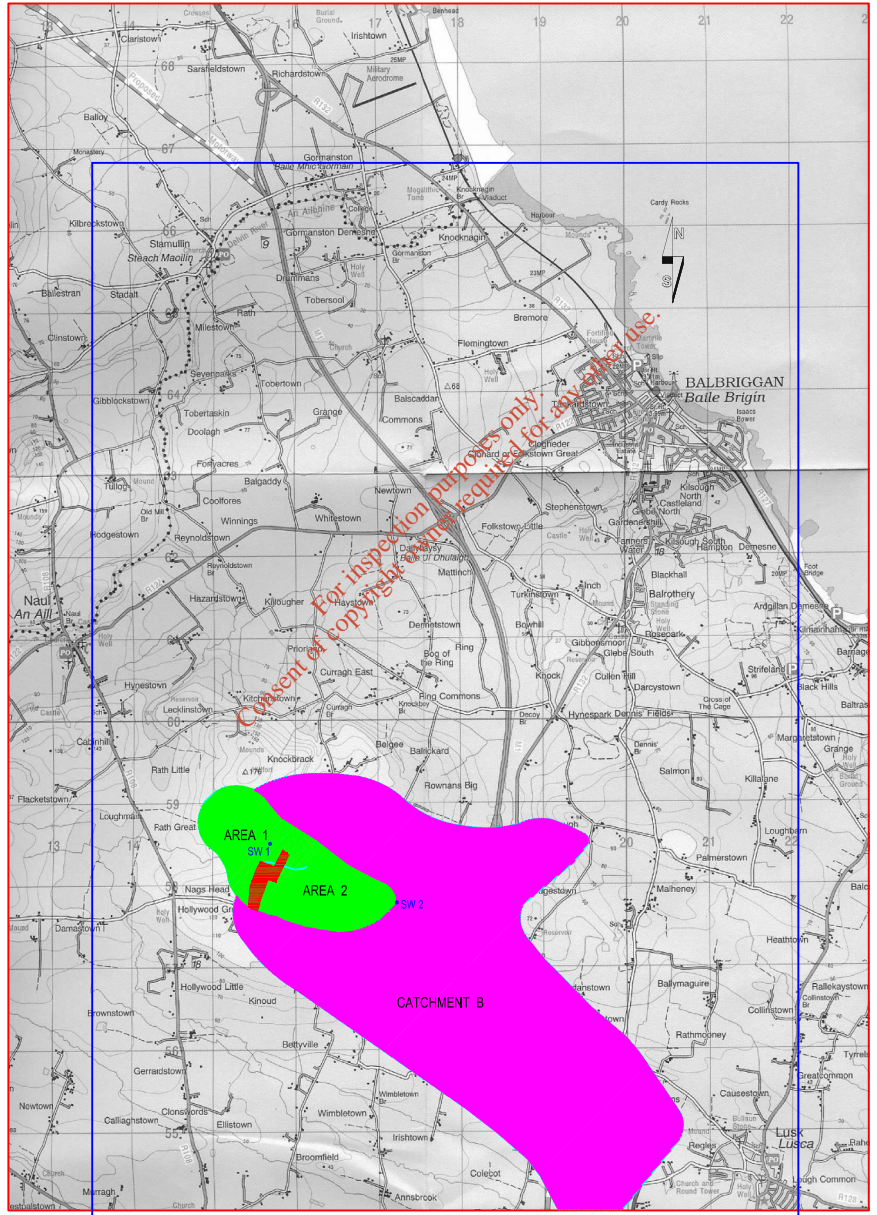
##### **Description of the Existing Surface Water & Study Area**

The site falls within the catchment of a small stream that discharges via a network of streams into the Rogerstown Estuary (Figure 6.4.6). The sub-catchment of the Rogerstown Estuary in which the site is located is highlighted on Figure 6.4.6 and comprises the zones labelled Areas 1, 2 and 3. Area 1 and Area 2 are the lands lying upstream of the bridge in Tooman and sampling location SW2. Area 3 is the balance of the subcatchment.

##### **Drainage**

The regional drainage pattern is dominated by two rivers; the Delvin (approximately 3km to the northwest of the site) and the Broad Meadow River (approximately 8 km to the south). The Delvin flows in a northerly direction through Naul and then eastwards to the coast through Gormanstown. The Broad Meadow flows in a general easterly direction.

The coastline also influences the regional drainage; many smaller rivers and streams flow through the Rogerstown Estuary and directly into the Irish Sea.



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FINGAL PLANNING CONSULTANTS

MURPHY CONCRETE MANUFACTURING  
 SURFACE DRAINAGE SYSTEM  
 FIGURE 6.4C SCALE 1:50,000

There is a strong regional orientation of rivers to the east of the site flowing in a southeasterly direction into the Irish Sea.

The site is located on a hill which acts as a watershed divide with a radial drainage pattern, although the dominant drainage is to the north-west into the Delvin and drainage to the east into the Irish Sea. A small stream runs along the northern boundary of the site and flows towards the east.

The small reservoir, located approximately 2.5km northwest of the site, is outside the catchment areas shown on Figure 6.4.6.

A small stream that drains eastwards along the northern boundary of the site falls from a base level of 114 m O.D at Clonany Bridge to 58 m O.D. (Malin Head) at the Joinery Bridge. This stream is cut into rock, which crops out at approximately 103m, 98m, 94m & 84m O.D. along this stretch of the stream course (See Figure 6.4.6). The site belongs to the catchment of this small stream.

### **Flows**

The two main rivers in the region (Delvin River & Broad Meadow River) are gauged and flow conditions monitored; however, both these rivers are outside the catchment areas of the site and therefore of no direct relevance. A smaller stream, the Ballyboghill Stream, to the south of the site is also monitored. The site is not within this stream catchment.

The flow gauging records from the Ballyboghill stream were used to estimate flows within Catchment B (Table 6.4.6). The catchment area of Ballyboghill stream is 22.1 km<sup>2</sup>, the gauge is located at NGR, 315200,253600. The average rainfall for the catchment area is 830 mm/year.

**Table 6.4.6 Catchment Details**

Catchment	Surface Area (km <sup>2</sup> )	Description	Flow (m <sup>3</sup> /s)
Catchment A	2.47	Joinery Bridge	0.029
Ballyboghil Guage	22.1	215200 E, 253600 N	0.26

### **Local Surface Water Quality**

Surface Water monitoring is carried out bi-annually at the site in compliance with Schedule D of Waste Licence W0129-01.

The surface water was sampled at two locations: upstream from the site at Clonany Bridge (SW1) and downstream at the Joinery Bridge (SW2). (See Figure 6.4.6).

Laboratory results were compared against Surface Water Regulations, SI No. 294 of 1989 – The European Communities (Quality of Surface Water Intended for the Abstraction of Drinking Water) Regulations. A3 river water quality was used as river water quality in this area is generally "moderately polluted" according to EPA water quality data.

All parameters comply with A3 Surface Water Regulation limits.

### **Potential Impacts of Project on Surface Water**

There is little to no surface water runoff from the existing quarry excavation, as most of the incident precipitation infiltrates the ground directly through the exposed bedrock in the existing quarry floor. Surface water run off from the developed site will be directed to perimeter drains. There will not be

uncontrolled runoff or groundwater discharge that could affect the quality of the adjoining stream. **The settlement ponds regulate the discharge of surface water runoff to the stream running along the northern boundary of the site**

### **Mitigating Measures**

Mitigation measures include the proposed restoration scheme, existing and new drainage ditches and silt control measures. Progressive and phased restoration and seeding will reduce silt load.

Inert wastes will be placed in the base of the quarry which will be lined with clay.

### *Hardstanding Drainage*

Pursuant to Condition 3.13.2 and Schedule B: Specified Engineering Works of the EPA Waste Licence, a surface water drainage control for the hard standing areas of the site is in place. The site entrance area has been reconstructed with a hardstanding area. Surface water run-off from the hardstand area is controlled and directed into a cross drain (a heavy duty 'Aco-drain') at the northern side of the hardstand. This surface water flows via a 150mm diameter PVC storm water drain pipe northwards to a Class 1 Bypass Separator (Klargester NSB8), a Silt Separation Tank and an Inspection chamber, as required by the EPA Licence W0129-01.

The oil chamber of the Bypass Separator is inspected regularly and when required the licensee employs a licensed haulier to export the oil off site. Records of all inspections and oil exports are kept and maintained on the site.

### *Silt Settlement Ponds*

During 2006, Murphy Environmental undertook the construction of surface water management 'settlement' ponds, located in the north of the site. The settlement ponds regulate the discharge of surface water runoff to the stream running along the northern boundary of the site. The water pumped to the ponds, and eventually discharged to surface water, is comprised only of clean rainwater from the base of the quarry, which is required to be removed for operational reasons. The settlement ponds retain the pumped water for a period of time, such that any sediment which may be suspended in the water is allowed to settle out, and falls to the base of the ponds. In this way, silt-laden water is prevented from being released into the stream. Monitoring conducted at the settlement ponds since their construction shows that they are effective in reducing the levels of suspended solids in the discharged water.



Annual and 6-monthly chemical and metal analysis of surface water at the locations outlined in Table 6.4.7, is carried out for the parameters as specified in Table D.4.1 of the Waste Licence W0129-01.

***Impacts after Mitigating Measures***

No significant effects on the quality of the adjoining surface water are expected from the development.

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## 6.5 Noise Impact

### Receiving Environment Introduction

The site is bounded to the north and east by land used for agricultural purposes and by a County Road on the south and west. An adjacent existing waste permitted site operates to the northwest of the site. The nearest noise-sensitive locations to the Murphy Environmental facility are the residential dwellings beyond the north, west and southern boundaries.

### Environmental Noise Survey

An environmental noise survey was conducted by AWN Consulting in order to quantify the existing noise environment. The survey was conducted generally in accordance with ISO 1996: Acoustics – Description and measurement of environmental noise: 1982. Specific details are set out below.

### Choice of Measurement Locations

Three measurement locations were selected; each is described in turn below and also shown on Figure 6.1.

- **Location 1** (N4) is located close to a residential dwelling to the north of the facility.
- **Location 2** (N5) is located close to a residential dwelling to the west of the facility.
- **Location 3** (N6) is located along a county road beyond the southern boundary of the site at a point close to a number of residential dwellings.

### Survey Periods

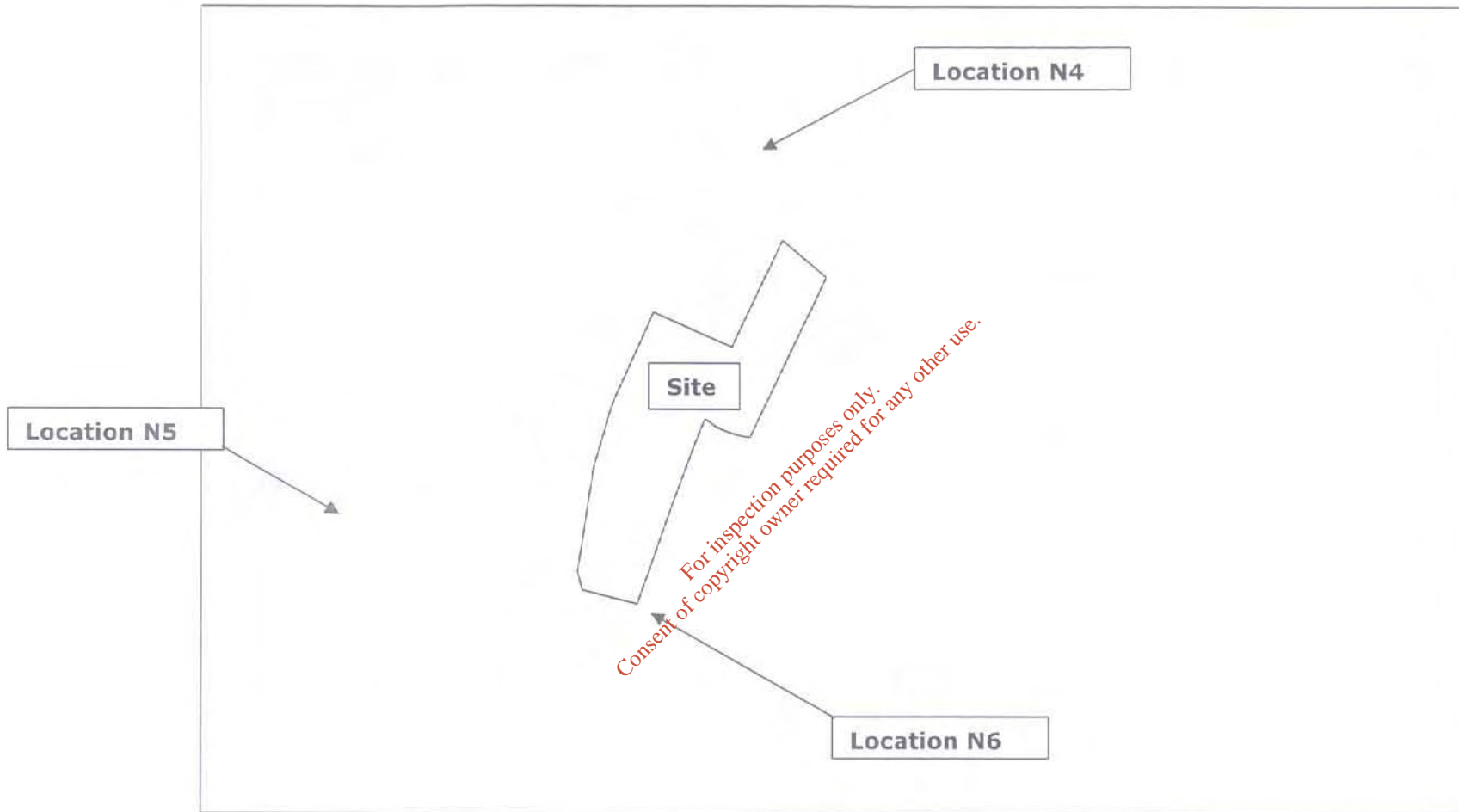
For the purpose of this document daytime is taken to be between 07:00hrs and 23:00hrs, whilst night-time is between 23:00hrs to 07:00hrs. Noise measurements were conducted over the course of the following periods:

- Daytime – 10:41hrs to 12:49hrs on 31/08/06
- Night-time – 22:48hrs to 00:31hrs on 29-30/08/06

The daytime measurements cover a typical period that was selected in order to provide a typical snapshot of the existing noise climate

The night-time period provides a measure of the existing background noise level.

The weather throughout the daytime survey was dry and calm. During the night-time period it was dry and breezy.



**Figure 6.1**  
**Location of Site and Noise Measurement Locations**

## Personnel and Instrumentation

Terry Donnelly (AWN) conducted the noise level measurements during both daytime and night-time periods.

The noise measurements were performed using Brüel & Kjær Types 2250 and 2260 Sound Level Analysers. Before and after the survey the measurement apparatus was check calibrated using a Brüel & Kjær Type 4231 Sound Level Calibrator.

## Procedure

Measurements were conducted at three selected locations on a cyclical basis for sample periods of 15 minutes. The survey results were noted onto a Survey Record Sheet immediately following each sample, and were also saved to the instrument memory for later analysis where appropriate. Survey personnel noted the primary noise source contributing to the noise build-up.

## Measurement Parameters

The noise survey results are presented in terms of the following three parameters:

- **L<sub>Aeq</sub>** is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period.
- **L<sub>A10</sub>** is the sound level that is exceeded for 10% of the sample period. It is typically used as a descriptor for traffic noise.
- **L<sub>A90</sub>** is the sound level that is exceeded for 90% of the sample period. It is typically used as a descriptor for background noise.

The "A" suffix denotes the fact that the sound levels have been "A-weighted" in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to  $2 \times 10^{-5}$  Pa.

## Results and Discussion

### Location 1

The survey results for Location 1 are summarised in Table 6.1 below.

**Table 6.1 Summary of noise measurements at Location 1**

Time		Measured Noise Level (dB re. $2 \times 10^{-5}$ Pa)		
		L <sub>Aeq</sub>	L <sub>A10</sub>	L <sub>A90</sub>
Daytime	10:41 – 11:12	60	58	48
Night-time	22:48 – 23:18	54	41	31

The dominant source of noise observed at this location during the daytime measurement period was frequent heavy vehicular traffic accessing a nearby landfill site. Noise associated with activity on the Murphy facility was also audible throughout the measurement period. In order to establish more precisely the noise contribution to the nearby dwelling associated with the Murphy facility an additional noise measurement was performed during a period when the Murphy facility was operating normally and activity at the adjacent landfill was relatively light (no heavy vehicles entered or left that site during the measurement period).

During the night-time period the primary noise source was local road traffic and wind generated noise. The Murphy facility was not operating during the night-time measurement period.

During the monitoring period no significant source of vibration was observed.

## Location 2

The results for Location 2 are summarised in Table 6.2 below.

**Table 6.2 Summary of noise measurements at Location 2**

Time		Measured Noise Level (dB re. $2 \times 10^{-5}$ Pa)		
		L <sub>Aeq</sub>	L <sub>A10</sub>	L <sub>A90</sub>
Daytime	11:37 – 12:07	62	60	39
Night-time	23:24 – 23:54	56	44	35

The primary source of noise affecting the noise climate at this location during the daytime measurement period was road traffic along local roads. Activity at the Murphy facility was not audible during the measurement period.

During the night-time the primary noise source was again local road traffic. The Murphy facility was not operating during the night-time measurement period.

During the monitoring period no significant source of vibration was observed.

## Location 3

The results for Location 3 are summarised in Table 6.3 below.

**Table 6.3 Summary of noise measurements at Location 3**

Time		Measured Noise Level (dB re. $2 \times 10^{-5}$ Pa)		
		L <sub>Aeq</sub>	L <sub>A10</sub>	L <sub>A90</sub>
Daytime	12:14 – 12:44	63	62	39
Night-time	00:01 – 00:31	56	47	37



The primary source of noise observed at this location during the daytime measurement period was traffic along local roads. Activity at the Murphy facility was barely audible during lulls in the traffic movement at this location during the measurement period.

During the night-time the primary noise source was again local road traffic. The Murphy facility was not operating during the night-time measurement period.

During the monitoring period no significant source of vibration was observed.

### **Characteristics of the Proposal**

When considering a development of this nature, the potential noise and vibration impact on the surrounding must be considered for the operational phase.

The primary sources of noise in the operational context will be as follows:

- site vehicle movement;
- additional vehicular traffic on existing public roads and site users.

### **Possible Effects of a Proposal of this Kind**

#### **Noise Criteria**

Due consideration must be given to the nature of the primary noise sources when setting criteria. In this instance, there are two primary sources of noise associated with the development once operational. Criteria from plant equipment and vehicle movement will be set in terms of the  $L_{Aeq,T}$  parameter (the equivalent continuous sound level). Given that vehicle movements on public roads are assessed using a different parameter (the ten percentile noise level;  $L_{A10}$ ), it is appropriate to consider the increase in traffic noise level that arise as a result of vehicular movement associated with the development on public roads in terms of the  $L_{A10}$  parameter.

There are two primary sources of noise impact in the operational context:

- Plant equipment;
- vehicular movement;

Each of these primary noise sources is addressed in turn.

Note that there are no significant sources of vibration associated with the operational phase of the proposed development.

A variety of items of plant will be in use, such as excavators, lifting equipment, dumper trucks, compressors and generators. There will be vehicular movements to and from the site that will make use of existing roads.

For the purpose of the calculation, it is assumed that equipment will be operating at a distance of 150 meters from the nearest residential dwelling.

The predicted noise level indicated in Table 6.5 assume a utilisation factor of 66% for construction equipment over the course of a typical working day.

**Table 6.5: Typical Noise Levels at nearest noise sensitive property during Different Construction Phases**

Phase	Item of Plant (BS5228 Ref)	L <sub>Aeq</sub> at 10m <sup>50</sup> (dB)	L <sub>Aeq</sub> at NSL (dB)
Site clearance/ excavation	Dump Truck (C36)	82	54
	Track Excavator (C2 25)	85	
Laying of liner	Compressor (C7 17)	82	42
	Lorry (C7 121)	70	
	Generator (C7.51)	72	

There are no items of plant that would be expected to give rise to levels that would be considered out of the ordinary or in exceedance of the levels outlined in Table 6.5.

#### Landfill Services Plant

Once a development of this nature becomes fully operational, mechanical plant will be required to carry out the operation. Most of this plant will be capable of generating noise to some degree. This plant will only be operational during operating hours, and hence will not effect the night time noise levels.

It will be necessary that the noise associated with the process in totality will be controlled so that it will not exceed a contributory noise level at one meter from the façade of any noise-sensitive location of 50dB L<sub>Aeq,1hr</sub> daytime and 45dB L<sub>Aeq,5min</sub> night-time, in accordance with Schedule C of the Waste Licence No W0129-01. In this situation noise sensitive locations include the dwelling to the east of the site boundary. The resultant noise level is within the guidelines noted above and the associated impact is not significant.

#### Site Vehicle Movement

Site traffic will enter and leave the development via an entrance roadway leading from the Country Road. Heavy vehicles accessing the facility along the site road will have the greatest potential for noise impact on the nearest receptors. The closest noise sensitive locations to the site roadway are the residential dwellings beyond the north, west and southern boundaries.

The traffic consultant has provided predicted peak hour traffic flows associated with the proposed development, i.e. a total of site vehicle movement. The 'worst case' peak hourly HGV traffic flow accessing the facility has been used to determine the predicted noise level at the façade of the nearest residential dwellings to the south of the facility.

The noise level associated with an event of short duration, such as a vehicle drive-by, may be expressed in terms of its Sound Exposure Level ( $L_{AX}$ ). The Sound Exposure Level can be used to calculate the contribution of an event or series of events to the overall noise level in a given period. Sound propagates in accordance with the "Inverse Square Law", meaning that sound pressure levels nominally decrease by 6dB per doubling of distance from the source. It is important to note that the relationship is not linear, i.e. sound levels do not decrease by a set amount per metre travelled. If a second pressure level is known at a given distance, application of the Inverse Square Law allows us to calculate the corresponding sound pressure level at any other distance in accordance with the following formula:

$$L_{Aeq,T} = L_{AX} + 10\log_{10}(N) - 10\log_{10}(T) + 20\log_{10}(r_1/r_2) - \text{Screening dB (1)}$$

where:

$L_{Aeq,T}$  is the equivalent continuous sound level over the time period T (in seconds);

$L_{AX}$  is the "A-weighted" Sound Exposure Level of the event under consideration (dB);

$N$  is the number of events over the course of time period T;

$r_1$  is the distance at which  $L_{AX}$  is expressed;

$r_2$  is the distance to the assessment location.

We have established from measurement the mean value of Sound Exposure Level for a HGV 'drive by' at low to moderate speeds (i.e. 15 to 50 kmph) is in the order of 83dB  $L_{AX}$  at a distance of 5 metres from the vehicle. This figure is based on a series of measurements conducted under controlled conditions. We have assumed a 'worst case' scenario whereby 32 HGV vehicle trips per hour are made along the entrance roadway.

Taking into account the effect of site vehicle activity from the development, attenuation due to distance and nominal screening provided by the change in ground levels, the predicted noise level at the nearest residence south of the facility during the peak period is 28 $L_{Aeq,1hr}$ . The predicted noise level at the nearest residence south of the facility during the peak period is 26dB  $L_{Aeq,1hr}$ .

These levels are well within the daytime criterion of 50dB  $L_{Aeq,1hr}$ . Therefore it may be concluded that there will be no significant impact associated with vehicle movement on the site.

### **Additional Vehicular Traffic on Existing Public Roads**

The traffic consultant has provided predicted traffic flows with and without the proposed development. Table 6.6 below indicated resultant traffic flows and changes in noise levels associated with the proposed development.

This information has been used to determine the predicted change in noise levels adjacent to various roads in the vicinity of the site. The method for calculating the

increase in noise is based upon the procedures within the *Calculation of Road Traffic Noise (CRTN)*<sup>11</sup>.

**Table 6.6: Summary of Peak hour traffic flow for year 2006 and calculated relative change in traffic noise levels resulting from the development.**

Junction Reference	AADT Traffic Flows for Year 2005		Change in Noise Level (dB) associated with Peak Hour Levels
	Without Development	With Development	
R132 and Country Road 439	1793	2038	+0.6

The predicted increase in traffic levels associated will result in an increase of 0.6dB or less in the vicinity of roads and junctions surrounding the proposed development. Reference Table 6.4 confirms that this increase is imperceptible and the resultant impact is not significant.

In summary, the predicted increase in noise levels associated with vehicles at any of the road junctions in the vicinity of the proposed development is not significant.

#### **Avoidance, Remedial or Reductive Measures**

In order to sufficiently ameliorate the likely noise impacts, a schedule of noise control measures has been formulated for the operational phases.

#### **Site Vehicle Movement**

The noise impact assessment outlined above has demonstrated that mitigation measures are not required.

#### **Additional Vehicular Traffic on Public Roads**

The noise impact assessment outlined above has demonstrated that mitigation measures are not required.

#### **Likely Effects of this Proposal**

This section summarised the likely noise impact associated with the proposed development, taking into account the mitigation measures.

#### **During Operation**

##### **Site Vehicle Movement**

The predicted noise levels associated with vehicle movement on the development site will not exceed the daytime criterion 50dB  $L_{Aeq,1hr}$ , hence the impact is not significant.

##### **Additional Vehicular Traffic on Public Roads**

The predicted increase in site-generated traffic post-development means that the impact in relation to noise from vehicles on public roads is not significant.

### **Monitoring**

Not applicable

### **Reinstatement**

Not applicable

### **Forecasting Methods**

Traffic noise levels are predicted in accordance with guidance set out in the CRTN in the form of  $L_{10}$  values.

### **Difficulties in Compiling Specified Information**

Not applicable

### **Interactions**

Information contained in chapter 5.0 – Traffic & Transportation relating to road traffic and site vehicles movements was used in compiling the Noise & Vibration chapter.

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## 6.6 Flora and Fauna

### 6.6.1 Receiving Environment

On behalf of Murphy Environmental (a trading division of Murphy Concrete Ltd.), a study was undertaken to investigate the ecological aspects for the purposes of an Environmental Impact Statement (EIS). Murphy Environmental holds planning permission from Fingal County Council for restoration activities at the site for a 15-year timeframe, effective from October 2004. This application seeks to extend the restoration footprint and increase the rate of filling per year per annum. The activities will be the same as those in progress since 2003 when the EPA Waste Licence became operational.

The development was assessed within the context of the potential direct, indirect, secondary and cumulative impacts upon the flora and fauna presently existing on site, and the immediate environs. The environmental impact statement will cover these potential impacts and put forward mitigation measures, if necessary, to minimise or eliminate the impact of the development on the receiving environment.

Upon establishing the baseline floral and faunal composition of the area for development and its adjacent habitats, the characteristics of the development with respect to the established ecological habitats were considered.

### 6.6.2 Sites of Conservation Importance close to site

The proposed extension landfill area nor any part of the existing site is not located within any protected areas. In addition the site and its immediate adjacent habitats are not recorded as containing any EC Natural Habitat types or fauna of community or national interest as directed by Council Directive 92/43/EC.

Table 6.6.1 provides a list of the closest Proposed National Heritage Areas (PNHAs) to the quarry site.

**Table 6.6.1 Proposed National Heritage Areas (PNHAs) within 10Km of Hollywood Site**

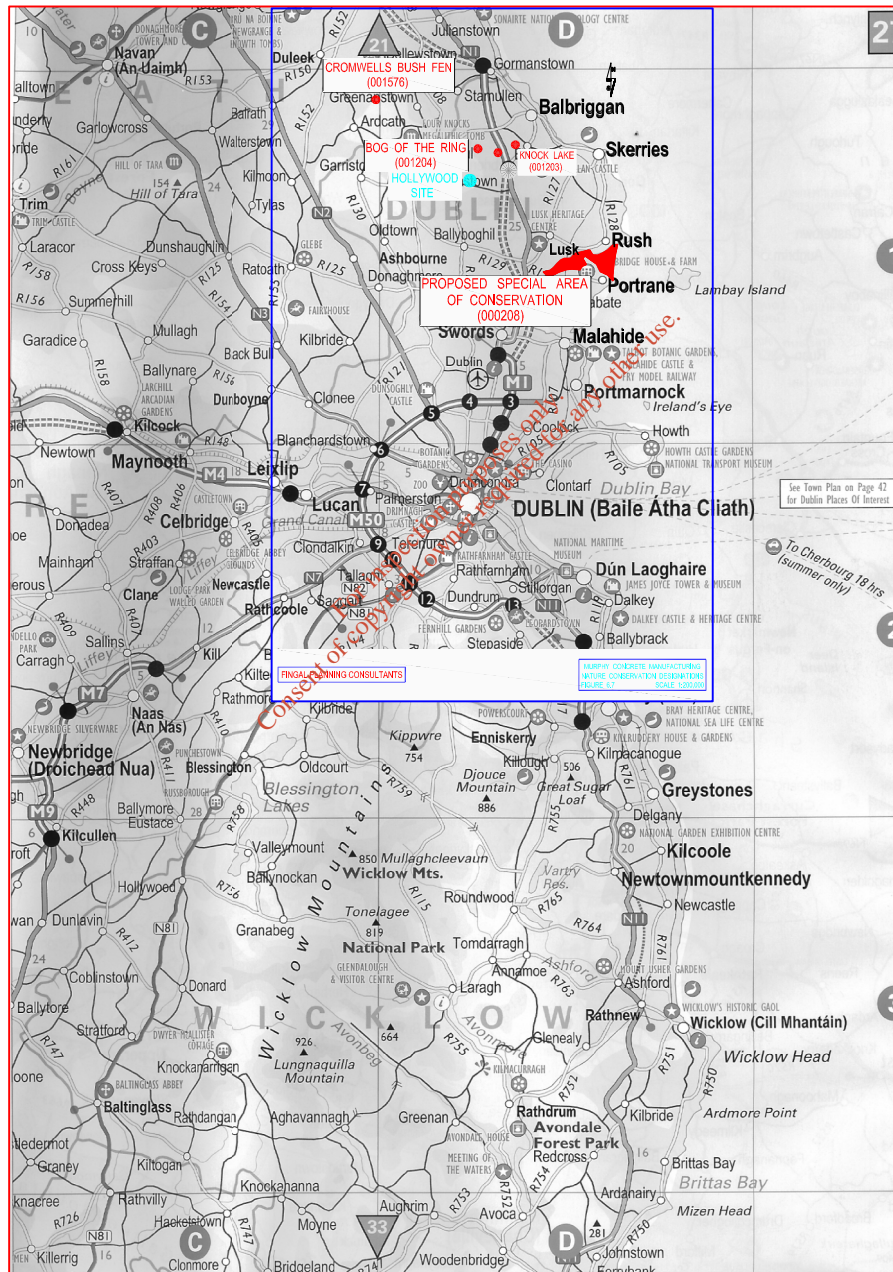
PNHA No.	Name	Distance from Site
001576	Cromwells Bush Fen	8.3km north west
000208	Rogerstown Estuary	8 km south west
001203	Knock Lake	4.2 km north east
001204	Bog of the Ring	2.5 km north east

#### **Cromwell's Bush Fen (001576)**

This site is situated approximately 6 km south-east of Duleek. It is a small wetland area in a pastoral / arable setting over poorly draining glacial drift. A wide range of fen species are represented on site. The site also supports a diversity of wetland waders.

#### **Rogerstown Estuary (000208)**

This site is situated approximately 2 km north of Donabate. It is a relatively small estuary separated from the sea by a sand and shingle bar. Three rare plant species, legally protected under the Flora Protection Order (1987), occur within the site. It is an important waterfowl site with Brent Geese having a population of international importance and a further 12 species have populations of national importance.



### **Knock Lake (001203)**

The site is situated at Balrothery, approximately 3km south of Balbriggan. It is a shallow artificial lake and has been used as a reservoir. Otter, a species listed in Annex II of the EU Habitats Directive, has been recorded at the lake. It is one of two nesting sites for Great Crested Grebe in County Dublin.

### **Bog of the Ring (001204)**

The site is situated approximately 5km south –west of Balbriggan. It is a flat low-lying area with impeded drainage, showing signs of peat development in its upper horizons. Pockets of marsh vegetation occur on the site. The site is used in the winter by Golden Plover, Whooper Swan (occasionally) and Short-eared Owl. Breeding species include Snipe, Skylark, Meadow Pipit, Reed Bunting, Stonechat and Sedge warbler.

## **6.6.3 Survey Methodology**

### **6.6.3.1 Flora – Habitats**

Habitats on site were surveyed and classified according to Fossitt (2000)<sup>6</sup>. This is a standard method of habitat classification and assessment developed through the Heritage Council Ireland.

Plant flora was identified using a standard text - Irish Flora (Webb *et al.*, 1996)<sup>7</sup>.

A field survey to determine habitats within a 0.5 km radius of the proposed development site was carried out. This field visit was made on 16<sup>th</sup> January 2007.

### **6.6.3.2 Fauna**

A survey for vertebrate fauna was carried out by means of search within the site and the immediate locality. The presence of mammals is indicated principally by their signs, such as dwellings, feeding signs or droppings - though direct observations are also occasionally made.

A number of mammalian species, including bats, otters and badgers, are protected under the Wildlife Act (1976, and Amendment, 2000) and it is an offence to wilfully interfere with or destroy the breeding or resting place of these species, though there are exemptions. Surveys were undertaken to identify those species listed under Schedule 5 of Wildlife Act 1976 which would be expected to occur on the site. These potentially might include bats Irish hare and badger. All bat species are protected under the E.U. Habitats Directive (Annex IV). All surveys were undertaken according to standard recommended methodologies (subject to seasonal constraints) with Dahlstrom and Bang (2001)<sup>8</sup> as a field reference.

## **6.6.4 Field Survey Findings**

### **6.6.4.1 Site Overview**

<sup>6</sup> Fossitt, J.A. (2000) *A guide to habitats in Ireland*. The Heritage Council.

<sup>7</sup> Webb, D.A., Parnell, J. and Doogue, D. 1996. *An Irish Flora* (6<sup>th</sup> ed.). Dundalgan Press, Dundalk

<sup>8</sup> Dahlstrom, P. and Bang, P. (2001). *Animal Tracks and Signs*. Oxford University Press.

The total surface areas of the site to be filled is 23 Ha. in extent and is situated on the east slope of a gently mounded hill at an elevation of 150m O.D.

The predominant land use in the area is agricultural – both pasture and tillage. A small stream runs along the north-eastern boundary of the site. A small area of land to the east and west of the site is used for vegetable growing. There is a graveyard to the south of the site and a moat to the south-west. There are a few small copses of woodland to the northeast and south of the site. See Figure 6.6.2.

#### 6.6.4.2 Flora - Habitats

##### *Aquatic Habitats*

A stream, approximately 0.5 m wide runs in a south-easterly direction along a 100 m stretch of the northern boundary of the site. The land slopes to the stream on both sides. A number of gates have been installed across the stream, to contain cattle movement, at intervals along the stream. The area around the stream is heavily overgrown with scrub species. The shrub/canopy species in this area consist of the following: common alder (*Alnus glutinosa*), ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*), willow (*Salix sp.*), gorse (*Ulex europeus*) and *Rosa sp.* Herbaceous species in the area directly adjacent to the stream include the following: *Iris sp.*, common rush (*Juncus effusus*), great willowherb (*Epilobium hirsutum*), bird's-foot trefoil (*Lotus corniculatus*), dog violet (*Viola riviana*), horsetail (*Equisetum palustre*), *Asplenium scolopendrium*, watercress (*Nasturtium officinale*) and *Carex remota*.

This area is of moderate local ecological value. However, it is not important on a regional level. No rare or protected species were recorded here. The stream is not designated as a Salmonid Water nor is it a tributary of a Salmonid Water.

At target note 1 is a small pond with submerged macrophytes including *Potamogeton sp.* Surrounding the pond is a strip of wet grassland (GS4) dominated by rush (*Juncus*) species. A scrub (WS1) community dominated by gorse, bramble and ruderal species including nettle, surrounds here.

##### *Grassland*

The grassland areas are characterised by grass species including Italian rye grass (*Lolium perenne*). Broadleaved herbs recorded include white clover (*Trifolium repens*), dandelion (*Taraxacum sp*) and creeping buttercup (*Ranunculus repens*). The main floral composition in the grasslands in the vicinity of the Murphy Quarry are presented in Table 6.6.2.

All grasslands recorded are heavily modified for agriculture and rotated with arable crops. Grasslands recorded best fit into improved grassland (GA1) classification.

According to the EU Habitat Directive 92/43/EC and the Irish Red Data Book (Curtis and McGough 1988)<sup>9</sup>, no grassland habitats at the site fall within the remit of the Directive. The vegetation in the grassland zones is widespread in the local area and generally in the north Dublin region.

<sup>9</sup> Curtis, T.G.F. and McGough, H.N. (1988). The Irish Red Data Book: 1 Vascular Plants. Dublin Stationary Office.

**Table 6.6.2 Floral Composition of GA1 Grassland**

Common Name	Scientific Name
Creeping Bent Grass	<i>Agrostis stolonifera</i>
Yorkshire Fog	<i>Holcus lanatus</i>
Red Fescue	<i>Festuca rubra</i>
Nettle*	<i>Urtica dioica</i>
Dock Leaf*	<i>Rumex obtusifolius</i>
Dandelion*	<i>Taraxacum sp.</i>
Buttercup*	<i>Ranunculus repens</i>
Clover*	<i>Trifolium repens</i>
Perennial rye-grass	<i>Lolium perenne</i>
Yellow staining mushroom	<i>Agaricus xanthodermus</i>

\* typical species found in a managed GA1 grassland

#### Woodland

The small woodland areas, mixed broadleaved/ conifer woodland (WD2), outlined in Figure 6.6.2 is a mixture of Oak, Ash, Hazel, Beech and some conifers. The general tree varieties in these areas are outlined in Table 6.6.3 below.

**Table 6.6.3 –Species found in Woodland Areas**

Common Name	Scientific Name
Ash	<i>Fraxinus excelsior</i>
Sycamore	<i>Acer pseudoplatanus</i>
Oak	<i>Quercus robur</i>
Beech	<i>Fagus sylvatica</i>
Hazel	<i>Corylus avellana</i>
Scots Pine	<i>Pinus sylvestris</i>
Bramble	<i>Rubus sp.</i>
Gorse	<i>Ulex europaeus</i>
Fern	
Vetch	<i>Vicia sp.</i>
Nettle	<i>Urtica dioica</i>
Ivy	<i>Hedera helix</i>

#### Hedgerows

There are very few tall, unmanaged trees on the site. Where they are present they are predominantly ash (*Fraxinus excelsior*). Most of the hedgerows on the site are managed. Hawthorn (*Crataegus momogyna*) is the dominant hedge canopy species. Elder (*Sambucus nigra*), blackthorn (*Prunus spinosa*) and gorse (*Ulex europeus*) are also common.

Many of the hedgerows have ditches adjacent to them. These were dry during the field visit to the site. There are remnants of stone walls along the banks of some of the hedgerows and portions of barbed wire and fence posts along others.

#### Quarry/ spoil areas

Most of the eastern portion of the site is used as an area for stockpiling soil and spoil (ED2). The stockpiles of spoil and soil and undisturbed slopes within the quarry are sparsely populated with grass and weed species including the following: willowherb (*Epilobium* spp.), coltsfoot (*Tussilago farfara*), groundsel (*Senecio vulgaris*), *Rumex* spp., white clover (*Trifolium repens*), dandelion (*Taraxacum officinale*), daisy (*Bellis perennis*), thistle (*Cirsium* spp.) and knotgrass (*Polygonum aviculare*), Gorse (*Ulex europaeus*).



### 6.6.4.3 Fauna

#### Birds

A field visit was conducted on 16<sup>th</sup> January 2007. The site was traversed on foot and general observations of wintering birds and mammals were made. The majority of the wildlife was concentrated in the hedgerows and fields surrounding the quarry.

The only species of conservation concern recorded were yellowhammer. This species is a common species in arable habitats of Ireland but is nevertheless considered to be a species of high conservation concern (Newton *et al.*, 1999)<sup>10</sup>.

Peregrine falcon (*Falco peregrinus*) may potentially nest on undisturbed crags within the active quarry (although this has never been noted by staff throughout the quarry's history). However, this species which is protected under Annex 1 of the EU Birds Directive was not recorded.

Common species recorded in the area around the landfill site are typical of hedgerows and pasture fields, including: robin (*Erithacus rubecula*), chaffinch (*Fringilla coelebs*), greenfinch (*Carduelis chloris*), rook (*Corvus frugilegus*), wood pigeon (*Columba palumbus*), songthrush (*Turdus philomelos*), yellowhammer (*Emberiza citronella*), goldfinch (*Carduelis carduelis*), blackbird (*Turdus merula*) and magpie (*Pica pica*). Pheasant (*Phasianus colchicus*) and a Kestrel (*Falco tinnunculus*) were also observed.

#### Mammals

Hares (*Lepus timidus hibernicus*) a protected species (Wildlife Act 1976) were observed during the site walkover, no other mammals were directly observed during this time. Protected species potentially using the site and adjacent areas include otter which may use the stream on the northern boundary of the site. No badger setts exist though wildlife tracks follow the bordering hedgerows. Bat species potentially will forage along bordering hedgerows and streams, though roost habitat (larger trees) are considered to be of only minor potential value as roosts. Protected and common fauna that may be expected to exist in the locality of the site are listed in Table 6.6.7 below.

**Table 6.6.7 – Listing of Common Mammals**

Common name	Scientific Name
Pygmy Shrew	<i>Sorex minutus</i>
Hedgehog	<i>Erinaceus europaeus</i>
Pipistrelle bat (species)	<i>(Pipistrellus pipistrellus)</i>
Rabbit	<i>Oryctolagus cuniculus</i>
Mountain hare	<i>Lepus timidus hibernicus</i>
Grey squirrel	<i>Sciurus carolinensis</i>
Wood mouse	<i>Apodemus sylvaticus</i>
House mouse	<i>Mus domesticus</i>
Brown rat	<i>Rattus norvegicus</i>
Red fox	<i>Vulpes vulpes</i>
Pine marten	<i>Martes martes</i>
Irish stoat	<i>Mustela erminea</i>

<sup>10</sup> Newton, S., Donaghy, A., Allen, D. & D. Gibbons. 1999. Birds of Conservation Concern in Ireland. *Irish Birds* 6(3) 333-344.

American mink	<i>Mustela vison</i>
Badger	<i>Meles meles</i>
Eurasian otter	<i>Lutra Lutra*</i>

### 6.6.5 Site Evaluation

The current development is not covered by any existing or proposed nature conservation designation. There are four designations within 10 km of the site, the nearest being 2.5 km north east of the site, see section 6.6.2.

The development is to be located on the site of an existing quarry. There is sparse vegetative cover on spoil heaps, quarry slopes etc. None of this vegetation is of ecological value. The surrounding land is used for pasture and tillage and is of no significant ecological value.

The hedgerows surrounding the site are mainly of low to moderate ecological value. The hedgerow and tree-lines surrounding the stream at the northern boundary of the site are also of moderate local ecological value. However, neither of these areas is of regional ecological value. No rare or endangered species of plant were recorded at the site.

### 6.6.6 Potential effects

There are four sites of nature conservation interest within 10 km of the development. The development will have no impact on any of these sites. Given that the proposed landfill material is inert construction and demolition waste, this will not act as a food source for birds and animals. There will be no wind blown litter, scavenging birds or rise in vermin populations associated with the proposed development, thus eliminating a potential problem for wildlife often associated with landfills. A small increase in site traffic may impact on fauna during the filling of the landfill due to an increase in noise from vehicles/machinery and human disturbance. The landfilling and subsequent restoration of the site will provide an opportunity for potential future positive ecological additions within the locality.

#### Landfill Area

There are currently no flora or fauna species of any ecological significance located in the quarry area to be filled and as such there will be no impact in this area.

#### Surrounding Area

The main impacts on the flora and fauna in surrounding lands from the development of the landfill facility comes from the potential deposition of dust on surrounding vegetation from the workings which may effect plant health.

### 6.6.7 Mitigation measures

As part of the restoration plan, it is proposed to provide supplementary planting on hedgerows where necessary. This will improve the existing habitat for wildlife. Existing hedgerows and tree-lines will be maintained in a natural state with minimal management intervention. Any hedge trimming will take place in late summer when the main bird nesting period has been completed.

If Peregrine falcon are shown to nest on the site either now or in the future they will be left undisturbed.

Upon completion of the landfill the entire area will be replanted with grass and returned to pasture for grazing. This land use is in keeping with the predominant land use in the area.

Water sprinklers, which may have the potential to affect plant health, will be used within the site to suppress airborne particulates, although this sprinklers are mainly used on hardstanding areas, where there is no plant growth.

The site will act as, at the very least, a temporary sanctuary for some species.

Appropriate pollution control measures will be implemented to minimise risks of any potential increases in suspended solid runoff to surface waters and adjacent streams.

### **6.7.8 Residual impacts of this proposal**

If the proposed mitigation measures outlined are implemented, then the impacts of the Murphy Environmental landfill facility on surrounding flora and fauna in grassland and woodland areas are unlikely to be significant. There are no perceived additional impacts on Flora & Fauna associated with the proposed extended restoration footprint or increased rate of filling per annum.

#### **Study constraints**

The survey was carried outside the botanic growing and breeding bird season, generally considered to be the spring to late summer period. However this would not be expected to considerably alter the overall findings and assessment given the current management and consequent habitats on the site.

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## 6.7 Cultural Heritage

### Receiving Environment

The ground in the quarried area of this site has already been disturbed during previous site works. However, there is undisturbed land lying below the major stockpile in the northeastern part of the site.

Fieldwalking survey detailed in section 5.4 above within the area of the quarry did not reveal any archaeological remains, neither in the area of the stockpiles or in the sections of the quarry sides.

### Characteristics of proposal

A detailed description of the characteristics of the proposal relative to the cultural heritage is given in the Material Assets Section of the E.I.S.

### Potential Impact of proposal

The restoring of this quarry to the original rolling green profiles with a resumption of agricultural after-use can only be beneficial.

Therefore it is concluded that the net effect of the overall scheme of restoration will be positive so far as the amenity and value of neighbouring material assets.

### Remedial or Reductive Measures

It is recommended that archaeological monitoring be carried out during and after the removal of the large stockpile.

### Predicted Impact of proposal

No likely adverse significant impact is predicted on the material assets of the area. It is expected that there will be an overall long term benefit by backfilling the quarry and returning the site to useful farm land.

## 6.8 Climate

### 6.8.1 Introduction

Aspects of climate have been reviewed as part of the Environmental Impact Assessment requirements. The climate at the proposed Hollywood site is anticipated to be typical of that experienced on the east coast of Ireland. Climate data from the weather station at Dublin Airport was used to represent that of the Hollywood area, as is regularly reported by the site to the EPA, as part of the requirements of their existing waste licence (Ref. W0129-01). The weather conditions investigated were:

- Precipitation
- Temperature
- Wind force and direction

### 6.8.2 Existing Climate

#### *Precipitation*

Table 6.8.1 illustrates the average precipitation recorded from the weather station at Dublin Airport over a 30-year period 1961-1990, while a record of rainfall in 2005 is detailed in Table 6.8.2. The average rainfall in the Dublin region is usually less than 800 mm per annum.

**Table 6.8.1: Monthly and Annual Rainfall 1961-1990**

<b>RAINFALL (mm)</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Year</b>
<b>Mean monthly total</b>	69.4	50.4	53.8	50.7	55.1	56.0	49.9	70.5	66.7	69.7	64.7	75.6	<b>732.7</b>
<b>Greatest daily total</b>	30.3	31.3	35.7	26.2	30.0	46.6	34.8	60.2	40.9	47.5	55.1	41.7	<b>60.2</b>
<b>Mean no. of days with &gt;= 0.2mm</b>	18	14	16	14	16	14	13	15	15	16	16	18	<b>185</b>
<b>Mean no. of days with &gt;= 1.0mm</b>	13	10	11	10	11	10	9	11	10	11	11	12	<b>128</b>
<b>Mean no. of days with &gt;= 5.0mm</b>	5	3	3	3	4	4	3	4	4	4	4	5	<b>48</b>



**Table 6.8.2: Monthly Rainfall January – December 2005**

RAINFALL (mm)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<b>Mean monthly total</b>	64	40.5	21.9	71.6	67.2	28.2	83.4	26.1	55.8	101.4	46.7	74.3	<b>681.1</b>
<b>Greatest daily total</b>	22.5	10.8	4.8	14.3	22	8.1	32.6	7.2	17.5	15	8.8	21.4	<b>32.6</b>
<b>Mean no. of days with &gt;= 0.2mm</b>	20	16	12	21	21	9	14	12	15	18	15	17	<b>190</b>
<b>Mean no. of days with &gt;= 1.0mm</b>	14	13	4	13	12	8	10	8	10	12	11	10	<b>125</b>
<b>Mean no. of days with &gt;= 5.0mm</b>	2	1	0	3	4	2	4	1	2	9	3	4	<b>35</b>

The mean average rainfall at Dublin Airport over the thirty year period for 1961 to 1990 is recorded by Met Eireann as being 732.7 mm. In the last 12 months to date (January 2005 to December 2005) the mean rainfall level has been recorded as 681.1 mm as seen in tables 10.1 and 10.2 above. The rainfall data from Dublin Airport illustrates that the level of precipitation recorded at Dublin Airport between January 2005 and December 2005 is comparable to historic data recorded over the 30 year period 1961-1990.

### Temperature

Historical data from Dublin Airport on the mean and extreme temperatures experienced between 1961 and 1990 are presented in Table 6.8.3. The mean temperatures at Dublin Airport between January 2005 and December 2005 are presented in Table 6.8.4 and are closely comparable to historical records.

**Table 6.8.3: Monthly and Annual mean and extreme temperatures 1961 - 1990**

TEMPERATURE (degrees Celsius)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<b>Mean daily max.</b>	7.6	7.5	9.5	11.4	14.2	17.2	18.9	18.6	16.6	13.7	9.8	8.4	<b>12.8</b>
<b>Mean daily min.</b>	2.5	2.5	3.1	4.4	6.8	9.6	11.4	11.1	9.6	7.6	4.2	3.4	<b>6.4</b>
<b>Mean</b>	5.0	5.0	6.3	7.9	10.5	13.4	15.1	14.9	13.1	10.6	7.0	5.9	<b>9.6</b>
<b>Absolute max.</b>	16.6	15.3	21.3	20.5	23.4	25.1	27.6	28.7	23.9	21.2	18.0	16.2	<b>28.7</b>
<b>Absolute min.</b>	-9.4	-6.2	-6.7	-3.7	-1.0	1.5	4.8	4.1	1.7	-0.6	-3.4	-10.1	<b>-10.1</b>

**Table 6.8.4: Monthly and Annual mean and extreme temperatures January – December 2005**

TEMPERATURE (degrees Celsius)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<b>Mean daily max.</b>	9.5	7.5	10.6	11.9	14.2	18.7	19.3	19.6	17.9	15.0	10.2	8.7	<b>13.6</b>
<b>Mean daily min.</b>	3.9	2.1	4.5	4.1	6.0	10.3	11.7	10.9	9.5	8.5	2.9	2.9	<b>6.4</b>
<b>Mean</b>	6.7	4.8	7.55	8.0	10.1	14.5	15.5	15.25	13.7	11.75	6.55	5.8	<b>10.0</b>
<b>Absolute max.</b>	12.9	11.8	16.6	17.6	18.9	23.5	24.8	22.7	21.3	19.9	17.6	13.4	<b>24.8</b>
<b>Absolute min.</b>	-0.9	-1.9	-2.1	-0.6	-0.4	4.3	9.1	6.1	2.3	1.2	-3.4	-2.7	<b>-3.4</b>

The annual mean temperature at Dublin Airport over the thirty year period from 1961 to 1990 is recorded by Met Eireann as being 9.6°C with the mean daily minimum temperature recorded as 6.4°C and mean daily maximum temperature recorded as 12.8°C. During last year (January – December 2005) the annual mean temperature has been recorded as 10.0°C with the mean minimum and maximum temperatures being 6.4°C and 13.6°C respectively. The temperature data from Dublin Airport illustrates that data recorded at Dublin Airport between January and December 2005 is comparable to historic data recorded over the 30-year period 1961 – 1990. The maximum and minimum absolute temperature for 2005 ranges from 24.8°C to –3.4°C. The range between maximum and minimum absolute temperatures during the 30-year average is much larger, ranging from 28.7°C to –10.1°C.

### Wind Speed & Direction

Historical wind speed data as obtained from Dublin Airport from the period 1961 – 1990 is presented in Table 6.8.5 below. This is compared with the mean monthly

wind speed data for January to December 2005, which is presented in Table 6.8.6. The average monthly wind speed data obtained for the 2005 period is closely comparable to historical records.

**Table 6.8.5: Monthly and Extreme Wind Speeds 1961-1990**

WIND (knots)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<b>Average monthly speed</b>	12.2	11.7	11.6	9.7	8.7	8.0	8.1	8.0	8.9	9.9	10.8	11.8	<b>9.9</b>
<b>Max. gust</b>	75	73	61	60	58	55	54	56	64	73	64	71	<b>75</b>

**Table 6.8.6: Monthly and Extreme Wind Speeds for January – December 2005**

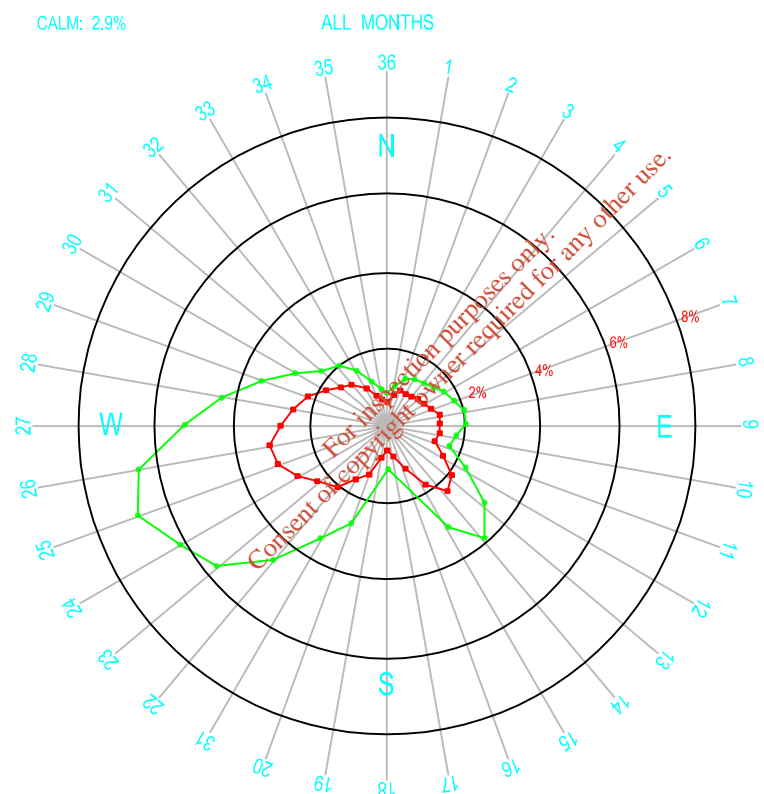
WIND (knots)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
<b>Average monthly speed</b>	15.8	11.5	10.5	11.1	10.8	9.1	8.8	9.5	10.8	10.8	11.0	9.7	<b>10.8</b>
<b>Max. gust</b>	73	50	37	43	45	36	37	38	40	41	46	36	<b>73</b>

The average monthly wind speed at Dublin Airport over the thirty year period from 1961 to 1990 is recorded by Met Eireann as being 9.9 knots with a maximum gust of 75 knots recorded for the area. From last year's data (January to December 2005) a monthly mean wind speed has been recorded as 10.8 knots with a maximum gust of up to 73 knots recorded in January 2005. The wind speed data from Dublin Airport illustrates that data recorded at Dublin Airport between January and December 2005 is comparable to historic data recorded over the 30 year period 1961 – 1990.

According to Met Eireann the prevailing wind from the period 1961 – 1990 is from a southwesterly direction and this is outlined in Figure 6.8.1.

## DUBLIN AIRPORT (1968 - 1996)

Percentage Frequency of Occurrence of Wind Directions



STANDARD DEVIATION: 6.0 KNOTS  
 MEAN WIND SPEEDS: 9.9 KNOTS  
 ANEMOMETER HEIGHT: 12m  
 SOURCE: METEOROLOGICAL SERVICE

—●— ALL SPEEDS  
 —●— 1-10 KNOTS

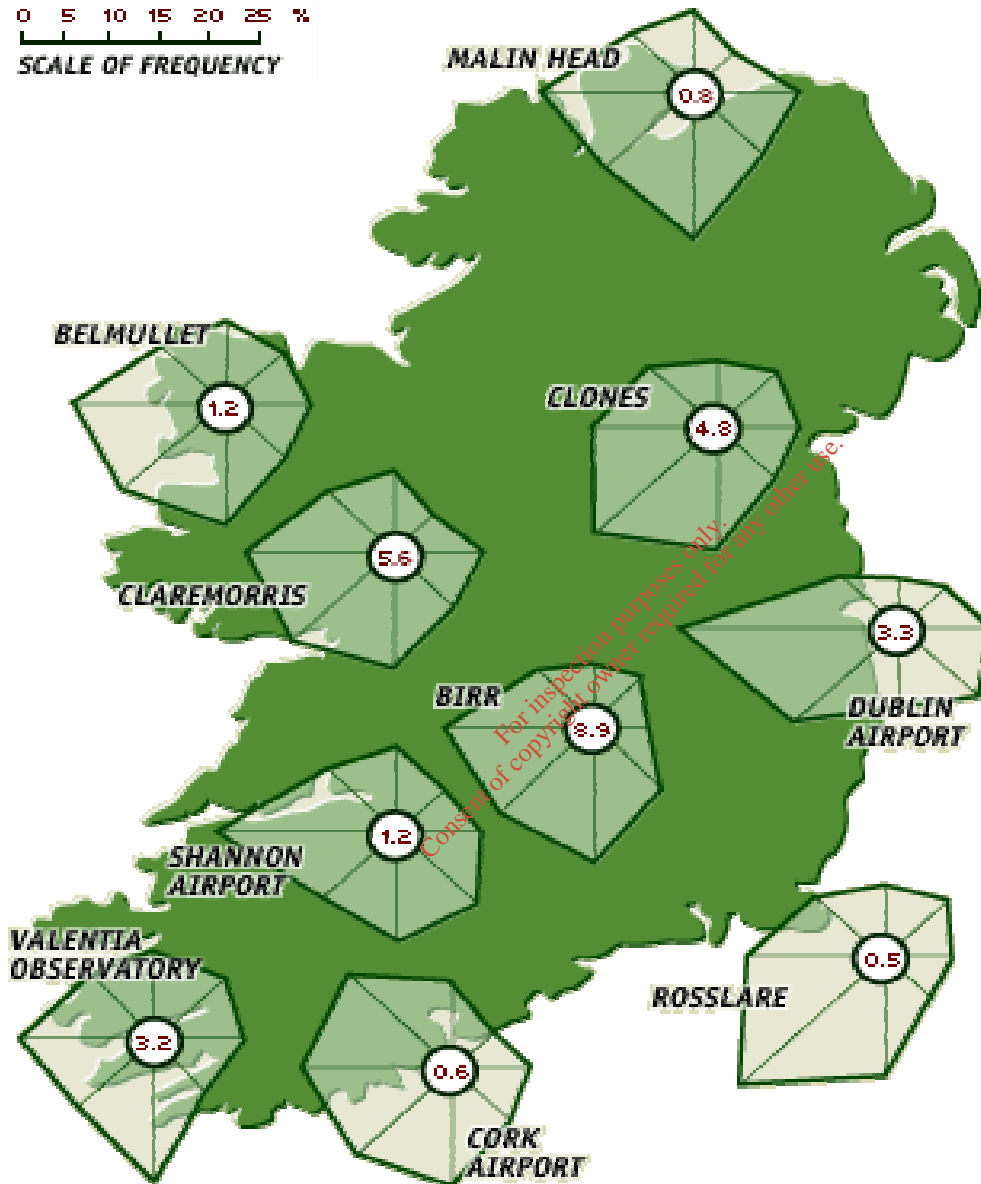
Percentage Frequency of Occurrence of Wind Speeds: + LESS THAN 0,1

0	1-3	4-6	7-10	11-16	17-21	22-27	28-33	34-40	41-47	> 48	KNOTS
4.4	10.8	17.5	26.9	28.0	9.7	3.5	0.6	+	+	0.0	%

FINGAL PLANNING CONSULTANTS

MURPHY CONCRETE MANUFACTURING  
 WIND SPEED, DIRECTION & FREQUENCY  
 NOT TO SCALE      FIGURE 6.9

Figure 6.8.1: Wind Direction from the period 1961 – 1990 (percentage frequency of wind direction)





### 6.8.3 Characteristics of this Proposal

Murphy Environmental holds planning permission from Fingal County Council for restoration activities at the site for a 15-year timeframe, effective from October 2004. This application seeks to extend the restoration footprint and increase the rate of filling per year. The activities will be the same as those in progress since 2003 when the EPA Waste Licence became operational, as described below.

The extension of the existing site will involve the construction of the following:

- Construction of engineered cells
- Internal roads linking with the current site infrastructure
- Extension of surface water management system

#### Site Operation

During operation of the facility the site will accept inert wastes at the facility.

#### Possible Impacts of Proposal of this Kind

It is not expected that the site will have any significant impact on the microclimate and local climate of the area.

### 6.8.4 Mitigation, Avoidance or Remedial Measures

The proposed development is not expected to affect the local climate or microclimate of the area; therefore no mitigation measures are proposed in this respect.

### 6.8.5 Likely Impacts of this Proposal

The proposed development will not negatively impact the local microclimate or the long-term patterns of weather in the Hollywood or North Dublin areas, therefore no significant impacts are anticipated.

### 6.8.6 Monitoring

Monitoring of climate data should not be necessary at this site, as a consequence of its impact on climate. Monitoring and recording of precipitation, temperatures, wind force/direction, evaporation and humidity take place at the facility as a requirement of the EPA Waste Management Licence (W0129-01), mainly in the context of dust nuisance control and other environmental management factors.

### 6.8.7 Reinstatement

Reinstatement will not be required.

### 6.8.8 Forecasting Methods

Data accumulated from Met Eireann records.

**6.8.9 Difficulties in Compiling Specified Information**

No difficulties were encountered in compiling this section

**6.8.10 Interactions**

Not applicable in this section.

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## 6.9 Air Quality

### Receiving Environment

#### Local Context

6.9.1.1 The traffic access to the site will be via the LP01090 (Baldarragh Road), which adjoins the LP01080 (Nevitt Road) close to the site entrance (at a distance of ca. 280m from the entrance). Current and predicted average traffic flows in the vicinity of the proposed development were obtained from the traffic consultants responsible for the section of the Statement devoted to traffic management. These figures have been used to predict average concentrations of (a) carbon monoxide, (b) benzene, (c) oxides of nitrogen, (d) nitrogen dioxide and (e) particulate matter (PM<sub>10</sub>) for most sensitive receptor at:

- A residence situated ca. 40m east of the southern part of the site, and located ca. 180m east of the junction of the LP01080 and LP01090.

6.9.1.2 An annual rate of increase in traffic volumes without the development of 2% (as reported in the traffic section of the Statement) has been used to extrapolate from the current traffic flow (2007) to those expected in 2012, whether the proposed development takes place or not. From traffic counts made in 2003 and 2007, the modal transport splits (LDV/HDV) for LP01080 and LP01090 are 82/18 and 47/53, respectively.

6.9.1.3 The operation's current planning status and EPA Waste Licence (W0129-01) allows quarrying activity and the deposition of 340,000 tonnes of inert wastes at the site annually, which results in an AADT (Annual Average Daily Traffic count) for 2007 of 1828 on LP01080 and 556 on LP01090. These figures represent all traffic on those roads, including the contribution attributable to the Murphy Environmental facility. A contribution attributable to the Fingal County Council landfill at Nevitt has been made from 2009 onward.

#### Significance Criteria

6.9.1.4 The EU Directive for the framework for ambient air quality management (96/62/EC) and the various Daughter Directives introducing pollutant limit values (1999/30/EC and 2000/69/EC) have been transposed in Irish Legislation by the Air Quality Regulations, 2002 (S.I. No. 271 of 2002). The pollutants regulated in this legislation in Ireland include: Sulphur Dioxide, Nitrogen Dioxide and Oxides of Nitrogen, Particulate Matter (PM<sub>10</sub>), Lead, Benzene and Carbon Monoxide.

6.9.1.5 The Air Quality Regulations, 2002 sets limit values for sulphur dioxide – SO<sub>2</sub> for: (i) annual (April to March) and winter (October to March), (ii) daily limit value and (iii) hourly limit value periods as 20 micrograms per cubic metre (µg/m<sup>3</sup>), 125 µg/m<sup>3</sup> and 350 µg/m<sup>3</sup>, respectively.

6.9.1.6 The Air Quality Regulations, 2002 sets limit values for nitrogen oxides for (i) annual limit value (for the protection of vegetation), (ii) annual limit value (for the protection of human health) and (iii) hourly value periods as 30 micrograms per cubic metre (µg/m<sup>3</sup>), 40 µg/m<sup>3</sup> and 200 µg/m<sup>3</sup>, respectively.

6.9.1.7 The Air Quality Regulations, 2002 sets limit values for PM<sub>10</sub> for: (i) annual limit values (for the protection of human health) and (ii) daily limit value periods as 20 micrograms per cubic metre (µg/m<sup>3</sup>) and 20 µg/m<sup>3</sup>, respectively.

- 6.9.1.8 The Air Quality Regulations, 2002 sets a limit value of 0.5 micrograms per cubic metre ( $\mu\text{g}/\text{m}^3$ ) for an annual mean ambient air concentration of lead.
- 6.9.1.9 The Air Quality Regulations, 2002 sets a limit of 5 micrograms per cubic metre ( $\mu\text{g}/\text{m}^3$ ) for an annual mean ambient air concentration of benzene.
- 6.9.1.10 The Air Quality Regulations, 2002 sets a limit value of 10 milligrams per cubic metre ( $\text{mg}/\text{m}^3$ ) for a daily (8-hour) mean ambient air concentration of carbon monoxide.

### Local Air Quality

- 6.9.1.11 There are a number of national air quality monitoring stations situated in Ireland, which are managed by the EPA. The closest station to the proposed development is at Drogheda, Co. Louth [an urban monitoring station]. The most comparable monitoring station is probably that situated at Kilkitt, Co. Monaghan – which is in a rural setting. The most recent results from those two stations are given in **Table 6.9.2**, as an indication of the air quality typical of the locality of the development. It is expected that the air quality at the site is closest (in concentration) to that seen at the Kilkitt monitoring station – the Kilkitt data was used as typical background-concentrations in the traffic emissions modelling undertaken (see **Table 6.9.4**).
- 6.9.1.12 Murphy Environmental ([www.murphyenvironmental.ie](http://www.murphyenvironmental.ie)) operates two EPA licensed sites: including the development site at Hollywood, Co. Dublin (WL Ref: W0129-01), and at Gormanston, Co. Meath (WL Ref: W0151-01), as well as a Waste Management Permit at Moorechurch, Co. Meath (Ref. WMP 2004-28). Murphy Environmental carry out regular measurement of dust-deposition at these sites to monitor the occurrence of this potential nuisance to neighbours.
- 6.9.1.13 The dust deposition results from all three sites show little impact of dust deposition nuisance to neighbours arising from the operation of the facilities. There have been two non-compliances (with Waste Licence limits,  $350\text{mg}/\text{m}^2/\text{day}$ ) at the Hollywood facility since monitoring began in July 2003, both inside the site (as opposed to at neighbouring premises). There has only been one non-compliance in Gormanston with Waste Licence limits since monitoring began in December 2003 and this also took place inside the site. There have been no non-compliances at the Moorechuch facility since monitoring commenced in February 2006. Dust deposition rates near residential locations are consistently relatively low at all facilities. The dust-deposition monitoring results for the Hollywood are summarised in **Table 6.9.1** (below).

	Dust Monitoring Results (mg/m <sup>2</sup> /day)				EPA Licence (mg/m <sup>2</sup> /day)	Waste Limit (mg/m <sup>2</sup> /day)
	D1	D2	D3	D4		
Q4, 2006	189	105	294	6001*	350	
Q3, 2006	262	178	346	42	350	
Q2, 2006	199	100	168	36	350	
Q1, 2006	136	63	278	419*	350	
Q4, 2005	<26	63	63	73	350	
Q3, 2005	450	81	217	81	350	
Q2, 2005	299	91	299	35	350	
Q1, 2005	107	34	243	32	350	
Q4, 2004	172	49	93	57	350	
Q3, 2004	178	89	173	42	350	
Q2, 2004	433	71	314	29	350	
Q1, 2004	100	225	110	68	350	
Q4, 2003	98	75	84	34	350	
Q3, 2003	170	58	319	17	350	

**Table 6.9.1.** Amalgamated dust-deposition monitoring results carried out at Murphy Environmental Hollywood Landfill site, since July 2003. Sampling Location D3 is situated adjacent to the residential receptor described in this section of the EIS. \* - represents spurious results caused by sample contamination, not considered non-compliances by the EPA.

- 6.9.1.14 The deployment of dust control equipment at the Hollywood facility, e.g. the wheel wash, sprinklers and the road sweeper is considered to have contributed to the successful management of dust levels at the Murphy Environmental sites.

## 6.9.2 Characteristics of this Proposal

### Road Traffic

- 6.9.2.1 Access to the site, as discussed in paragraph 6.9.1.1, will be via the LP01090 from the junction with the LP01080. The impact on air quality as a result of the projected increase in road traffic has been calculated using the procedures given in UK Department of Transport's Design Manual for Roads and Bridges (2003), Volume 11, Section 3, Part 1, Air Quality. This document was prepared by the United Kingdom Highways Agency, the Scottish Office for Industrial Development, the Welsh Office and the Department of the Environment for Northern Ireland. The Annex provides a screening method for the prediction of ground level concentrations of various pollutants at sensitive receptor points close to new traffic developments
- 6.9.2.2 Average concentrations of carbon monoxide, benzene, nitrogen dioxide, oxides of nitrogen and PM<sub>10</sub>, at reference dates 2007 and 2012, have been determined for the most sensitive receptor point close to the development. This receptor point is situated ca. 40m east of the southern part of the site, and located ca. 180m east of the junction of the LP01080 and LP01090. The location of this receptor is shown on **Figure 6.9.1**. This location is considered to be where the most significant effects of increased traffic flow will be felt, from an Air Quality perspective.
- 6.9.2.3 Calculations have been made based on existing traffic flows and those predicted to result from the proposed development. As the average speed of traffic, as well as distance of potential receptors from junction points have a significant effect on the generation of pollutants, calculations have been carried out using different traffic speed scenarios at critical locations. The speeds modelled at the junction



of LP01080 and LP01090 were 80 km/hr, 50 km/hr and 30 km/hr for non-development related traffic, and 15 km/hr for development-related traffic (to represent the turning movements at the junction, and slow progress up the incline to the site). The results of these calculations are presented in **Table 6.9.3**.

6.9.2.4 As a worst case situation, the proposed development will lead to an additional 28 AADT [Annual Average Daily Traffic] (100% HGV) on the LP01080/LP01090 in 2007 with the development. With a fixed acceptable tonnage allowance of 500,000 tonnes per annum, this additional AADT will not increase annually, though the other contributions to the AADT are expected to increase by 2% per annum (as discussed in 6.9.1.2).

6.9.2.5 In order to facilitate direct comparison with the evaluation criteria discussed above, the traffic peak hour concentration have been adjusted to give predictions of:

- the annual maximum daily (8-hour) concentration of carbon monoxide,
- the annual mean concentration of benzene,
- the annual mean concentration of oxides of nitrogen (NO<sub>x</sub>) and nitrogen dioxide (NO<sub>2</sub>) and
- the annual mean concentrations of PM<sub>10</sub>,

using the methodology given in Appendix 1 of Volume 11, Section 3, Part 1 of the UK Dept. of Transport Design Manual for Roads and Bridges (2003). These adjusted figures for 2007 and 2012 are given in **Table 6.9.3**. A summary of all results in relation to the EPA Air Quality Data from Kilkitt, Co. Monaghan and Legislative Limits is given in **Table 6.9.4**.

6.9.2.6 To summarise the screening model findings, if the development is fully operational in 2007, when these modelled pollutant concentrations are converted to the corresponding long-term significance criteria (see **Tables 6.9.3** and **6.9.4**), the indications are that there will be no significant increases in the pollutants modelled at the residential receptor, and all pollutant concentrations will be in compliance with the appropriate legislative limit value concentrations.

6.9.2.7 Furthermore, by the year 2012, all discrete traffic-pollutant concentrations are likely to have significantly reduced (compared to 2007), as a result of legislation-driven technology. At this time, if the development takes place, it is estimated that there will be no increase in carbon monoxide, or benzene found at the most sensitive receptors, up to a ca. 26% reduction in nitrogen dioxide and up to a ca. 42% reduction in PM<sub>10</sub>, compared to 2007 predictions

### Summary of Air Quality Modelling Study

6.9.2.8 In summary, the modelling studies undertaken as part of the environmental impact assessment have shown that the pollutant concentrations present at the proposed development site are not significant. The proposed development will not result in significant additional traffic, and thus will not negatively impact on the local air quality.

### 6.9.3 Possible effects of proposals of this kind

- 6.9.3.1 The possible effects of a proposal of this kind are the lowering of air quality due to a possible increase in pollutants and particulates during additional operational stages.
- 6.9.3.2 The facility will control dust generation in the same way as it does at the Hollywood site currently and at other facilities operated by Murphy Environmental, which has proven to be adequate and appropriate.

### 6.9.4 Avoidance, remedial or reductive measures

#### Road Traffic

- 6.9.4.1 Emissions of pollutants from road traffic can be controlled by either controlling the number of road users or by controlling the flow of traffic. For the majority of vehicle-generated pollutants, emissions arise as speed drops, although the opposite is true for oxides of nitrogen. Emissions are also higher under stop-start conditions when compared with steady speed driving.
- 6.9.4.2 When this development is operational, however, even if the average traffic speed on the LP01080 drops below 30 km/hr (which is unlikely), compliance with all the legislative criteria is likely to be achieved at the nearest sensitive residential receptor.
- 6.9.4.3 The overriding mitigating measure with regard to dust control is attributable to the physical characteristics of the site, i.e. because the quarried areas to be landfilled will be significantly below surrounding ground levels, this will act as a natural dust suppression method by containing dust within the quarry void and preventing nuisance to the surrounding landscape.
- 6.9.4.4 A number of measures (which have proven to be effective to-date on site) will continue to be taken by Murphy Environmental to mitigate against dust and mud nuisance on and around the site, including:
- Operation of a road sweeper dedicated for use at the site.
  - Use of an automated wheel-wash facility, which will be used by all vehicles exiting the site.
  - A mobile water bower is on site at all times for sprinkling/dust-suppression in other site areas, especially for deployment during periods of dry weather.
  - Sprinklers are used in the entrance/reception area, for dust suppression.
  - The hard-standing concrete surface at the entrance to the site reduces dust generation in this area.

### 6.9.5 Likely effects of this proposal

#### Road Traffic

- 6.9.5.1 The predictions for road traffic pollution generation indicates that there will be no significant increases in the levels of various traffic-related pollutants as a result of the development in the vicinity of the receptors modelled. These receptors represent the likely worst-case impacts on air quality from traffic. However, with

reference to current European Union and Irish legislative criteria will not have any negative effect on air quality, even under worst-case average traffic conditions.

- 6.9.5.2 Dust deposition is not likely to cause a problem as a result of this development, as it will continue to be controlled in the appropriate and adequate manner (under the supervision of the EPA, through their enforcement of the existing Waste Licence), as is currently the case.

### **6.9.6 Monitoring**

- 6.9.6.1 Dust monitoring will continue to be carried out and reported to the EPA (quarterly) as a condition of current and reviewed Waste Licence.

### **6.9.7 Reinstatement**

- 6.9.7.1 Not Applicable

### **6.9.8 Forecasting methods**

- 6.9.8.1 Predictions of traffic derived pollutants was carried out using the procedures given in the Design Manual for Roads and Bridges (2003), Volume 11, Section 3, Part 1, Air Quality. This document was prepared by the United Kingdom Department of Transport, the Scottish Office for Industrial Development, the Welsh Office and the Department of Environment for Northern Ireland.

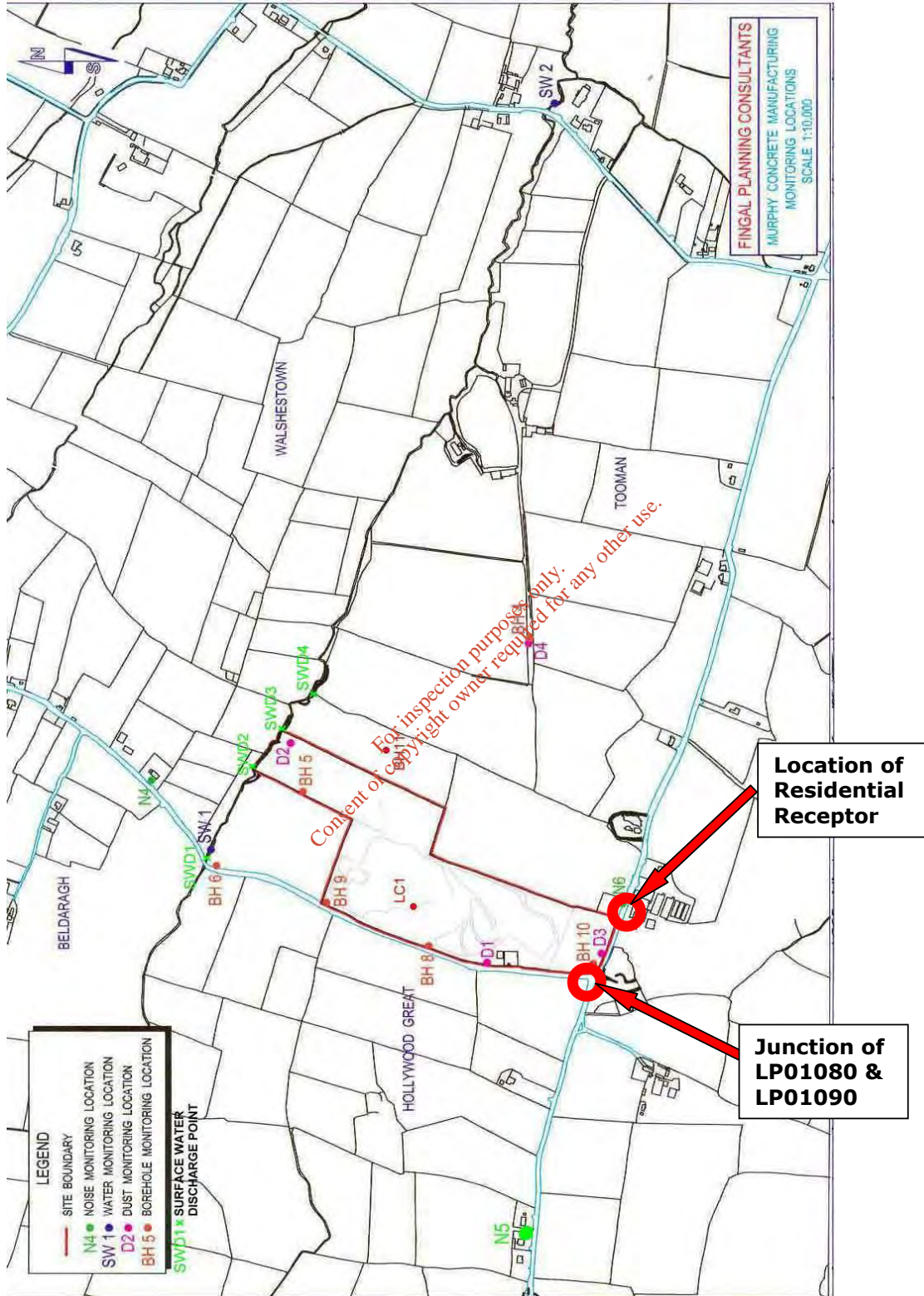
### **6.9.9 Difficulties in compiling specified information**

- 6.9.9.1 As local government air quality monitoring is not carried out in the vicinity of the site, it was not possible to obtain ambient air quality data for all parameters close to the site.

### **6.9.10 Interactions**

- 6.9.10.1 The assessment of predicted air quality due to traffic-derived pollution was based on data received from the project traffic consultant.

Figure 6.9.1: Location of residential receptor for air quality modelling purposes, adjacent to Murphy Environmental landfill, Hollywood.



**Table 6.9.2: Air Quality Baseline Assessment at Drogheda and Kilkitt**

Tabulated data from EPA air quality monitoring stations are: (A) Drogheda, Co. Louth [7 km from proposed development, in an urban environment, 19/02/2002 to 03/01 2003], and (B) Kilkitt, Co. Monaghan [which is situated in a similar rural context to the development site, 11/09/2002 to 04/03/2003].

**Note:** The annual average for Oxides of Nitrogen at Kilkitt in 2005 was report by the EPA to be 3.5  $\mu\text{g}/\text{m}^3$ .

Parameters	Measurement	Location A	Location B	Legislative Limit Value
Carbon Monoxide ( $\text{mg}/\text{m}^3$ )	Annual Hourly Mean Concentration	0.4	0.3	10.0
Sulphur Dioxide ( $\mu\text{g}/\text{m}^3$ )	Annual Hourly Mean Concentration	13.8	8.2	20.0
Oxides of Nitrogen ( $\mu\text{g}/\text{m}^3$ )	Annual Hourly Mean $\text{NO}_2$ Concentration	22.7	6.4	40.0
Particulates [PM10] ( $\mu\text{g}/\text{m}^3$ )	Annual Daily Mean Concentration	32.4	13.5	40.0
Benzene ( $\mu\text{g}/\text{m}^3$ )	Annual Mean Concentration	1.3	0.2	5.0
Toluene ( $\mu\text{g}/\text{m}^3$ )	Annual Mean Concentration	2.3	0.3	None Applicable
Lead ( $\mu\text{g}/\text{m}^3$ )	Annual Mean Concentration	0.02	0.02	0.50
Cadmium ( $\text{ng}/\text{m}^3$ )	Maximum Survey Concentration	2.7	1.6	None Applicable
Nickel ( $\mu\text{g}/\text{m}^3$ )	Maximum Survey Concentration	5.0	2.2	None Applicable
Arsenic ( $\mu\text{g}/\text{m}^3$ )	Maximum Survey Concentration	None Detected	None Detected	None Applicable



**Table 6.9.3: Air Quality Assessment at Murphy Environmental Hollywood landfill.**

Summary of predicted air quality impact (due solely to traffic) at the residential receptor located closest to the junction of the LP01080 and LP01090. The receptor distances from the LP01080 and LP01090 are 10m and 180m respectively. The average traffic speeds modelled on the immediate road are 80km/hr, 50 km/hr and 30km/hr, and 15 km/hr for turning movements.

Note: It is important to note that there is no legislative limit value for NO<sub>x</sub>, as opposed to NO<sub>2</sub>.

Situation	Traffic Speeds <sup>11</sup>	Carbon Monoxide (mg/m <sup>3</sup> )		Benzene (µg/m <sup>3</sup> )		Oxides of Nitrogen (µg/m <sup>3</sup> )			Particulates (µg/m <sup>3</sup> )	
		Annual mean conc.	Legislative limit value	Annual mean conc.	Legislative limit value	Annual mean NO <sub>x</sub> conc.	Annual mean NO <sub>2</sub> conc.	Legislative limit value (NO <sub>2</sub> )	Annual mean conc.	Legislative limit value
2007 no change	80km/hr	0.0	10.0	0.0	5.0	5.4	2.3	40.0	0.47	50.0
	50km/hr	0.0		0.0		5.5	2.3		0.52	
	30km/hr	0.0		0.0		6.5	2.6		0.70	
2007 with development	80km/hr	0.0	10.0	0.0	5.0	5.5	2.3	40.0	0.47	50.0
	50km/hr	0.0		0.0		5.6	2.3		0.52	
	30km/hr	0.0		0.0		6.6	2.7		0.71	
2012 with development	80km/hr	0.0	10.0	0.0	5.0	3.9	1.7	40.0	0.29	50.0
	50km/hr	0.0		0.0		3.9	1.7		0.31	
	30km/hr	0.0		0.0		4.6	2.0		0.41	

<sup>11</sup> Also includes the contribution of the turning movements at the LP01080/LP01090 junction, at 15 km/hr

**Table 6.9.4: Summary of predicted air quality impact (due solely to traffic) at residential receptor**

Summary of predicted air quality impact above background (due solely to traffic) at residential receptor situated ca. 180 m from junction of LP01080 and LP01090 with and without the development, in relation to Legislative Limits and average Air Quality at Kilkitt, Co. Monaghan (11/09/2002 to 04/03/2003).

Receptor No.	Year	Traffic (km/hr)	Carbon Monoxide (mg/m <sup>3</sup> )				Benzene (µg/m <sup>3</sup> )				Oxides of Nitrogen (µg/m <sup>3</sup> )				Particulates (µg/m <sup>3</sup> )			
			Annual mean conc				Annual mean conc				Annual mean conc				Annual mean conc			
											NO <sub>2</sub>							
			Air Quality at Kilkitt	Without Development	With Development	Legislative limit value	Air Quality at Kilkitt	Without Development	With Development	Legislative limit value	Air Quality at Kilkitt	Without Development	With Development	Legislative limit value (NO <sub>2</sub> )	Air Quality at Kilkitt	Without Development	With Development	Legislative limit value
1	2007	80	0.0	0.0	10.0	0.0	0.0	5.0	6.4	2.3	2.3	40.0	13.5	0.5	0.5	50.0		
		50	0.0	0.0		0.0	0.0			2.3	2.3			0.5	0.5			
		30	0.0	0.0		0.0	0.0			2.6	2.7			0.7	0.7			
	2012	80	-	0.0		-	0.0			-	1.7			-	0.3			
		50	-	0.0		-	0.0			-	1.7			-	0.3			
		30	-	0.0		-	0.0			-	2.0			-	0.4			

## 6.10 Environmental Nuisances

### Bird Control

#### Description of Existing Environment

Birds are not a nuisance on site as the waste for deposition is inert. Since landfilling operations began in Summer 2003, no scavenging birds have been noted. Quite a wide variety of bird species are known to exist in and around the site, predominantly in the surrounding hedgerows and fields (see Section 6.6).

#### Description of project and its potential impacts (positive and negative)

It is highly unlikely that scavenging birds will be attracted to this landfill site as putrescible waste is not acceptable at the site. There are no proposed changes to acceptable waste types, i.e. it will remain limited to construction & demolition-type materials.

#### Description of mitigating measures

No mitigating measures are foreseen as required.

#### Description of impacts after mitigating measures

n/a

### Dust and Mud Control

#### Description of existing environment

Due to the nature of the site and its operations, dust and mud can be problematic if not managed. However, a number of mitigating measures have been put in place since operations began 2003, which have been successful in controlling these issues. Dust has been monitored at the site since 2003 (see Section 6.11)

#### Description of project and its potential impacts (positive and negative)

Landfilling operations have the potential to create dust, especially for the waste types accepted at Hollywood Landfill. This application seeks to extend the restoration footprint and increase the rate of filling per annum. The extension of the restoration footprint will not result in higher dust levels being generated, as the active tipping area or landfill cell will be restricted in location and area.

With regard to increased levels of vehicle movements associated with a higher rate of filling, this has the potential to increase dust levels in and around the site.

#### Description of mitigating measures

The overriding mitigating measure with regard to dust control is attributable to the physical characteristics of the site, i.e. because the quarried areas to be restored are significantly below surrounding ground levels, this acts as a natural dust suppression method by containing dust within the quarry void and preventing nuisance to the surrounding landscape. There are also significant areas of buffer zones around the site.

A number of additional measures have been taken by Murphy Environmental to mitigate against dust and mud nuisance on and around the site:

- Purchase of a road sweeper dedicated for use at the site. The sweeper is a Johnston 600 series.

- Installation of a wheelwash, which must be used by all vehicles exiting the landfill/quarry.
- A mobile water bowser is on site at all times, for deployment during periods of dry weather.
- Sprinklers are situated in the entrance/reception area, for use as dust suppression.
- Use of a concrete surface at the entrance to the site reduces dust generation in this area.
- Quarterly monitoring and reporting the EPA, as per licence requirements.

### **Description of impacts after mitigating measures**

The mitigating measures employed by Murphy Environmental in the control of dust and mud have made a significant contribution towards controlling these nuisances in and around the site, since commencement of operations. The infrastructure is now in place to mitigate against these impacts.

It is not expected that dust levels will increase as a result of the proposed extension of the landfill footprint. It is suggested that a combination of dust/mud control measures available at the site will be adequate to maintain any increased dust emissions associated with increased truck movements. This will be verified by ongoing dust monitoring and reporting to the Agency. Murphy Environmental must comply with dust emission limit values as prescribed by the EPA in Waste Licence W0129-01.

## **Fire Control**

### **Description of existing environment**

Patel Tonra Ltd., acting on behalf of Murphy Environmental, conducted a risk assessment to determine the requirements for fire-fighting and firewater retention facilities at Hollywood Landfill facility in June 2003. The study covered both quarry and landfill operations. No significant fire risk exists or is likely to be caused by new landfilling operations. The results of the risk assessment are included below.

### **Description of project and its potential impacts (positive and negative)**

There will be no additional fire risk issues associated with the proposed extended restoration footprint or increased annual rate of filling. The Risk Assessment report to determine the requirements for fire-fighting and firewater retention facilities at Hollywood Landfill facility was prepared with reference to the EPA Manual on Firewater Retention Facilities (1995).

In relation to the requirements for firewater retention facilities as per Appendix A of the EPA Manual, Hollywood Landfill does not store dangerous substances under the European Communities (Classification, Packaging, Labelling and Notification of Dangerous Substances) Regulations, 1994 nor discharge to drinking, sensitive or protected surface waters. It was deemed, therefore, that firewater retention capability at the site is not required.

Site activities or materials handled/stored on site are a low fire risk. The main fire risk is associated with fuel storage on site.

### **Description of mitigating measures**

Murphy Environmental has undertaken a number of actions which will mitigate against a fire occurring or the potential impacts from firewater runoff.

- All fuel tanks are bunded and in the event of a fire, valves can be shut off, allowing contaminated water from the bunded area to be contained and tankered off site to a licensed facility, where necessary.
- Murphy Environmental are in possession of a Fire Certificate for site buildings, issued by Fingal County Council.
- Murphy Environmental has invested in a suitable fire safety system and fire-fighting equipment for the Hollywood facility.
- Over 10,000 gallons of water are stored on site, which could be used for fire-fighting in the case of an emergency.
- Murphy Environmental has a dedicated Health & Safety Officer, H&S Representatives, First Aiders, six Fire Safety Officers and four Fire Marshals, all of whom have received appropriate training during 2006.
- Murphy Environmental has an Emergency Response Procedure and an established and labeled Fire Assembly point on site.

### **Description of impacts after mitigating measures**

Murphy Environmental has taken a number of actions to reduce the risk of fire on site. The main fire risk is associated with fuel storage, used for both quarry and landfill equipment. The waste itself, because it is inert, is not combustible and does not pose a fire hazard.

### **Litter and Vermin Control**

#### **Description of existing environment**

There are currently no litter or vermin issues on site associated with landfilling operations or otherwise. There will no additional litter/vermin issues associated with the proposed extended restoration footprint or increased annual rate of filling.

#### **Description of project and its potential impacts (positive and negative)**

The inert material acceptable at the site does not impact upon litter as the material is heavy and does not become wind-blown. Any non-conforming material will be satisfactorily quarantined and removed off-site, where necessary. Also, because no food wastes are acceptable on site, there is no vermin nuisance. Proposals to extend the landfill footprint and increase the annual rate of filling will not impact on this.

#### **Description of mitigating measures**

No special provisions are deemed to be necessary due to the nature of the material. Litter checks will be carried out daily by the Facility Manager in and around the site. Any fly-tipping which may occur at the site entrance or on the access road will be immediately cleaned up and disposed of to an appropriate landfill. A vermin control contractor will be employed by Murphy Environmental immediately, should the need arise.



**Description of impacts after mitigating measures**

The type of materials to be landfilled does not pose a threat as a litter or vermin nuisance. Any litter which may present itself in or around the site will be promptly removed and disposed of at an agreed facility.

**Odour Control**

**Description of existing environment**

There are no odour impacts at the site.

**Description of project and its potential impacts (positive and negative)**

The inert materials to be landfilled will not cause an odour impact. No domestic or putrescible waste will be accepted on site. There will no additional odour issues associated with the proposed extended restoration footprint or increased annual rate of filling.

**Description of mitigating measures**

No mitigating measures are required. Non-conforming and/or fly-tipped waste will be removed off site to an approved facility.

**Description of impacts after mitigating measures**

N/A

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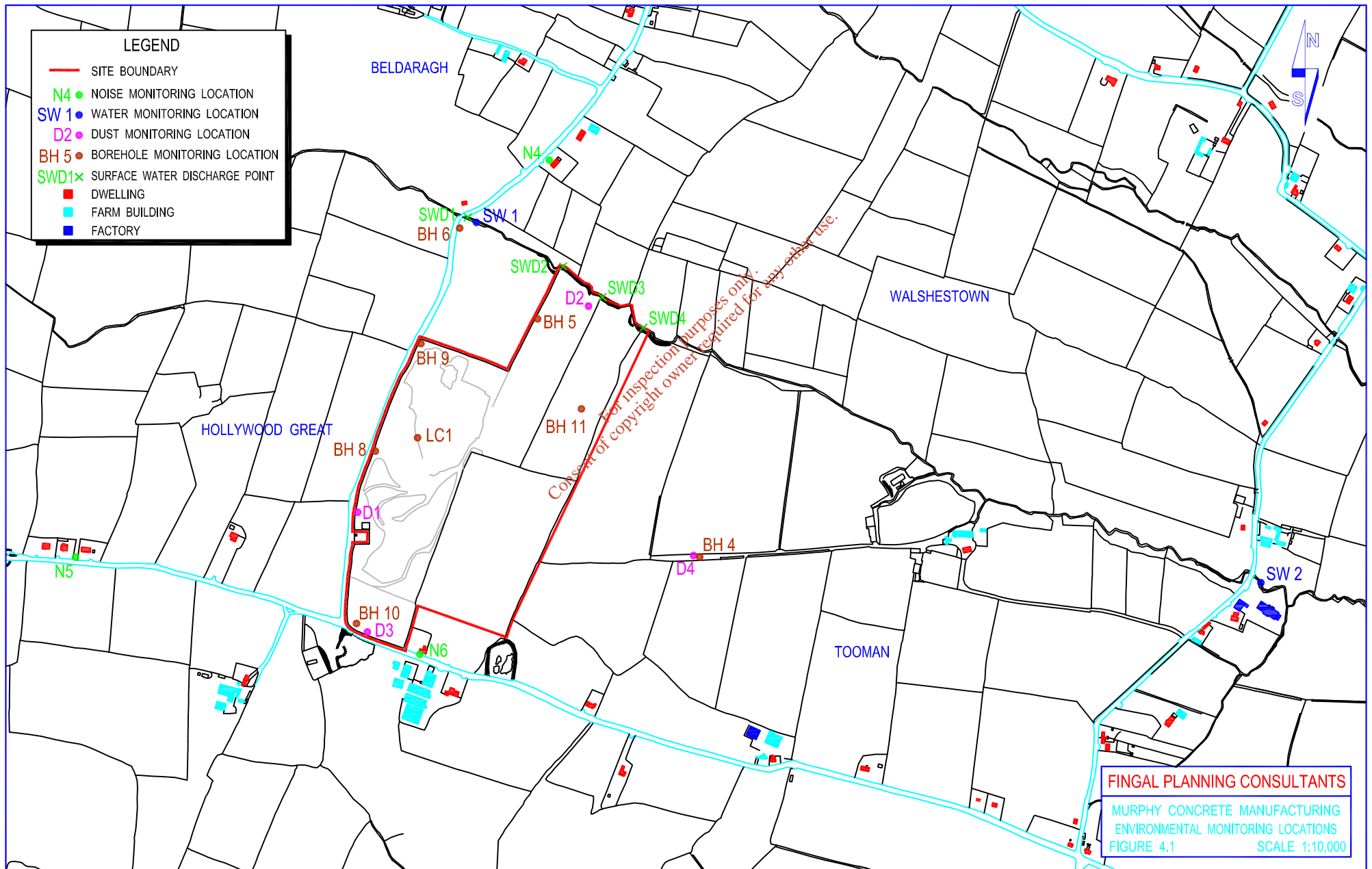
## 6.11 Emissions to the Environment

Environmental dust is monitored at 4 locations within and around the site. The dust monitoring locations, as prescribed in Table D.1.1 of Waste Licence 129-1, are listed in Table 6.11.1 below.

**Table 6.11.1: Dust Monitoring Locations**

Dust Station	Grid Reference		Location
	Easting	Northing	
D1	315474	257927	Within site – west; car park adjacent to garage building
D2	315896	258353	Within site – north eastern corner
D3	315463	257714	Within site – south; above deep 'rock cell'.
D4	316103	257864	East of site (ca. 500m); neighbouring farm

The dust emissions from this facility are summarised below.



**Table 6.11.2: Dust Monitoring Locations**

	Dust Monitoring Results (mg/m <sup>2</sup> /day)				EPA Waste Licence Limit (mg/m <sup>2</sup> /day)
	D1	D2	D3	D4	
<b>Q4, 2006</b>	189	105	294	6001*	350
<b>Q3, 2006</b>	262	178	346	42	350
<b>Q2, 2006</b>	199	100	168	36	350
<b>Q1, 2006</b>	136	63	278	419*	350
<b>Q4, 2005</b>	<26	63	63	73	350
<b>Q3, 2005</b>	450	81	217	81	350
<b>Q2, 2005</b>	299	91	299	35	350
<b>Q1, 2005</b>	107	34	243	32	350
<b>Q4, 2004</b>	172	49	93	57	350
<b>Q3, 2004</b>	178	89	173	42	350
<b>Q2, 2004</b>	433	71	314	27	350
<b>Q1, 2004</b>	100	225	110	68	350
<b>Q4, 2003</b>	98	75	84	34	350
<b>Q3, 2003</b>	170	58	379	17	350

\*Results for D4 during Q1 and Q4, 2006 were dismissed as unrepresentative samples due to interference at this monitoring point.

### **Emissions to Air – Dust** **Description of existing environment**

Dust monitoring is undertaken at 4 locations on a quarterly basis, as a requirement of the Waste Licence. Results are presented in Table 6.11.2 above. A 96% compliance rate was achieved with reference to limit values prescribed in the Waste Licence. 2 No. non-compliances were observed and reported at D1. D1 is located close to the hardstanding reception area.

Dust emissions may be generated from the site in the following main areas:

- Quarrying of rock
- Crushing of quarried rock
- Screening of finished material
- Loading of aggregate product to trailers and transfer
- Depositing of inert material in the landfill cell
- The dust levels created by vehicular movements in the reception and deposit area

### **Description of project and its potential impacts (positive and negative)**

There will be no perceived additional dust loading associated with the proposed extended restoration footprint. Dust emissions associated with proposed increased annual rate of filling is predicted to be negligible.

### **Description of mitigating measures**

A number of measures have been taken by Murphy Environmental to mitigate against dust on and around the site:

1. Purchase of a road sweeper dedicated for use at the site. The sweeper is a Johnston 600 series.
2. Installation of a wheelwash, which must be used by all vehicles exiting the landfill/quarry.
3. A mobile water bowser is on site at all times, for deployment during periods of dry weather.
4. Sprinklers are situated in the entrance/reception area, for use as dust suppression.
5. Use of a concrete surface at the entrance to the site reduces dust generation in this area.

### **Description of impacts after mitigating measures**

The mitigating measures employed by Murphy Environmental in the control of dust have made a significant contribution towards controlling this nuisance in and around the site. The infrastructure is now in place to mitigate against these impacts. It is suggested that a combination of dust control measures available at the site will be adequate to maintain combined dust emissions from the quarry and the landfill below licence limits.

### **Emissions to Air – Odour**

No odour emissions are expected

### **Noise Emissions**

See Section 6.5.

### **Emissions to Groundwater**

See Section 6.4.

### **Emissions to Surface Water**

See Section 6.4.

### **Traffic Movements In and Out of Site**

See Section 6.2.



## 6.12 Natural Resources Used

This section describes the full range of natural resources used, processed or consumed by Hollywood Landfill. There will be negligible impact from a proposed extension of the landfill footprint or an increased annual rate of filling.

### Energy

Energy is used on-site in terms of electricity for lighting (interior and exterior), heating and electronic equipment. Records of electricity usage are maintained on site, as a part of an energy efficiency audit, in accordance with Condition 11.5 of Waste Licence W0129-01 and are reported to the EPA annually in the AER (Annual Environmental Report).

Energy in terms of fuel use includes diesel used for on-site vehicles. Records of fuel usage on site are maintained, as a part of an energy efficiency audit, in accordance with Condition 11.5 of Waste Licence W0129-01 and are reported to the EPA annually in the AER (Annual Environmental Report).

### Assimilative capacity of water, soils and air

Emissions to water, soils and air due to operation of the facility are negligible. Routine monitoring will detect any uncontrolled emissions to the environment.

The site is located on an extensive aquifer, which in the event of a groundwater incident would have the capacity to buffer and dilute any contamination. Neither groundwater nor surface water is extracted for drinking water purposes.

### Water usage

Mains water is piped onto site for drinking water purposes. Small amounts of water are also used for toilets, kitchen facilities etc.

Water is used for dust and mud control purposes in water sprinklers, wheelwash, bowser and roadsweeper. Water for these purposes is sourced from mains supply, surface water collected in the base of the quarry and, in the case of the wheelwash, is filtered and recycled to reduce water requirements.

Records of water usage are maintained on site, as a part of an energy efficiency audit, in accordance with Condition 11.5 of Waste Licence W0129-01 and are reported to the EPA annually in the AER (Annual Environmental Report).

### Minerals

Hollywood Landfill is licensed to accept a range of Construction & Demolition wastes, as per EPA Waste Licence W0129-01. These materials are used to fill the void space created by quarrying activities. On-site deposits of boulder clay, with naturally low permeability, are used to form the clay liner and build the engineered landfill cells. A combination of imported materials and site deposits will be used to complete the capping layer, restore the site to its previous condition and return it to agricultural use.

It is estimated that ca. 4.8 million tons of material will be required to fill the quarry void.

## 7.0 Summary of Impacts, Mitigation Measures, Interactions and Alterations Considered

### 7.1 Summary of Impacts

ASPECT	POTENTIAL EFFECT BEFORE MITIGATION	MITIGATION	PREDICTED EFFECTS AFTER MITIGATION
<b>Human Beings</b>	<ul style="list-style-type: none"> <li>• Unacceptable levels of noise and general disturbances</li> <li>• Visual obtrusiveness</li> <li>• Possibility of litter and vermin</li> <li>• Possibility of odours and dust</li> <li>• Contamination of groundwater</li> <li>• Unacceptable levels of noise and general disturbances</li> <li>• Unacceptable levels of traffic</li> </ul>	<ul style="list-style-type: none"> <li>• Propose to retain all existing hedges and undertake additional planting along hedgerows.</li> <li>• Infill will occur within presently deep void.</li> <li>• Not visible to existing residences.</li> <li>• Existing quarry will be filled with inert material and returned to contours that are consistent and compatible with adjoining lands.</li> <li>• No odour mitigating measures required</li> <li>• Inert waste does not decompose and there is no risk of landfill gas. Any landfill gas will be detected on site by routine monitoring of site.</li> <li>• Litter checks will be routinely carried out daily on site by facility manager.</li> <li>• Any fly tipping will be immediately cleaned up and disposed of to an appropriate landfill.</li> <li>• A vermin control contractor will be employed by applicant if necessary</li> <li>• No mitigating measures needed to control birds</li> <li>• There will not be uncontrolled run off or ground water discharge that could affect water quality of adjoining stream.</li> <li>• Propose to retain all existing hedges</li> </ul>	<ul style="list-style-type: none"> <li>• The combination of dust control measures are sufficient to control levels of dust in quarry and maintain levels below the EPA limits.</li> <li>• No impact from odour.</li> <li>• Routine monitoring of vermin and litter to ensure no impact on environment.</li> <li>• No significant impacts with regard to scavenging birds on site.</li> <li>• No significant effects on the quality or use of groundwater given the mitigation process.</li> <li>• Land to be grassed and returned to agricultural use.</li> <li>• Likely significant effects low to moderate.</li> <li>• On completion of restoration there will be little or no negative visual amenity.</li> <li>• There will be a predicted net positive visual impact</li> </ul>

		<p>and undertake additional planting along hedgerows..</p> <ul style="list-style-type: none"> <li>Existing quarry will be filled with inert material and returned to contours that are consistent and compatible with adjoining rural nature lands.</li> <li>Expected overall traffic will increase 14% to 17%</li> <li>Level of traffic well within the capacity of road network.</li> <li>No injury to residential amenity.</li> <li>Limit on number of vehicles to access site.</li> <li>No significant increase in level of noise</li> </ul>	<p>and improvement on the local amenity value of the area.</p> <ul style="list-style-type: none"> <li>Filling and restoration will result in contours similar to pre quarry conditions.</li> <li>No significant effects on the quality of the adjoining surface water are expected from the proposal</li> </ul>
<b>Material Assets/Cultural Heritage</b>	<ul style="list-style-type: none"> <li>Ground has already been disturbed due to the previous quarrying activity .</li> </ul>	<ul style="list-style-type: none"> <li>Archaeological monitoring be carried out during and after the removal of the large stockpile.</li> </ul>	<ul style="list-style-type: none"> <li>No likely adverse significant impact is predicted</li> </ul>
<b>Climate</b>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>None necessary</li> </ul>	<ul style="list-style-type: none"> <li>No predicted effects</li> </ul>
<b>Air</b>	<p>Emissions of dust generated from site arising from;</p> <ul style="list-style-type: none"> <li>Quarrying of rock</li> <li>Crushing of quarried rock</li> <li>Screening of finished material</li> <li>Loading of aggregate product to trailers and transfer</li> <li>Depositing of inert material in the landfill cell</li> <li>Dust created by traffic in deposition area.</li> </ul>	<ul style="list-style-type: none"> <li>Use of road sweeper</li> <li>use of wheelwash</li> <li>A mobile water browser is on site at all times for use in dry periods.</li> <li>Sprinklers situated in entrance/reception area for use as dust depression</li> <li>Use of concrete surface at the entrance to site reduces dust generation</li> </ul>	<ul style="list-style-type: none"> <li>The combination of dust control measures are sufficient to control levels of dust in quarry and maintain levels below the EPA limits.</li> </ul>
<b>Soil Geology and Groundwater</b>	<p>Potential effects include;</p> <ul style="list-style-type: none"> <li>Excavations below water table</li> <li>Waste disposal in on and under ground</li> <li>Discharge of clean surface water</li> </ul>	<ul style="list-style-type: none"> <li>Will use on site deposits of boulder clay to form low permeability landfill liner.</li> <li>Imported soils stones and inert material used to restore quarry</li> <li>Controlling the type of wastes landfilled</li> </ul>	<ul style="list-style-type: none"> <li>Likely significant effects considered positive on completion of restoration..</li> <li>No significant effects on the quality or use of</li> </ul>

	<p>runoff from roads and hardstands into ground</p> <ul style="list-style-type: none"> <li>• Direct discharge of treated sewage effluent into ground</li> <li>• Accidental spills.</li> </ul>	<ul style="list-style-type: none"> <li>• No wells in area for drinking water.</li> <li>• In coming wastes checked to ensure no harmful leachate generated by wastes</li> <li>• Regular monitoring will reduce risk</li> <li>• Groundwater is protected at this site by natural geographical/hydrogeological conditions</li> <li>• No significant impact on surface water as no uncontrolled runoff to adjoining stream.</li> <li>• Proposed restoration scheme, silt control measures, oil interceptor and surface watermanagement infrastructure will manage and treat surface water</li> <li>• Annual and six monthly analysis of upstream and downstream surface waters and landfill leachates to monitor and protect potential impacts.</li> </ul>	<p>groundwater given the mitigation process.</p>
<p><b>Landscape /Visual Aspects</b></p>	<ul style="list-style-type: none"> <li>• Moderate to high impact from 1km north of site with clear views into site with excavation, site building and stockpiles.</li> <li>• Moderate to high impacts from existing residences north of site.</li> <li>• Low to moderate impacts from south to south west of site.</li> <li>• Moderate to low impacts from east of site with stock piles visible.</li> </ul>	<ul style="list-style-type: none"> <li>• Propose to retain all existing hedges and undertake additional planting along hedgerows.</li> <li>• Plant discrete copse of woodland/scrub adjacent to townland boundary hedge at north.</li> <li>• Existing quarry will be filled with inert material and returned to contours that are consistent and compatible with adjoining lands.</li> </ul>	<ul style="list-style-type: none"> <li>• Land to be grassed and returned to agricultural use.</li> <li>• Likely significant effects low to moderate.</li> <li>• On completion of restoration there will be little or no negative visual amenity.</li> <li>• There will be a predicted net positive visual impact and improvement on the local amenity value of the area.</li> </ul>

			<ul style="list-style-type: none"> <li>Filling and restoration will result in contours similar to pre quarry conditions.</li> </ul>
<b>Traffic</b>	<ul style="list-style-type: none"> <li>Net increase in traffic will be an average of 26 twenty tonne trucks per day.</li> <li>Due to closure of Baldargh and Macken Developments IN 2008 a net increase in traffic of 2 vehicles AADT on LPO1090 and net decrease of 5 vehicles AADT on LPO1080</li> <li>As quarry operations scale down the traffic will reduce.</li> <li>Majority of trucks travel on M50 and R132. These are high quality National roads.</li> <li>If Finall landfill granted permission all Murphy Environmental traffic will divert from R132 to M1</li> </ul>	<ul style="list-style-type: none"> <li>No specific remedial or reductive measures apparent</li> <li>Murphy Environmental contributed Euro 500,000 in respect of any deterioration of pavement condition on LPO1080 and LPO1090.</li> </ul>	<ul style="list-style-type: none"> <li>No predicted negative impacts in area of development.</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>Potential source of noise from truck movements within the site and along the haul route.</li> </ul>	<ul style="list-style-type: none"> <li>No requirement for remedial measures.</li> </ul>	<ul style="list-style-type: none"> <li>Noise contribution due to landfill will be insignificant in comparison to existing noise from the quarry.</li> <li>No increase in the overall ambient noise level due to landfill</li> <li>No environmental noise impact due to landfill.</li> <li>Vibration due to landfill will be insignificant</li> </ul>
<b>Flora and Fauna</b>	<ul style="list-style-type: none"> <li>There are 4 sites of nature conservation interest within 10km. of site.</li> <li>No potential impact on flora or</li> </ul>	<ul style="list-style-type: none"> <li>Provide supplementary planting on hedgerows and improve existing habitat for wildlife.</li> <li>Entire area to be replanted with grass</li> </ul>	<ul style="list-style-type: none"> <li>No significant impact on flora and fauna</li> </ul>

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	<p>fauna. The infill material is inert C&amp;D material this will not act as a food source for birds and animals. No windblown litter, scavenging birds or vermin.</p> <ul style="list-style-type: none"> <li>• There are no flora or fauna species of ecological significance in quarry area</li> <li>• Potential impacts on surrounding lands will result from the deposition of dust on surrounding vegetation from workings of landfill.</li> </ul>	<p>and returned to grazing.</p>	
<p><b>Litter Pollution and Vermin Control</b></p>	<ul style="list-style-type: none"> <li>• No odour impacts on site</li> <li>• The inert material will not cause an odour impact</li> <li>• No domestic or putrescible waste will be accepted on site.</li> <li>• No landfill gas produced by inert material on site</li> <li>• Currently no litter or vermin issues on site associated with the landfill operation.</li> <li>• Little possibility of litter as material is heavy and not windblown</li> <li>• Birds are not currently an issue for the landfill as there is no putrescible waste material on site.</li> </ul>	<ul style="list-style-type: none"> <li>• No odour mitigating measures required</li> <li>• Inert waste does not decompose and there is no risk of landfill gas. Any landfill gas will be detected on site by routine monitoring of site.</li> <li>• Litter checks will be routinely carried out daily on site by facility manager.</li> <li>• Any fly tipping will be immediately cleaned up and disposed of to an appropriate landfill.</li> <li>• A vermin control contractor will be employed by applicant if necessary</li> <li>• No mitigating measures needed to control birds</li> </ul>	<ul style="list-style-type: none"> <li>• No impact from odour.</li> <li>• Routine monitoring of vermin and litter to ensure no impact on environment.</li> <li>• No significant impacts with regard to scavenging birds on site.</li> </ul>

## 7.2 Alternatives Considered

Since this is essentially a landfilling and restoration operation of an existing quarry there is very little scope for assessing alternative locations.

The application proposes to vary the previous permission by restoring and infilling the existing and an additional area of void at an increased rate. Alternative rates of fill per year were considered. The rate selected was thought to be the most suitable having regard to the remaining area of void to be filled, the number of years left in the permission and the need to complete infilling some years before the end of the permission so as to allow sufficient time for restoration.

## 7.3 Likely Significant Direct and Indirect Effects on the Environment Arising from use of Natural Resources

The nature of the waste to be deposited i.e. select materials from construction and demolition waste will not cause any significant direct and indirect effects on the environment. No putrescible or hazardous waste will be deposited. The waste consists mainly of inert materials arising from building construction, demolition and renovation projects, e.g. overburden, degraded rock, concrete, bricks, tiles, ceramics and plasterboard.

Upon completion, a compatible land use such as pasture will be re-established on the site. From the natural resources viewpoint, it is not likely that there will be any significant adverse impacts on the environment.

## 7.4 Likely Significant Direct and Indirect Effects on the Environment Arising from Emissions of Pollutants and Creation of Nuisances

It is anticipated that the effect of the overall scheme of restoration will be positive so far as the amenity and value on neighbouring material assets are concerned.

Details of emissions arising from the development are outlined in the relevant sections. No likely significant direct or indirect effects have been identified.

## 7.5 Methods Used to Forecast Impacts on the Environment

The methods used to forecast the effects on the various aspects of the environment were 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 aspects of the environment by the development in its mitigating form and thereby arrive at a net impact from the development.

## 7.6 Interaction of the foregoing

Summary of Impacts, Mitigation Measures, Interactions and Alternatives Considered are illustrated in the following table.

In addition to the requirements to describe the likely significant effects of a proposed development on particular aspects of the environment, it is also a requirement to identify the interaction of those effects. These interactions are set out in the following matrix. Where an interaction is likely to be significant they are designated by way of ● in the required box.

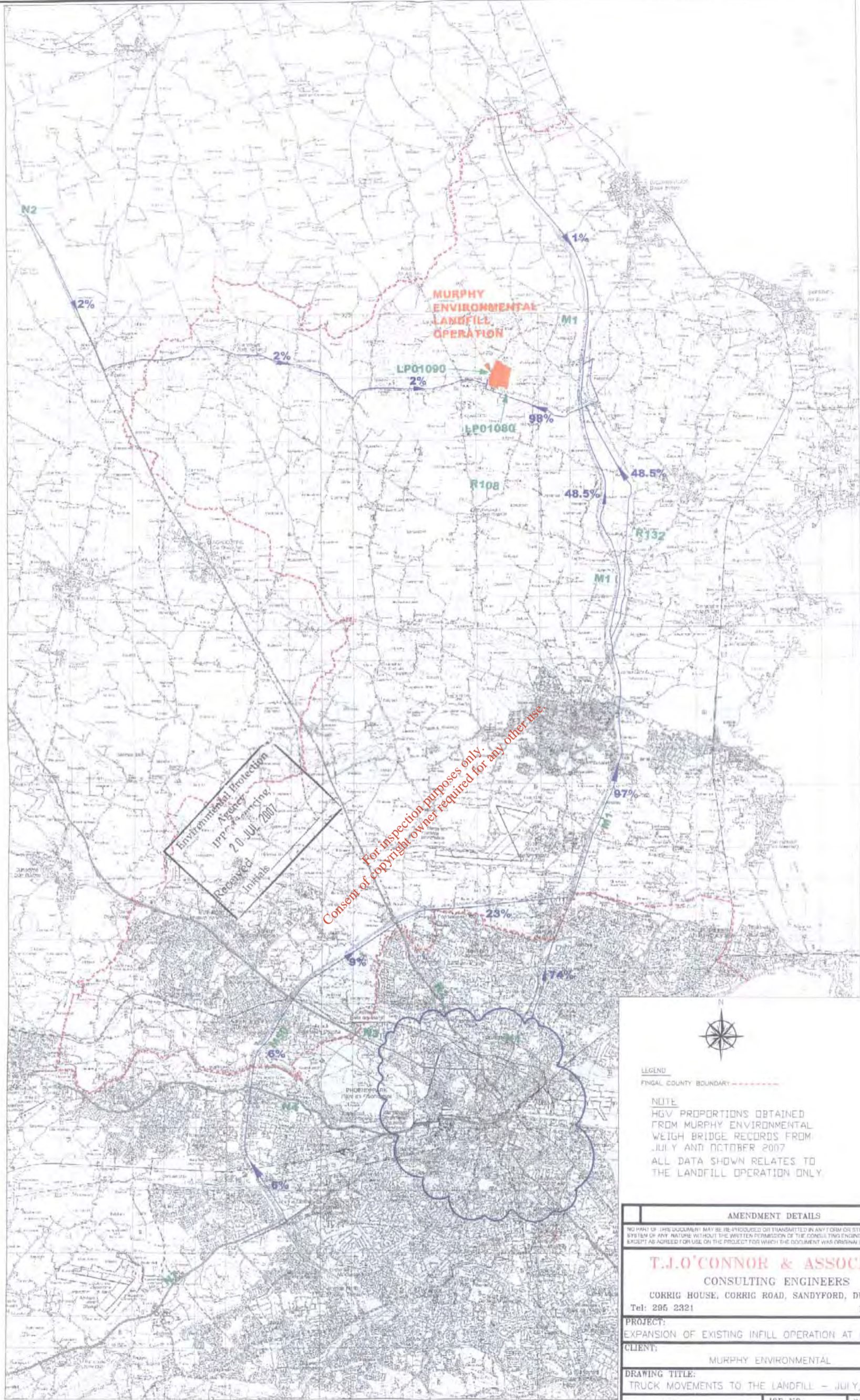
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	Human Beings	Material Assets	Climate	Air	Soil	Traffic	Landscape	Flora Fauna	Cultural Heritage	Noise	Litter Pollution
Human Beings				•		•	•	•		•	•
Material Assets							•				
Climate											
Air	•										
Soil /Groundwater											
Traffic	•			•						•	
Landscape								•			
Flora/Fauna							•				
Cultural Heritage							•				
Noise	•										
Litter Pollution/Vermin Control	•										

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**LEGEND**  
 FINAGAL COUNTY BOUNDARY - - - - -

**NOTE**  
 HGV PROPORTIONS OBTAINED FROM MURPHY ENVIRONMENTAL WEIGH BRIDGE RECORDS FROM JULY AND OCTOBER 2007  
 ALL DATA SHOWN RELATES TO THE LANDFILL OPERATION ONLY

AMENDMENT DETAILS	DATE
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<b>PROJECT:</b> EXPANSION OF EXISTING INFILL OPERATION AT HOLLYWOOD G	
<b>CLIENT:</b> MURPHY ENVIRONMENTAL	
<b>DRAWING TITLE:</b> TRUCK MOVEMENTS TO THE LANDFILL - JULY/OCT 2007	
SCALE: NTS	JOB NO: 2616
DATE: 05/03/07	DRAWING NO: SK-01
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