



**Murphy Environmental
Hollywood Ltd**

MEHL Integrated Waste Management Facility

**Hollywood Great, Nag's Head,
Naul, Co Dublin**

EIS Non-technical Summary

December 2010

ARUP



 **patel tonra** ltd
environmental solutions

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1 Introduction

Murphy Environmental Hollywood Ltd (MEHL) proposes to construct an integrated waste management facility for the acceptance of solid non-biodegradable waste, including hazardous and non-hazardous waste-to-energy residues, hazardous and non-hazardous soils and inert soils, and other compatible waste streams. The proposed facility will be located at the site of the existing MEHL landfill in Hollywood Great, Nag's Head, Naul, Co. Dublin.

The Applicant

Murphy Concrete Manufacturing (MCM) Ltd was formed by Seamus Murphy in 1969 and he remains as the Company Managing Director. In 2003, Murphy Environmental was established as a trading division of MCM Ltd to serve as the waste management division of the company. In October 2008, Murphy Environmental Hollywood Limited (MEHL) was established as a separate legal entity to manage the landfill activity at the Hollywood facility. Murphy Environmental Hollywood Limited (MEHL) is the applicant.

MEHL currently owns and operates an EPA licensed inert landfill (licence reference number W0129-02) for the acceptance of up to 500,000 tonnes per annum of inert waste located at Hollywood Great. The site operated as a quarry until 2007. From late in 2002 the site was also a licensed landfill so for a period both activities were undertaken simultaneously at Hollywood. Quarrying began at the Hollywood site in the late 1940s and Murphy Concrete Manufacturing (MCM) Ltd took over operations in 1975. MEHL is responsible for all aspects of the management and operation of the landfill and compliance with the EPA waste licence.

The landfill at Hollywood was the first privately-operated landfill facility in Ireland to attain the ISO14001 international standard for Environmental Management Systems. An Environmental Management System requires the allocation of resources, assignment of responsibility and ongoing evaluation of practices, procedures and processes to improve environmental performance. An integral part of ISO 14001 is clear and regular communications with members of the public, customers, suppliers and regulatory authorities. MEHL is committed to permanent and open dialogue regarding environmental matters.

The proposed MEHL integrated waste management facility will involve an investment of approximately €20 million and is expected to be operational from 2011 for 25 years. Up to 50 staff will be employed in the construction phase and an additional 15 staff when the facility is operational.

2 The Proposed Integrated Waste Management Facility

Site

The site for the proposed MEHL integrated waste management facility is located at the current operational MEHL landfill, approximately 32 km north of Dublin city centre. It is located 2.5km west of the M1 motorway between Dublin and Belfast. Refer to Figure 1.

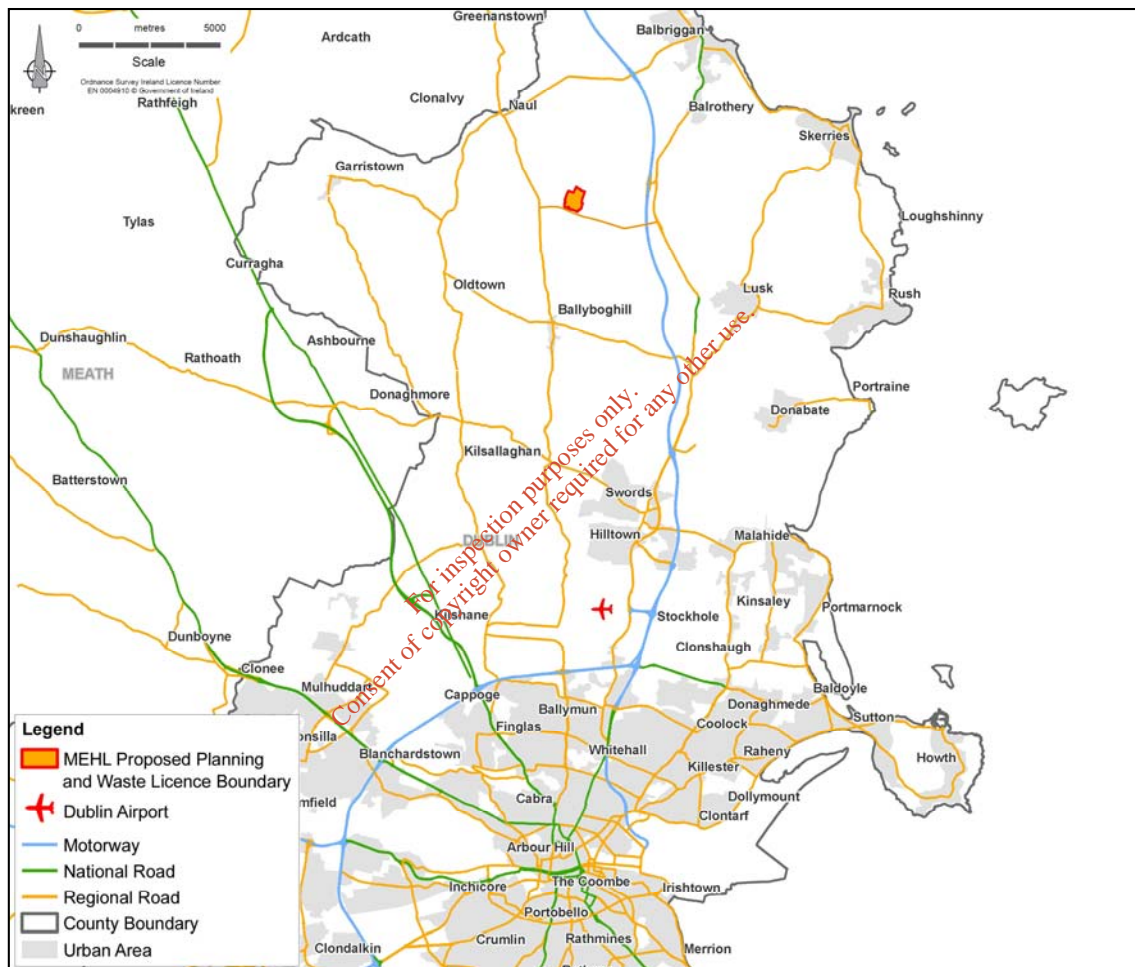


Figure 1 Site Location

The total area of land in the ownership and control of MEHL is 54.4 hectares; of which the proposed planning application and EPA waste licence application covers 39.8 hectares. The area of land which adjoins the site and is under the control of MEHL is 14.6 hectares.

The MEHL site is located within a rural and agricultural area with residential dwellings dispersed throughout the surrounding areas. To the north and south of the MEHL site, the land use is mainly pasture. There is a waste permitted facility located to the north-west of the MEHL facility, which has been in operation since January 2005. There is a second waste permitted facility to the south-west of the

facility, operational since 2009. The proposed Fingal County Council Landfill site is located 1.4 km to the south east of the MEHL site. To the south-east, east and west the land is predominantly used for tillage. Refer to Figure 2.

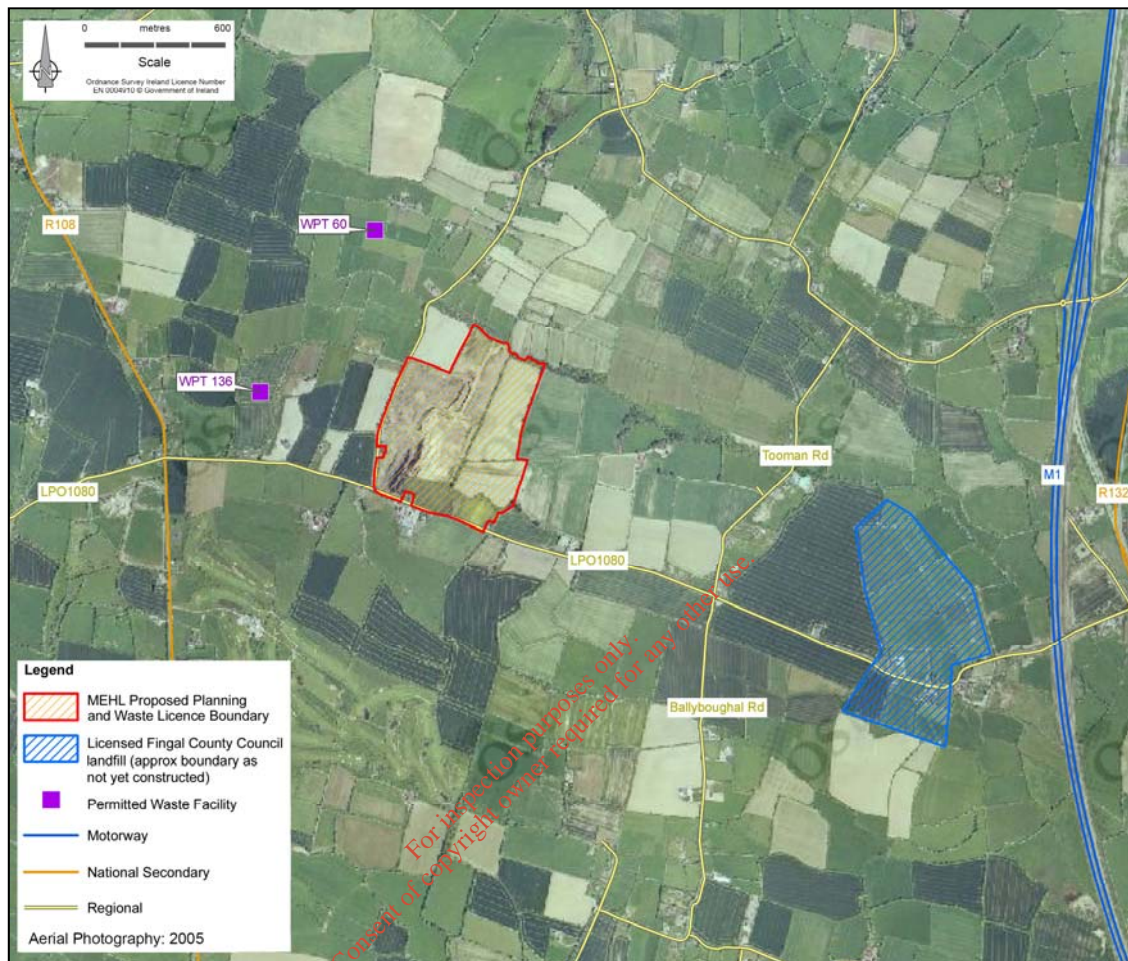


Figure 2 Site in Context

Overview of the Development

The proposed MEHL integrated waste management facility will comprise of specially engineered landfill cells for inert, non hazardous and hazardous solid, non-biodegradable solid waste. Refer to Figure 3.

This facility will also consist of:

- New site entrance and access road at the southern boundary.
- New administration building and site management infrastructure.
- Solidification plant with associated storage tanks and silos.
- A storage building.
- Surface water and foul water management systems.
- Leachate management system.

The quantity of waste accepted at the facility will not exceed the existing planning and waste licence limit of 500,000 tonnes per annum.

Waste acceptance at the facility will be between the hours of 8.00am and 6.00pm, Monday to Friday inclusive and 7.00am to 4.00pm on Saturdays.

The facility will operate between the hours of 7.00am to 7.00pm, Monday to Friday and 7.00am to 5.00pm on Saturdays. The early start and later finishing will allow for preparation, cleaning, etc. of the facility. The site will not operate on Sundays or Bank Holidays.

The opening hours and the hours within which waste can be accepted are as per the current EPA licence; no changes are proposed.

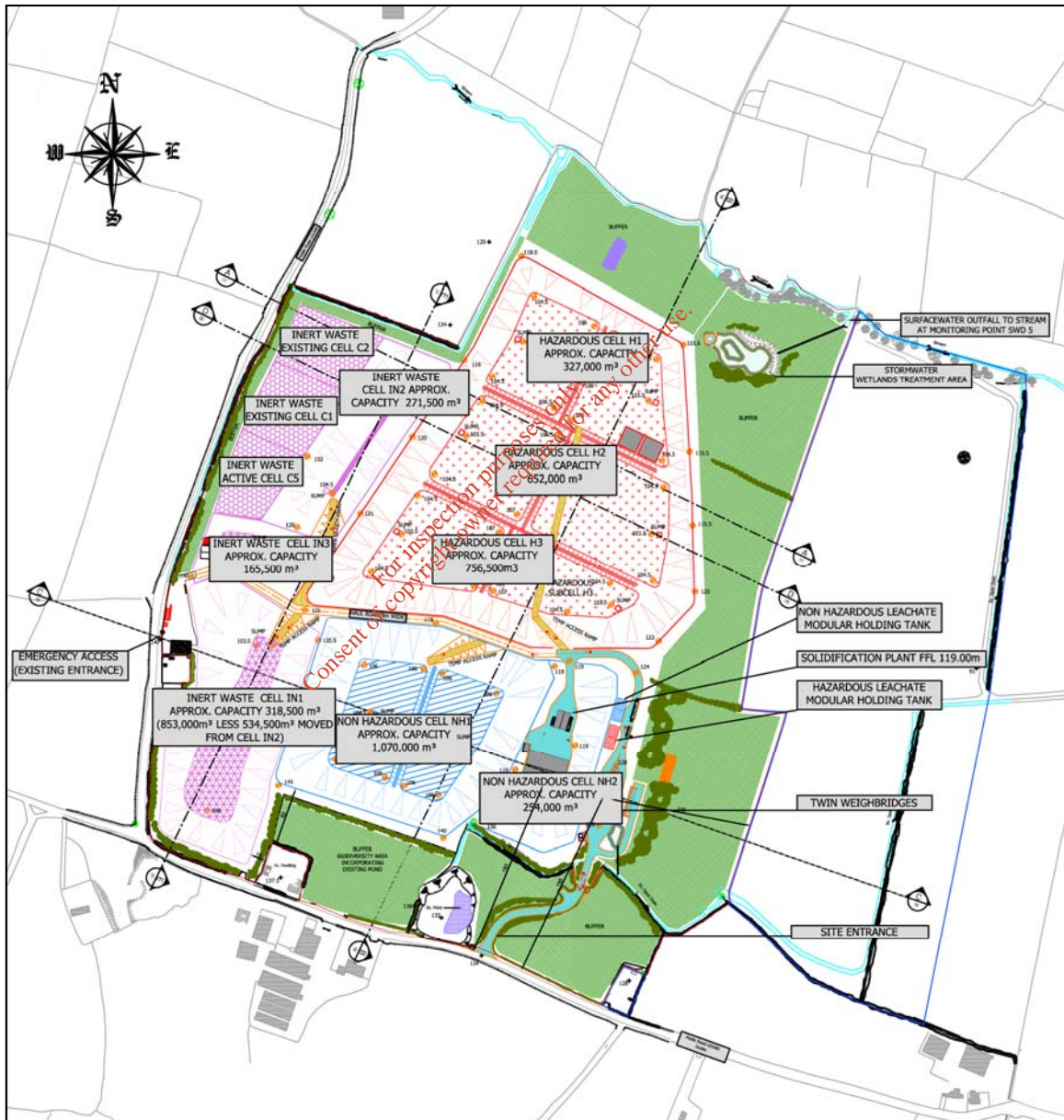


Figure 3 Site Layout Plan

Main Features of the Development

Landfill Cells for Hazardous, Non Hazardous and Inert Waste

Four phases of construction, filling and restoration of the landfill cells will occur over the 25 year operational life of the proposed MEHL facility, with construction commencing in 2011 and operations continuing until an estimated 2036.

Three cells for the landfilling of hazardous waste will be developed and restored over three phases, two cells for the landfilling of non hazardous waste will be developed and restored over two phases and three cells for the landfilling of inert waste will be developed and restored over three phases. It is proposed to use Dense Asphaltic Concrete to line the base and side walls of the landfill cells for hazardous waste. A Dense Asphaltic Concrete lining system is engineered to provide complete containment thus making it a more effective landfill barrier than the conventional lining systems traditionally used.

A composite clay and geo-membrane liner will be installed on the base and side walls of the proposed cells for the landfilling of non hazardous waste. A clay liner will be installed on the base and side walls of the proposed cells for the landfilling of inert waste, in compliance with the current licence requirements.

New Site Entrance and Access Road at the Southern Boundary

A new site entrance will be constructed from the LP01080 public road at the southern boundary of the MEHL site. The new entrance will cater for all construction and operation related traffic. Once the new facility entrance is operational, the existing entrance from the road to the west of the site will be used only as an emergency entrance and exit. The existing haul road through the central portion of the MEHL site will be developed to provide access to the proposed landfill cells. Secondary haul roads with access control will be constructed to ramp down into each of the cells. By having only one controlled access point to each cell, waste placement will be tightly controlled.

New Administration Building and Site Management Infrastructure

A new administration building with access control, twin weighbridges and car parking will be located on the eastern side of the proposed MEHL facility, approximately 200m from the southern site boundary. The administration building will comprise a reception area, two offices, one meeting room, a canteen, a file store and shower and toilet facilities. The building will be a single storey building with flat roof. Ten car parking spaces will be provided adjacent to the administration building.

Wheel washing facilities will be provided on the exit from the landfill facility. The wash water will be recycled and residual water will be disposed to the leachate holding tanks.

Solidification Plant

The solidification plant will be used to receive and treat flue gas treatment residues from energy from waste facilities prior to their deposition in the hazardous landfill cells.

Flue gas treatment residues typically contain a mixture of fine ash, residues from reactions that take place during cleaning like salts and carbon containing heavy metals and dioxins as well as unreacted residues such as lime. They also contain heavy metals released during combustion. The residues are generally pale grey to white in colour, often containing small black particles of activated carbon. They are fine-grained, free-flowing, granular and mostly dry (0.2% moisture).

Due to the high lime content, these flue gas treatment residues are classified as hazardous as an irritant to skin and the respiratory system. The elevated total lead concentration can also exceed the threshold resulting in an ecotoxic hazardous classification.

The solidification plant will have a capacity of approximately 50,000 tonnes per annum and will consist of the following:

- An enclosed process building with process area, storeroom, process control room and welfare facilities (showers, canteen, toilets, etc).
- Process area housing a mixing unit and weighing scales.
- 4 x storage silos to store flue gas treatment residues awaiting solidification.
- 1 x cement silo.
- 2 x 30m³ bunded acid tanks.
- Storage building for curing solidified ash.

The solidification plant will be located on the eastern side of the non hazardous waste cell and will be screened by constructing the plant at a lower level than the administration building.

The flue gas treatment residues will be transported to the MEHL facility in fully enclosed road tankers and will be weighed on arrival at the facility, prior to proceeding to the solidification plant for unloading. The tanker will drive into the solidification building and the doors of the building will automatically close once the vehicle is inside the building. The tanker will directly pump the residues into a stainless steel silo via a fully enclosed pumping system. This operation will be controlled and supervised by a MEHL trained member of staff. The empty vehicle will then exit the site via the weighbridge and wheelwash.

From the silo, the residues will be pumped to the mixing unit where cement, leachate or water, and acid will be added at a controlled rate, in a batch process, using an electronic process control system. The mixed material will be discharged into labelled, one cubic metre intermediate bulk container bags in order to form solidified blocks and will be held in the storage building for a minimum 2-4 days to cure the material and to facilitate its handling for onward placement in the hazardous landfill cell. Management procedures will be implemented, based on the traceability codes/dates printed on individual bags, to ensure blocks are retained in the storage building or temporary storage area for the appropriate retention time.

Solidified bags will be transported from the storage building when the storage building capacity is full, to a temporary storage area within the active hazardous landfill cell. The temporary storage area will be covered in order to avoid the solidified material coming in contact with rain and thus prevent the generation of leachate. When the solidified plant is not operating at peak capacity and the available storage capacity in the storage building is significantly greater than the minimum 2 to 4 days, it should be possible to move the solidified material directly from the storage building to the final destination in the hazardous landfill cell.

The waste licence will specify the chemical characteristics of the waste which can be accepted at the facility. It is proposed initially to undertake the testing of the bags of solidified material, to ensure it complies with the waste licence specification, approximately 28 days after the material has been subject to the solidification process. Based on current guidance, this is the maximum length of time required to fully cure the material and immobilise certain heavy metals and other parameters within the solidified mass. Once it is shown that the solidified bags are compliant with the waste licence specification, the solidified bags will be moved from the temporary storage area to the active landfill cell.

Leachate Management

Leachate is generated by the percolation of rainfall through the waste. The leachate would be expected to contain soluble and suspended material picked up from the waste deposited.

Leachate produced in the hazardous waste cells will be collected above the liner in pipes running through a drainage layer. The liner will slope downwards towards a sump at the cell perimeter where the leachate will be pumped into sealed pipes which will connect to a concrete leachate holding tank. The collected leachate will be used in the solidification process as described earlier.

It is intended to minimise leachate generation by using rainfall deflectors on the landfill cell sidewalls. These deflectors will collect surface water from the sidewall and divert it away from the waste to an inactive cell or temporary sump. The clean surface water will then be discharged through the wetlands to the stream long the northern boundary of the site.

The management of leachate from the non hazardous waste cells will be the same as for the management of leachate from the hazardous waste cells as described above. During periods of intense rainfall, it is likely that leachate collected from the non hazardous waste cells will not be required for the solidification process and will be disposed off site to an EPA licensed waste water treatment plant.

Leachate generated by the inert waste is not currently collected or treated. At present, there is no proposal to undertake collection and treatment of leachate from inert waste cells.

3 Planning Procedure

The Planning and Development (Strategic Infrastructure) Act 2006 has been operational since 31 January 2007. The purpose of the 2006 Act is to provide a

streamlined procedure for planning applications for prescribed classes of infrastructure development. Under the 2006 Act, applications for major infrastructure projects must be made directly to An Bord Pleanála rather than to the local planning authority (in this case Fingal County Council).

The MEHL integrated waste management facility corresponds to one of the classes listed in the Seventh Schedule of the 2006 Act. The facility is of strategic importance to the State and the region and An Bord Pleanála has given notice that the MEHL proposed development falls within the provisions of the 2006 Act. An EIS must be submitted with the application to An Bord Pleanála.

MEHL has attended a number of pre-application consultation meetings with An Bord Pleanála as required under the Act.

4 Environmental Impact Statement

The Environment Impact Statement (EIS) has been prepared to provide information on the possible environmental impacts of the construction and operation of the proposed integrated waste management facility and to propose mitigation measures to reduce the impacts of the development. The EIS will be submitted with the planning application for the proposed development. This EIS has been prepared in accordance with the relevant provisions of the Planning and Development Regulations 2001, as amended. Due regard has also been given to guidelines and advice notes for the preparation of environmental impact statements published by the Environmental Protection Agency.

5 Consultation

During the preparation of the EIS, discussions were held with a number of parties in order to ensure that the environmental issues relating to the project were addressed.

Key focus areas of the EIS were determined following:

- Consultation with An Bord Pleanála.
- Consultation with the Environmental Protection Agency.
- Consultation with Fingal County Council.
- Consultation with Meath County Council.
- Consultation with Dublin City Council
- Consultation with Department of Environment, Heritage and Local Government.
- Consultation with semi and semi-state bodies.
- Consultation with local community groups.
- Review of all previous planning applications and EISs relating to the site.

- Responses from statutory consultees to the scoping document and or information letter.
- Responses from non statutory consultees to the scoping document and or information letter.
- Comments raised at public information sessions.
- Review of the topics which were raised in the Fingal County Council and An Bord Pleanála reports for the Fingal landfill application.

All neighbouring premises (residential and commercial/industrial) within a 1km radius of the MEHL site boundary were visited by MEHL on 18 and 19 May 2010. An information leaflet and letter from MEHL was prepared and presented to neighbours to inform them of the proposed development and to advise neighbours of how they could engage in the process. A Public Information Day was held on 1st September 2010. Neighbours within 1km of the site were issued with a postal invitation to attend the event and advertisements were placed in the local press to advise the neighbours and any other interested parties of the opportunity to view the project information and engage with the company and its appointed consultants.

6 Need for the Project

Policy Context

The need for an integrated waste management facility for the acceptance of solid, non-biodegradable waste including incinerator residues (both hazardous and non-hazardous), hazardous and non-hazardous soils, non biodegradable inert waste and other compatible waste streams was reviewed.

For the following reasons, the key piece of waste infrastructure required in Ireland is a hazardous waste landfill.

- The EPA's National Hazardous Waste Management Plan 2008-2012 recommends that at least one hazardous waste landfill be developed in Ireland, capable of accepting the wide range of hazardous wastes that would otherwise be exported for landfill.
- EU waste policy requires member states to achieve self-sufficiency in the management of waste. Currently, there is no option in Ireland but to export certain wastes.
- Waste management plans adopted in the Republic and Northern Ireland acknowledge the need for all-island solutions to manage hazardous waste.
- Adequate waste management infrastructure is vital for economic development. Currently, Ireland's infrastructure for managing hazardous waste is lacking.
- Managing such waste in Ireland will give rise to economic opportunities and a beneficial spin-off for local industries and local employment, which are currently foregone because the waste is exported.

- Managing non-biodegradable wastes, residues and waste soils in Ireland will reduce greenhouse gas emissions arising from the export of the waste and will reduce any risks associated with waste shipments.
- EU waste policy requires member states to implement the waste hierarchy, which ranks energy recovery from waste, which cannot be recovered or recycled, higher than disposal of the waste. The MEHL facility will facilitate the development of modern and future waste management solutions in line with the waste hierarchy.

Scale of the Facility

Solid, non-biodegradable hazardous, non-hazardous and inert wastes, including incinerator ash are the wastes most suitable for disposal at the proposed MEHL facility. Some of the estimated quantities of these waste types suitable for acceptance at the proposed facility are detailed below.

Hazardous Waste Quantities

The EPA reported in the National Hazardous Waste Management Plan 2008 – 2012 that the general trend is for an increase in the amount of hazardous waste generated. The Plan indicated that hazardous waste generation in 2016 is expected to be 405,481 tonnes compared to 314,072 tonnes in 2006.

For the purposes of this project, an assessment was undertaken of the potential hazardous ash i.e. flue gas treatment residues from the major waste-to-energy projects which have been planned and are expected to come on-stream and be fully operational in the next six years approximately. This comprises the following four projects:

- Carranstown, Duleek, Co. Meath (currently under construction)
- Ringaskiddy, Co. Cork (currently at planning stage)
- Poolbeg, Ringsend, Dublin 4 (at construction stage)
- Provision for Waste-to-Energy in Northern Ireland

An estimated 86,640 tonnes per annum of flue gas treatment residues is expected to be generated from these four projects. The proposed MEHL facility will be capable of accepting this hazardous waste

The EPA's Technical and Economic Aspects of developing a National Difficult Waste Facility document presents predicted arisings of soil and stones containing dangerous substances. The MEHL facility will also be capable of accepting this waste type. Refer to Table 1.

Table 1 Hazardous Soils and Stones potentially suitable for Landfill, Ireland and Northern Ireland, Aggregated on 6 year basis, 2008-2025

Waste Type	2008-2013 Average Tonnes per Year	2014-2019 Average Tonnes per Year	2020-2025 Average Tonnes per Year
17 05 03* soil and stones containing dangerous substances	142,642	179,121	195,723

The quantities and sources of other non-biodegradable hazardous wastes are not possible to predict with any level of certainty.

Non Hazardous Non-biodegradable Waste

An assessment was undertaken of the potential quantities of non-hazardous residues i.e. 'bottom ash' and 'boiler ash' from the four waste-to-energy projects referred to earlier.

An estimated 261,000 tonnes per annum of non-hazardous bottom and boiler ash will be produced from the four energy from waste projects, once all four project are fully operational. Therefore, this total tonnage will not be available for intake at the proposed MEHL facility initially.

The quantities and sources of contaminated soils and other non-biodegradable, non-hazardous wastes, other than non-hazardous incinerator ash, are not possible to predict with any level of certainty. Likewise, the quantities and sources of non-biodegradable inert wastes are difficult to predict.

7 Site Suitability and Alternatives

The existing MEHL landfill facility has planning permission to infill at a rate of 500,000 tonnes per year with inert waste.

A site suitability study was carried out which examined the suitability of the MEHL site for the disposal of hazardous waste and assessed how the MEHL site compared with other landfill sites in the Republic of Ireland in terms of suitability for the acceptance of such waste.

Firstly, the capacity of the facility was reviewed in terms of the likely quantity of the target wastes that will arise over the 25-30 year period. The remaining licensed void space at Hollywood was found to be more than sufficient to accept the likely target waste quantities.

Secondly, the location and access to the sites was considered in terms of the likely centres of the target waste arisings. The Hollywood site scored highly in this regard as it is located on a national transport corridor and within the Greater Dublin Area. Its location in the Dublin-Belfast corridor is considered a significant advantage with regard to the generation of the target wastes within Northern Ireland.

In summary, the site suitability assessment concluded that the Hollywood site has suitable capacity for the acceptance of the expected volumes of the target wastes that are likely to arise on the island of Ireland over the future 25-30 years and that the Hollywood site is ideally located regarding the likely centres of these waste arisings.

The following two key documents were considered as part of the site validation exercise for the EIS. The site suitability study included an assessment of each of the shortlisted sites with respect to the World Health Organisation (WHO) Guidelines. Based upon the WHO Selection Criteria, the MEHL site enjoys a favourable rating.

EPA Landfill Manuals, Manual on Site Selection (Consultation Draft, 2006)

The purpose of the EPA manual on landfill site selection is to provide guidance on the selection of a landfill site and assist those involved in assessing the impact of a landfill on the surrounding environment including those involved in the decision making in respect of such proposals.

The guidance is primarily aimed at municipal, industrial and commercial waste landfills falling into the non-hazardous waste landfill category. With regard to the hazardous waste landfill category, the guidance may offer some assistance, but for additional screening and selection criteria appropriate to such a facility, consultation with the statutory authorities is advised as is the use of any relevant international best practice (e.g. Site Selection for New Hazardous Waste Management Facilities, WHO European Region Publication #46).

Part 5 of the manual states that “at an early stage in the site selection process exclusionary areas, i.e. areas considered to be generally unsuitable for landfill should be identified”. The following factors must be considered:

- Landfill Directive
- Regionally Important Aquifers
- Geological Unstable Areas
- Flood Plains
- Airports
- Designated Areas for Conservation
- Archaeological Heritage
- Areas of High Amenity

These factors have been considered by Fingal County Council as part of previous planning approvals and by the EPA in the granting of the waste licence for the existing MEHL landfill facility. All of these factors have been reassessed in this EIS.

Part 6 of the manual outlines criteria for site assessment and selection including land use/compatibility with surrounding land use, geology and hydrogeology, archaeological heritage/environmentally sensitive areas and traffic/access.

Centre for Advanced Engineering (CAE) Landfill Guidelines Towards Sustainable Waste Management in New Zealand (2000)

These Guidelines provide guidance on siting, design and construction with respect to new landfills and lateral expansions of existing landfills on a site specific basis. The Guidelines deal specifically with landfills intended to accept municipal solid waste. Chapter 3 of the Guidelines deals with Landfill Siting, in particular:

- Landfill siting philosophy
- Strategic planning
- Site selection process
- Landfill siting criteria

The Guidelines state that it is unlikely that any site will meet all siting criteria. Therefore the assessment of the suitability of a site for a landfill becomes a balance of trade-offs with respect to:

- Comparison of site characteristics with alternative locations
- The potential for engineered systems to overcome site deficiencies
- Methods of operation proposed for the site
- Social and cultural issues associated with the site

In order to minimise future risk to the environment from landfilling activities, primary considerations should be given to key issues and potential fatal flaws with respect to geology, hydrogeology, surface hydrology and site stability.

In the assessment which took account of the New Zealand Guidelines and the EPA Landfill Manual on Site Selection, no features of the MEHL site were identified which would render it unsuitable as a site of a hazardous waste landfill.

Consideration of Alternatives

For hazardous landfills, the EPA landfill site design manual presents two liner options, a single composite high density polyethylene liner and a double composite high density polyethylene liner and states that the option to be used shall be selected dependent on the nature of the waste materials being deposited. The design options appraisal for this facility considered both single composite and double composite high density polyethylene liners. The EPA manual also clearly states that alternative lining systems may be considered for pre-treated hazardous wastes e.g. solidification, stabilisation and vitrification of hazardous wastes. The alternative lining system comprised of Dense Asphaltic Concrete which is commonly used in Europe was also considered.

As mentioned earlier, it is proposed to use Dense Asphaltic Concrete to line the base and side walls of the cells for hazardous waste as the Dense Asphaltic Concrete lining system provides complete containment rather than controlled seepage thus making it a more effective landfill barrier than the single, composite or multiple lining systems traditionally used.

For the inert and non hazardous waste cells, it is proposed to employ standard clay lining and high density polyethylene technologies respectively as per the EPA

Landfill Site Design Manual, which is in accordance with the requirements of the Landfill Directive 99/31/EC.

8 Construction Activities

It is expected that construction work at the site will commence in 2011. It is proposed to construct and operate the MEHL facility over four phases. The hazardous waste cells will be constructed and restored over three phases, with the construction works moving from the north to the south of the site. The final restoration of each hazardous waste cell will commence when filling is completed. As each phase is developed the leachate management and surface water management systems will be extended to connect new cells to the existing infrastructure. In the period between cell construction and commencement of waste placement, drainage from the unused cell will be uncontaminated and will therefore be suitable for disposal to the surface water drainage systems.

The main structures to be constructed include the administration building, solidification plant and solidification storage building.

The solidification plant and storage building will consist of a steel frame with lightweight cladding. The initial 2m of the external walls will be precast concrete or blockwork. The floors will be insitu or precast concrete. Internal walls forming the office, canteen, laboratory and stairs enclosure will be constructed in blockwork.

The last stage of the permanent works will be the completion of any external works including laying of final paving, completion of landscaping and completion of external services i.e. lighting.

During construction of the facility, typically the workforce on site will average 25 with the peak workforce expected to be 50. A temporary site compound and access road will be located in the car parking area of the permanent works.

The site compound will provide a temporary car park allowing for 50 car spaces for site construction management and visitors.

Normal construction working hours, 07.00 – 19.00 Monday to Friday, and 07.00 – 17.00 on Saturday, will be observed. It may be necessary to work overtime including at weekends and at night at certain limited stages. Working outside normal hours may be necessitated through considerations of safety, weather, schedule or sub-contractor availability. The construction programme will be planned in such a way that noisy construction activities will be avoided outside normal hours, if possible, and the amount of work outside normal hours will be strictly controlled.

A Health and Safety Plan will be prepared which will address health and safety issues from the design stages through to the completion of the construction and maintenance phases. This plan will be reviewed as the development progresses.

The employment of good construction management practices will serve to minimise the risk of pollution of soil, surface waters or groundwater during the construction period. A construction and demolition waste management plan will

be developed and maintained for the duration of the construction phase by the main contractor prior to construction works commencing on site.

Measures will be taken to control surface water run-off and ensure mud and silt will not enter watercourses or the public road. Measures will be taken to minimise dust and maintain the site and surrounding area in a tidy state. Materials will be stored and fuels handled in a manner to avoid contamination of soil, surface water or ground water. Spill control and spill response measures will be in place. Construction noise will be kept to a minimum in accordance with the British Standard BS 5228.

It is anticipated that with the proper construction management, there will not be any significant negative residual impacts arising from the construction works.

9 Human Beings

An assessment of the human beings who potentially could be affected within the environs of the facility including homes, schools and other sensitive receptors and commercial and industrial premises was conducted.

The closest residence to the site is a detached house in its own grounds, which is approximately 300m from the centre of the current operational MEHL inert landfill facility. The next closest property is circa 340m from centre of the MEHL facility. Naul village is 3km from the MEHL site. Naul National School is 2.7km from the MEHL north west site boundary and Hedgestown National School is 2.9km to the east of the site.

One nursing home was located within 5km of the MEHL site at Oldtown.

The predominant land use in the immediate vicinity of the MEHL site is agricultural. There are a number of small industries on the roads surrounding the site which provide employment.

Economic Contribution

The estimated overall value of the project is in the order of €20 million. The construction workforce is expected to be approximately 50. In addition, construction of the facility will provide indirect employment which will include construction industry suppliers and services providers. It is estimated that there will be an additional 15 full-time staff employed in the MEHL facility. The employment provided will make a substantial contribution to the economy of the area.

Human Health

The impact of the proposed integrated waste management facility on human health was assessed.

A literature review was conducted of a number of relevant publications including *Health and Environmental, Effects of Landfilling and Incineration of Waste– A*

Literature Review published by the Health Research Board in 2003, *Review of Environmental and Health Effects of Waste Management: Municipal Solid Waste and Similar Wastes* published by the University of Birmingham / Enviro in 2004, *Population health and waste management: scientific data and policy options* published by the World Health Organisation in 2007. In summary, the literature reviewed indicated that where health problems were potentially linked to landfills it was only in the case of old, uncontrolled landfill operations. Nowadays with far greater engineering controls and much higher level of supervision of what enters landfills and management of potential emissions it is certain that potential health effects are less than in the past. Unfortunately there does not appear to be any literature specifically on the landfilling of incinerator ash. The literature review indicated that the impact on human health was minimal even where landfill sites were used for disposing of wastes presenting significantly greater hazards than those from the solidified flue gas treatment residues proposed for this facility. At present there is little or no evidence to demonstrate a link between cancer and exposure to any landfill facility.

From information contained in **Chapter 14 Soils, Geology and Hydrogeology**, 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 MEHL facility will be restored with its former landscape characteristics.

The residual impacts on groundwater are considered to be imperceptible with the proposed mitigation measures in place.

On the basis of this assessment, it has been concluded that there will be no deleterious effect on human health or on food production or agriculture as a result of water contamination.

From information contained in **Chapter 9 Air Quality**, the residual impact on air quality as a result of the proposed development will not be significant following the implementation of all mitigation measures. This applies for both the construction phase and the operational phase.

On the basis of this assessment, it has been concluded that no detrimental effect on human health or on food production or agriculture can result from emissions to air from this project.

The proposed MEHL facility does not pose any risk to human health. The potential for damage to aquatic systems is minimised by providing full containment of the hazardous wastes handled and secondary containment for any spills.

The risk to the aquatic environment is considered to be negligible.

10 Roads and Traffic

Existing Traffic

The existing predicted traffic generation from the MEHL facility is based upon its previous maximum licensed intake of waste. In 2007, the existing facility accepted approximately 23,000 loads of waste into the facility, but in 2009 approximately 2,200 loads were accepted. Therefore, there has been a 90% decrease in annual tonnage and total number of loads per annum accepted at the landfill between 2007 and 2009.

Existing Public Transport, Cycling and Pedestrian Provision

There is no public transport in close proximity to the MEHL site. Dublin Bus service 33 and 33a run through the town of Lusk, approximately 8km from the site. The 101 expressway bus service by Bus Éireann stops at various locations between Dublin and Drogheda, including stops at Balbriggan and Balrothery. This is a frequent service with buses running every 20mins during the peak periods and every 30mins during the off-peak periods.

There are currently no pedestrian or cycling facilities available along the Tooman Road, Rowan's Road, the local road to the south of the MEHL site or the local road to the west of the site.

Traffic Generated by the MEHL Facility

The waste licence and planning permission for the existing development allows for the acceptance of up to 500,000 tonnes of waste per annum. No intensification is proposed as part of the proposed integrated waste management facility.

Construction Phase

The peak construction period is 2011 when the earthworks stage of Phase 1 will commence. During this period it is assumed that there will be negligible operational traffic as the site footprint will be subject to significant reconfiguration and redevelopment.

At its peak, it is estimated that there will be 120 trucks per day (240 two-way movements) moving soil and other materials to or from the site. It is estimated there will also be 50 trips (two-way) for construction workers. Therefore, 290 trips daily (two-way) are estimated for the peak construction period. Considering a 10-hour day and applying a peak hour factor of 1.5 to take account of construction workers trips during the peak hour periods, 44 trips (two-way) has been assumed.

Throughout the life of the proposed waste facility, there will be intermittent periods of construction activity associated with the proposed development as it will be necessary for one waste cell to be constructed before the previous waste cell has reached its capacity. However, for a "worst case" scenario, it is assumed that there will be 20 trips (two-way) associated with construction activity in 2014 and 18 trips (two-way) associated with construction activity in 2024, both during the morning and evening peak hour periods of "Do Something" scenario.

Operational Phase

Assuming the facility is open for 300 days per annum, and an average of 20 tonne per load, it is estimated that there would be 83 truck loads per day (166 two-way movements) of waste being delivered to the site. This is a worst case figure.

Other daily movements will include staff, visitors and delivery and collection of cement, acid and leachate. This amounts to an additional 51 two-way trips per day. This equates an average of 25 two-way movements per hour (over a 9 hour day).

For a robust assessment, a peak hour factor of 2 has been assumed, therefore 58 two-way movements are assumed for appraisal purposes.

It is assumed that there will not be any increase in traffic levels due to the proposed development. Therefore, for both the “Do Nothing” and “Do Something” scenario, 25 one-way trips to and from the site are used for trip generation.

Traffic Impact

As there will be no change in the peak volume of traffic entering and exiting the facility, mitigation measures are not required as a result of the proposals.

There will be no significant residual impacts associated with the development from a traffic and transportation viewpoint. There are beneficial residual impacts in terms of site access as the proposed new entrance off LP01080 will be much safer, with greater visibility than the existing access off LP01090.

11 Noise and Vibration

A noise and vibration impact assessment of the proposed facility has been carried out.

A noise survey was conducted in order to quantify the existing noise environment in the vicinity of the MEHL facility. Three measurement locations were selected. The first location was in the front garden of a residential property which borders the southeast of the facility. This property is now in the control of MEHL. The range of noise levels measured at this property is representative of the noise experienced at residential dwellings to the east of this location and immediately south. The second location was at the top of a laneway to a farm house located to the south west of the facility. This location was chosen to represent the noise levels at sensitive receptors to the west of the facility. And the final location was between two residential properties located to the north west of the site, representing noise levels at receptors along this boundary of the facility.

The existing MEHL facility is currently operated in accordance with EPA waste licence (W0129-02). It is expected that the new waste licence will have the same noise limits as the current licence.

The noise levels of each phase of development were predicted and are expected to be within the EPA waste licence limits.

Traffic noise emissions were calculated from the traffic generation figures derived in Chapter 8 of the EIS and the predicted noise levels from construction and operational traffic are within the waste licence daytime limit of 55dB L_{Aeq, 1hr}.

Noise emissions from operational plant items at the closest noise-sensitive property are expected to be insignificant. The increase in traffic noise levels for 2011 in the vicinity of the roads and junctions assessed surrounding the MEHL site is less than 1dB(A). This increase will not be perceptible.

Mitigation measures will be implemented during the construction and operational works to ensure that noise from the facility will be within the waste licence limits, including:

- Limiting the hours during which site activities likely to create higher levels of noise or vibration are permitted;
- All site access roads will be kept even so as to mitigate the potential for vibration from lorries;
- Selection of plant with low potential for generation of noise and/ or vibration;
- Erection of temporary barriers as necessary around noisy processes and items such as generators, heavy mechanical plant or high duty compressors, and;
- Placing of noisy plant machinery as far away from sensitive properties as permitted by site constraints.

The predicted noise levels at the nearest sensitive locations, due to emissions from the development, are within the sites operational noise limits in all instances and no significant impacts are expected.

12 Air Quality

The likely impact of the proposed MEHL development on air quality was assessed.

Introduction

The assessment of the impacts of the construction phase on air quality considered the impact of construction activities associated with the construction of the solidification plant, new entrance and other site infrastructure and landfilling activities and construction traffic. The assessment of the operational phase considered the impact on air quality of operational traffic, fugitive emissions and odour from landfilling.

Existing Environment

MEHL undertakes dust deposition monitoring biannually at four locations in accordance with the current Waste Licence.

According to the 2009 Annual Environmental Report for the existing facility, dust deposition monitoring results were significantly below the licence limit during both monitoring rounds.

Previously, under Waste Licence No. W0129-01, when quarrying activity was also underway at the site, MEHL was obliged to undertake dust deposition monitoring once per quarter. The overall exceedance rate for all dust deposition monitoring rounds was 4% with a compliance rate of 96% since operations at the site began in 2003.

It is not proposed to accept any biodegradable waste materials. Hence the odour potential presented by, for example, municipal landfill facilities, will not occur at the MEHL facility.

Emissions from the MEHL Facility

During the construction phase, dust and traffic will be the main potential emissions to air. The Contractor will be obliged to comply with the dust deposition limits set by the existing EPA Waste Licence No. W0129-02 or any future licence.

The Contractor will compile a Dust Minimisation Plan which will be implemented. At all times, the procedures put in place will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, satisfactory procedures will be implemented by the Contractor to rectify the problem.

The UK Highways Agency 'Design Manual for Roads and Bridges' states that if daily traffic flows change by less than 1,000 annual average daily traffic or Heavy Duty Vehicle (trucks) flows change by less than 200 annual average daily traffic, then the impact on air quality can be considered neutral. During the construction phase, no routes are predicted to achieve an increase in truck numbers of this significance.

The main potential operational sources of emissions to air are operational site traffic, and fugitive emissions.

It is only proposed to accept non-biodegradable material at the MEHL facility, therefore impacts associated with the generation of odours from the decomposition of organic materials will not arise.

Hydrocarbon contaminated soils may have the potential to release fugitive odorous emissions. Operational control procedures will be implemented to ensure that such wastes are covered as appropriate to prevent potential odour emissions of this kind.

Non-hazardous wastes will be transported in either enclosed containers or covered vehicles and deposited directly into the waste cell. The distance to the closest residential dwelling is approximately 85m from the proposed non-hazardous waste cell. No significant odour impact as a result of the landfilling of non-hazardous waste is therefore anticipated.

Hazardous wastes will either be transported directly to the solidification plant or to the hazardous waste cells according to the waste type and characterisation. Hazardous waste in the form of flue gas treatment residues specified for pre-treatment in the solidification plant will be transported in fully enclosed tankers to the site and will be pumped via an enclosed system into a steel silo, inside an enclosed building. From the silo the residues will be pumped directly into the mixing unit. The residues will then be mixed, bagged, cured and deposited into

the cell. There will be no odour potential from the flue gas treatment residues or the solidification process.

Hazardous wastes which do not require pre-treatment in the solidification plant will be transported to the site in covered or fully enclosed containers, in accordance with regulatory requirements. The wastes will then be deposited directly onto the hazardous cell floor. The closest residential dwelling is located at a distance of approximately 284m from closest hazardous waste cell therefore no significant odour impact is anticipated.

As both hazardous and non hazardous leachate will be stored in closed concrete tanks, no odour impact from the storage of leachate is likely to occur.

13 Climate

The impacts of the proposed integrated waste management facility on the climate and on Ireland's production of greenhouse gases were assessed.

Ireland is currently faced with meeting two targets with respect to greenhouse gas emissions. The first of these is the Kyoto Protocol to the United Nations Framework Convention on Climate Change which limits Ireland's total national emissions to an average of 62.8 M tonnes of carbon dioxide per annum in the period 2008 – 2012.

In January 2008, the EU Commission proposed to deliver a 20% reduction in total EU greenhouse gas emissions by 2020 (relative to 1990 levels). This was agreed by the EU Parliament and Council in December 2008.

In March 2009, the Environmental Protection Agency revised its greenhouse gas projections based on the economic downturn. The projected annual average emissions for 2008-2012 including specific measures due to be introduced by the government are 58M tonnes of carbon dioxide. This projection is 4.5M tonnes less than the Kyoto limit. Carbon dioxide emissions from road and rail transport in the EU are included in each Member State's national target.

Macroclimate

The climate of a large geographic area such as Ireland is defined as a macro-climate. In general the proposed MEHL development shall have a positive impact on greenhouse gas emissions and carbon dioxide levels for the following reasons:

- The MEHL facility will facilitate the development of modern and future waste management solutions in line with the waste hierarchy. The use of energy from waste facilities for the management of municipal waste will reduce the amount of biodegradable waste being landfilled. This, in turn, will reduce gaseous emissions of methane and carbon dioxide produced as a result of the decomposition of biodegradable material in the landfills.
- Energy from waste plants generate electricity which replaces the requirement for electricity generated by using fossil fuels.
- As the proposed facility will eliminate the requirement to ship certain hazardous wastes abroad for disposal, it is estimated that a saving of 3,100

tonnes of carbon dioxide will be made per year. This is based on an average of 106,000 tonnes per year of certain hazardous wastes being transported to Germany by sea (<http://www.carbonfund.org/business/calculator>). Although CO₂ savings cannot be accurately calculated, there is the potential for reductions in CO₂ emissions due to the combination of reduced truck miles required for waste transport when compared with that required for waste export and the proximity of the facility to major waste generators. The facility will accept non-biodegradable wastes only. It will therefore not generate landfill gas, a greenhouse gas.

Microclimate

The climate in the immediate area is known as the micro-climate.

Given that the site is already in use as a landfill for inert waste and that there will be no increase in annual tonnage of waste above the current licensed limit of 500,000 tonnes per annum, there will be not be a significant impact on microclimate.

No significant variation in distances travelled by vehicles carrying the solid, non-biodegradable hazardous wastes proposed for acceptance at the MEHL facility are expected between the current situation and the proposed development. Furthermore, capping and landscaping of the site will be a positive measure.

No climate mitigation measures are required for the proposed scheme as no negative impacts are predicted.

14 Landscape and Visual Assessment

The visual and landscape impacts of the proposed MEHL facility on the surrounding area have been assessed.

Impacts on landscape character and features and views are considered in the impact assessment. Impacts on landscape character relate to changes in the particular identity of coherent landscape areas. Impact on landscape features includes the direct effects on the fabric of the landscape which may be affected by the development. Impacts on views are where there are particular receptors (e.g. residential, recreational or road users) that will experience a noticeable change in their view due to the proposed development.

Impacts on the character of the landscape include responses, which are felt towards the combined effects of the new development. The significance of impacts on the perceived landscape character will depend mainly on the visual experience of the landscape and on the number of people affected, but also on judgements about how much the change will matter.

According to the Fingal County Development Plan, the area in which the MEHL site is located is part of the North Fingal Uplands which forms a high lying area to the north of the County around Naul. The topography of the area is quite pronounced and falls from west to east. The MEHL site is situated within a rural, agricultural landscape containing local highpoints such as a Hillfort in Knockbrack to the north. To the west is the summit of Hollywood Great of which

the site forms the eastern flank. The quarried area of the site has effectively removed part of the north eastern portion of the hill and part of the ridge, although generally the ridge remains intact and backgrounds the quarry to the south. The lowest part of the site is on the north eastern boundary. The northern boundary parallels a stream and local valley that separates Hollywood Great from Knockbrack. On the eastern boundary (beyond the quarried area) the site falls steeply in an easterly direction towards relatively low lying agricultural lands.

The landscape within the environs of the site is regarded as sensitive given that it occurs within a High Amenity Area, designated in the Fingal County Development Plan 2005-2011 and there a number of protected views within the vicinity. However, any assessment of the impact of the proposed development on this sensitive landscape must be set within the context of the existing old quarry and MEHL site, which is a feature of the local area. The proposed development will not significantly alter the character of the existing landscape. When the landfill activities cease and the site is progressively restored to amenity use, there would be a positive impact on the landscape character as disturbed land and the hill profile is reinstated

The site will be progressively restored and as each cell is filled it will be capped and seeded. Restoration will commence in the northern portion of the site and move southwards. The final restoration will comprise the construction of a cap for cell NH2 while the administration building and car park will be removed. The final site profile will reinstate the ridgeline removed by the quarrying activity.

The existing MEHL site is an established feature of the local landscape and is part of the existing view and character. It is not highly visible from the east, south or west due to the topography of the area and intervening vegetation. The most open views occur from elevated land to the north and north west where there are ten residential properties that overlook the site.

The principal change to existing views, as a result of the proposed development, will be increased activity, during the initial construction stage where activity will draw attention to the site. This will give rise to slight/ moderate and negative impact to properties with open, elevated views. During the operational stages the progressive infilling and restoration of the site will not significantly change the character and nature of existing views and there will generally be a slight, positive impact in the medium term.

Within the context of the existing licence and planning permission the impact will be slight.

There will be an imperceptible-slight impact associated with lighting to those properties located on the LP01080.

While there are preserved views in close proximity to the site none directly overlook the proposed development and the impact will be imperceptible.

Mitigation Measures

In order to minimise or reduce the potential visual impacts of the proposed development, the following mitigation measures are proposed during the initial construction phase of the development.

Screened planting is proposed to the east of the solidification plant and car park area. This planting will be implemented during the initial construction phase. The planting will serve to screen views of the site buildings, from the east and long views from the LP01080 road to the south of the site and serve as an ecological habitat.

The proposed screen planting will comprise a mix of native species.

All perimeter hedgerows will be retained with the exception of the boundary adjoining the site entrance area where a small section will be removed to facilitate construction works and sightlines. A hedge will be reinstated at the proposed entrance. Species chosen will be similar to those currently within the existing hedgerow. New hedgerow planting will be carried out along the LP01080.

Where there are gaps in the existing hedgerow on the western boundary these will be thickened to maximise screening from the County road to the west. Boundary hedges will also be thickened along the southern boundary.

The site contains one internal hedgerow in the south east corner. This will be retained except for a small break in the hedge required for the construction of proposed site access road.

Scrub planting will be established around the proposed wetlands to the north east corner to enhance the ecological benefits.

Progressive restoration will bring the site back to its original condition before quarrying commenced leaving a natural contoured site that fits the site context.

15 Flora and Fauna

A flora and fauna impact assessment of the proposed development was carried out.

There are no environmental designations pertaining to the site nor is the site likely to be designated in the future. There are four designated conservation areas within 10km of the site. However these sites are some distance away and direct impacts on these sites are unlikely to occur as a result of the proposed development.

As there will be no discharge of contaminated waters from the landfill site into surface water network or seepage into groundwater system, there will be no direct or indirect impact on Rogerstown Estuary cSAC and SPA, which is the nearest designated conservation area located 7.5km to the east.

A survey of flora and fauna on the site was carried out by Natura Environmental Consultants on the MEHL site on 17 May 2010. A survey of peregrine falcon on the site was undertaken by R and D Avian Ecology over the summer of 2010.

Two hare were observed on site. Other mammals not seen but likely to use the site include fox and rabbit. Otters occur on many Irish watercourses and are likely to occur along the stream on the northern site boundary as it is a tributary of a salmonid watercourse. The woodland edge along the stream would be suitable for badger and other small mammals, including rabbit and hedgehog.

The following habitats were found on the site:

- Spoil and Bare Ground
- Exposed Calcareous Rocks
- Recolonising Bare Ground
- Eroding Upland Streams
- Mixed Broadleaved Woodland/Scrub
- Artificial Lakes & Ponds

During a site visit on 18th June 2010, a female falcon was recorded roosting on the southern perimeter of the quarry, whilst the male was observed roosting on the western quarry face. Both birds were observed from a vantage point within the quarry and no breeding behaviours and activity were recorded. A second site visit took place during the 29th June 2010 where a single adult peregrine was observed perched on the southern perimeter of the quarry, this bird took flight and flew south away from the quarry following 20 minutes of observation from the cliff top. No breeding behaviours or activity were recorded and no young peregrines were recorded.

Overall, the MEHL site is evaluated to be of county ecological importance as per the National Roads Authority Ecological Evaluation Scheme due to the presence of peregrine falcon and the exposed limestone cliff face.

The open water bodies on the site and exposed glacial material with vegetation, created as a result of previous quarrying activity, have potential to significantly expand the local biodiversity over time.

Mitigation measures as described below will be implemented to reduce the impact on flora and fauna of the development.

There will be no permanent development works, other than the removal (in a controlled manner) of an existing temporary stockpile of soil, or any disturbance of existing ground within 10m of the edge of the stream flowing along the northern boundary of the site. This will preserve into the future a 10m wide (minimum) riparian corridor or 'leave strip' which is important to the protection of local aquatic ecological integrity and general biological diversity.

Alternative natural or artificial ledges will be installed on the south-western side of the limestone cliff face as peregrine roosting or potential nest sites, as far away from the landfill construction as possible, to minimise any potential disturbance to peregrine.

A constructed wetland system associated with the attenuation ponds will over time provide habitat to add to the local habitat and species diversity. A wetland area at the southern end of the site, which includes an open water body fringed with vegetation will be retained. This will help to increase local biodiversity.

In the longer term, if monitoring results determine it necessary, the creation of an additional nest site away from the location of the MEHL site will be investigated in consultation with landowners and the National Parks and Wildlife Service. This additional site could be located in another quarry or on a man-made structure such as a church/cathedral. Prior to the selection of an alternative nest site location, further monitoring of the peregrine within nearby quarries will be required to better understand their distribution and breeding behaviour. This will

help inform the selection of the best locations for alternative peregrine breeding sites.

A constructed wetland system associated with the attenuation ponds will, over time, provide wetland habitat and add to the local habitat and species diversity. Details of the constructed wetland system will be finalised at the detailed design stage in consultation with a suitably qualified wetland ecologist and the Board of Inland Fisheries Ireland.

The construction and operation of the proposed MEHL integrated waste facility will not result in any additional direct loss of habitat. If considered necessary, following monitoring, the creation of an alternative peregrine nest site away from the quarry at a suitable location within 5km of the site will compensate for adverse impacts to this species.

The retention of an existing wetland area near the southern boundary of the site into the MEHL site will add to the biodiversity of the site. The constructed wetland area will provide habitat for a range of wetland species over time.

There will be no residual significant adverse impacts on the local surface watercourses or on the groundwater resource, provided the mitigation measures described in **Chapters 14 Soils, Geology and Hydrogeology** and **15 Surface Water** are fully implemented and monitored. As a consequence, there will be no significant adverse impact on the Rogerstown Estuary cSAC/SPA located more than 7.5km to the east.

16 Soils, Geology and Hydrogeology

An assessment of the potential impacts to the soils, geology and hydrogeology from the proposed development was undertaken for the site and the surrounding area. Potential impacts from the development were established and mitigation measures were developed. Due regard was had to guidance from the Geological Survey of Ireland, the Institute of Geologists of Ireland and the National Roads Authority.

Existing Environment

The existing environment was assessed from publically available literature, historic site specific information and the extensive field investigations carried out as part of this assessment.

The existing baseline is summarised below:

- Bedrock beneath this former quarry site can be divided into an aquifer unit and an aquitard unit. An aquifer is a permeable layer of rock or soil that can both store and transmit water in significant quantities. An aquitard is a layer of rock or soil of low permeability that can store groundwater, but is only capable of transmitting water slowly between aquifers. Permeability is the ease with which water can pass through a material.
- The aquifer unit is classified by the GSI as a Locally Important Aquifer and the aquitard as a Poor Aquifer.

- The majority of the site is underlain by the aquitard. The aquifer outcrops in the southern part of the MEHL site and then dips to the north, where it is covered by at least 60 m of the aquitard strata in the northern parts of the site.
- The permeability of the aquifer unit is much higher than that of the aquitard. The aquitard confines or isolates the groundwater within the aquifer.
- There are at least two faults in the central part of the site, a north-south aligned fault which appears to restrict groundwater movement and an east-west aligned fault which does not.
- Groundwater flows in a generally south easterly direction from the site.

The Bog of the Ring collection of groundwater wells to the north east of the site was highlighted by consultees as an important water supply. The MEHL site lies approximately 1 km outside the Source Protection Area for the Bog of the Ring and approximately 3km from the well locations. The source protection area is the area around a well, or wells, which has tighter controls on activities which can take place in it, in order to avoid contamination of the well or wells. As groundwater beneath the site is flowing to the south east away from the Bog of the Ring well-field it is not believed to be at risk from any potential contamination arising from the proposed development.

Geological Heritage Areas are designated as part of the Irish Geological Heritage Programme as part of a partnership with the Geological Survey of Ireland (GSI) and the Department of The Environment, Heritage and Local Government. The MEHL quarry has been designated a Geological Heritage Area.

Potential Impacts

The main potential impacts to geology and hydrogeology from the proposed development are:

- Potential contamination of the aquifer and local wells
Potential contamination of the aquifer may arise from both general accidents such as leaking fuel containers kept on the site and from leaking leachate from the placement of the waste.
- Loss of the Geological Heritage Area
The MEHL quarry is to be back filled as part of its current planning permission and therefore the exposed quarry faces will eventually disappear in a 20 to 30 year period.

Proposed Mitigation Measures

A number of mitigation measures have been developed and incorporated into the design of the proposed development.

To minimise the risk of aquifer contamination the placement of the waste with regard to the distribution of the aquifers on the site will be as follows:

- The inert and non-hazardous waste cells will be located in the part of the site underlain by the Locally Important Aquifer
- The hazardous waste cell will be located in the part of the site underlain by the poor aquifer

The following mitigation measures will be employed:

- All waste will be placed above the water table.
- The waste streams of inert, hazardous and non-hazardous waste will be segregated to ensure that hazardous waste cannot enter the inert or non-hazardous cells.
- The inert material will be placed in cells lined with low permeability clay 1 m thick which will be designed in line with EU regulations and EPA guidance.
- Non-hazardous waste cells will be lined with a 2 mm thick high density polyethylene liner and 1 m thick low permeability clay which will be designed in line with EU regulations and EPA guidelines.
- An additional 1 m of low permeability material will be placed beneath the liner of the cell for non hazardous waste to further enhance the natural protection
- A Dense Asphaltic Concrete liner will be constructed for the cells in which hazardous waste is to be placed. The liner will be designed to meet EU Landfill Directive requirements.
- Flue gas treatment residues will be solidified before being placed in the cells to lock in certain heavy metals.
- Temporary covers will be installed on the hazardous cells, as required, in order to minimise leachate generation.
- A leak detection system will be provided below the Dense Asphaltic Concrete liner to ensure that in the unlikely event of a leak, the leak will be detected early.
- As part of the waste licence conditions, groundwater will be monitored on site.

A detailed risk assessment was undertaken to quantify the potential risks to groundwater. For the purposes of the assessment, an imaginary receptor well was located downstream of the proposed MEHL facility on the MEHL land ownership boundary. The assessment demonstrated that when the proposed mitigation measures are put in place, water quality at the imaginary well would meet drinking water standard.

The MEHL quarry is to be back filled as part of its current planning permission. However, given that the restoration of the MEHL facility will be phased over a 25-year timeframe, the rock outcrops in the quarry wall will remain exposed for maximum duration. Following consultation with the GSI, MEHL will:

- i) provide a viewing platform from which the quarry faces can be viewed in a safe environment
- ii) provide an information panel to explain the geological features
- iii) maintain the exposures for as long as is practical and
- iv) allow for professional and/or student access where the necessary insurances are in place.

17 Archaeology, Architectural and Cultural Heritage

Moore Group was commissioned to determine the cultural heritage resource of the area, to determine potential impacts of the proposed development, propose mitigation measures and provide an indication of the likely residual impacts upon the cultural heritage of the region.

The assessment of impacts upon the archaeological, architectural and cultural heritage was based on a desktop study of published and unpublished documentary and cartographic sources, followed by a field survey and consultation with statutory stakeholders.

The assessment noted an important site in close proximity to the proposed development, a Church and graveyard to the south west. This site is protected under Irish legislation as a National Monument as well as being on the Record of Monuments and Places and is listed in the Fingal County Council Record of Protected Structures.

A field inspection was carried out on the 4th June 2010. In addition to inspecting the subject site, the immediate area surrounding was also visited. The nearby church and graveyard, Walshestown House and other relevant sites in the vicinity were either investigated or reviewed during the visit. Field-walking in the area of the quarry revealed nothing of additional archaeological significance. There were no features of note within the field where the new access road is proposed.

There will be no direct negative impacts upon the known architectural or cultural heritage resource. There will be no indirect negative impact on nearby architectural or cultural heritage sites.

There will be a positive impact upon known architectural or cultural heritage sites in the vicinity of the subject site, as there will be a reduction in the visual impact on cultural heritage sites when the quarry is filled in and landscaped.

Given that the proposed development site is a former quarry that is currently in the process of accepting waste under EPA licence W0129-02 and this proposal relates to its further development as a facility to accept waste, there is limited potential for impact upon the architectural or cultural heritage sites, features or deposits during the operation of the facility.

Therefore there is no potential for impact during the course of deposition of waste material within the site.

Part of the application includes the construction of a new entrance to the site, from the road to the south, crossing a previously undisturbed green field area. No previously unrecorded cultural heritage sites were noted in the vicinity of the proposed site access. However given the elevated position with expansive views to the south and the density of archaeological sites located on hilltops to the north there is a possibility that previously unrecorded archaeological deposits might be found during the construction of this roadway.

The assessment noted the church and graveyard to the south west. As previously noted this site is protected under Irish legislation as a National Monument as well as being in the Record of Monuments and Places and being listed in the Fingal County Council RPS Record of Protected Structures. This protection extends to

the gated entrance to the site. The location of the proposed new entrance to the MEHL facility will ensure that trucks will not pass the church and graveyard site and this will serve to reduce the potential for impact upon this site.

It is recommended that groundworks associated with the new access road be monitored by a suitably qualified archaeologist, ideally under licence to the Department of Environment, Heritage and Local Government. It is further recommended that proposed groundworks in the north-eastern portion of the site where there is a possibility of pre-quarry, undisturbed strata being present, be monitored by a suitably qualified archaeologist, ideally under licence to the Department of Environment, Heritage and Local Government. In the event that an archaeological feature is discovered, all work in the vicinity would cease and contact would be made with the National Monuments Section of the Department of Environment, Heritage and Local Government on how best to proceed. A licence from the Department would be required to allow the full recording and excavation of any archaeological features or deposits which may be exposed.

18 Material Assets

An impact assessment of material assets was undertaken for the construction and operation phases of the proposed development. Material assets are defined by the EPA as resources that are valued and that are intrinsic to specific places. They may be either of human or natural origin and the value may arise for either economic or cultural reasons. Cultural heritage is addressed above in Section 17.

Electricity usage on site currently is for lighting (interior and exterior), heating and electronic equipment. Electricity services are provided to the site by ESB. A medium voltage 38kV electricity supply is currently available on site. Diesel fuel is used for on-site vehicles and some road vehicles. 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.

There is an existing potable water supply on site. Water is used for dust and mud control purposes in water sprinklers, wheelwash, bowser and roadsweeper. Water for these purposes is obtained from mains supply and surface water from the base of the quarry. Water used in the wheelwash is recycled to reduce water requirements. Foul water is serviced by a septic tank, which is emptied regularly and sent by tanker to a receiving sewage treatment works.

During the initial construction phase, electricity for the site compound will be connected with the agreement of the ESB. Site lighting will be installed around the compound and proposed buildings. The requirement for mobile diesel generators will be limited to pumps and welders. A diversion of overhead lines and the construction of a substation will be undertaken to provide a mains supply of electricity to the site.

During the construction phase of the project, water will be required for consumption by the construction personnel, for general construction works and for the construction of the concrete elements of the buildings. A potable water supply for use within the contractor's accommodation will be provided from the

existing public water supply and water for other uses will be sourced from site ponds, if feasible.

A combination of imported materials and site deposits will be used to complete the capping layer and restore the site to its previous condition. On-site deposits of boulder clay, with naturally low permeability, will be tested and may be used to form the clay liner and build the engineered inert landfill cells if it has the appropriate properties.

The impact of natural resource use on site will be slight.

Where possible on-site materials will be used for site engineering works.

Existing stockpiles of low permeability clays and subsoils on site will be used in the lining and capping systems. On-site deposits of boulder clay, with naturally low permeability, will be tested and may be used to form the clay liner and build the engineered inert landfill cells if it has the appropriate properties.

When the MEHL integrated waste management facility is in operation, it will have a significant positive residual impact on material assets by avoiding the need to export hazardous waste to Europe for disposal.

The proposed development will exceed the lower tier threshold under the Seveso Directive, due to the quantity of materials classified toxic to the aquatic environment, which will be stored. This status, as a lower tier Seveso site, will not have any consequences for land use in the surrounding area.

The proposed development will take place on land within the ownership of MEHL which currently operates a landfill at this location. There will be no intensification of use as a result of this proposal. It will not result in the loss of family homes.

A landfill for inert waste has operated at the MEHL site since 2003, and previously the facility was a quarry. As the proposed MEHL facility will accept non biodegradable waste only, the typical potential nuisances impacts associated with municipal waste landfills such as landfill gas, odours and vermin will not arise. As a result, it is difficult to predict with any certainty the effect, if any, of the proposed development on nearby property values.

The proposed design, construction and operation of the MEHL integrated waste management facility will be in accordance with the planning and waste licence conditions, and this will ensure the development does not have a significant impact on the community or the environment. MEHL proposes to pay contributions into a community gain fund related to the tonnage and waste classification of materials taken into the site which are either non-hazardous or hazardous in nature. The amount of that contribution will be consistent with other similar community gain models in existence.

When the MEHL integrated waste management facility is in operation, it will have a significant positive economic residual impact by providing substantial capacity for landfill of certain hazardous wastes and avoiding the need to export this hazardous waste to Europe for disposal. It will also facilitate the development in Ireland of modern waste infrastructure. Potential cumulative impacts of the proposed MEHL development with the Fingal County Council Landfill Project were considered in relation to flora and fauna, archaeology, air quality, noise, surface water and groundwater, however, no related cumulative impacts are anticipated.

19 Other Impact Headings, Cumulative Impacts and Interactions

The overall cumulative impact of the development will be the provision of essential waste management infrastructure, which will facilitate economic development. It will improve economic competitiveness and the development of modern waste management infrastructure in Ireland, and will result in a reduction in the quantity of hazardous waste to be exported from Ireland. This will assist in complying with EU waste policies including the proximity principle and self sufficiency in waste management. The facility will also provide additional capacity for the landfill of solid non biodegradable waste. An important impact will be additional jobs and an increased economic activity in the north Dublin region during the construction and operation of the facility.

20 Viewing and Purchasing the Environmental Impact Statement

The full Environmental Impact Statement, of which this is a non-technical summary, can be viewed and purchased at the offices of:

An Bord Pleanála
64 Marlborough Street
Dublin 1

The Planning Department
Fingal County Council
County Hall
Swords
Fingal
Co. Dublin

The EIS may also be viewed or down-loaded free of charge from the website specifically created by MEHL for the planning documents:
www.mehlwastefacilitysidapplication.ie

It can also be requested by contacting MEHL:

- Via email info@mehl.ie
- Telephone 01 - 8433744