SECTION A NON-TECHNICAL SUMMARY

A Non-Technical Summary is to be submitted. The summary should include information on those aspects outlined in the Guidance Note and must comply with the requirements of Article 12 (1) (u) of the Waste Management (Licensing) Regulations, S.I. 395 of 2004.

The Non-Technical Summary should form **Attachment A.1**.

Attachment A1 – Non Technical Summary

A.1.1 Nature of Facility

The proposed Fingal Landfill has been developed in a coherent and planned manner by the Dublin Local Authorities in-keeping with the planning and waste management policies of the region. Section 18.9 of the Waste Management Plan for the Dublin Region 2005 – 2010 includes the objective:- *"to provide a landfill (of up to 10 million tonne capacity) in accordance with the Dublin Landfill Siting Study 2004*". The proposed Fingal Landfill also conforms to Policy 18.10 of the Waste Management Plan, which seeks to ensure the Dublin Region can manage its own waste in a self-sufficient manner.

The proposed Fingal Landfill development will comprise of a new fully engineered landfill at a greenfield site in north County Dublin. The landfill disposal area will incorporate approximately 57 hectares to be developed in discrete lined cells, over approximately eleven construction phases and to include the provision of leachate collection and treatment and gas collection and utilisation. A remaining area of approximately 153 hectares is to be used as a buffer area for screening/ landscaping of the landfill**.** This area will also incorporate the landfill site infrastructure including: new county road and landfill access road, public recycling centre, administration building & car parking, maintenance facilities, wheel washing facilities, weighbridges, waste inspection and quarantine areas, gas compound, leachate treatment facilities and surface water management facilities.

The landfill will cater for a maximum annual tonnage of approximately 500,000 tonnes of waste in the initial development period. Following the development of the proposed Waste-To-Energy (WTE) facility at Poolbeg this will reduce to approximately 300,000 tonnes. The landfill will have enough capacity to serve the Dublin Region as a non-hazardous landfill for up to 30 years depending on the progress of the implementation of other elements of the Dublin Waste Management Plan.

Geology/Hydrogeology

The bedrock geology of the North Fingal area is varied. Apart from Lower Palaeozoic Rocks which lie to the north of Bog of the Ring, the geological succession is Carboniferous aged.
The bedrock geology of the study area was established by ground investigations which encountered limestones, siltstones and mudstones inferred to be of the Balrickard, Loughshinny, Lucan, Naul and Walshestown Formations. In general, depth to bedrock ranged from approximately 5m to 34m below ground level (mbGL) within the study area.

The overburden within the study area typically consists of glacial till deposits overlying bedrock and in some places sand and gravel deposits. The depth of overburden was found to

vary considerably with typical thicknesses range from 15m to 25m, thinning to the east and southeast.

The deepest clay deposits were found within the centre of the study area (where the proposed landfill footprint has been located) with thicknesses up to 27.25m encountered. Sand and gravel deposits vary across the study area with thicknesses ranging from absent to 10m. These areas lie outside of the landfill footprint.

The landfill footprint has been specifically located such that it is in an area where groundwater has a low vulnerability to pollution due to the presence of thick (at least 10m) low permeability (clay) subsoils and where a minimum of 10m of low permeability clay will be retained below the footprint when excavation occurs.

A.1.2 Class or Classes of Activity

The principle class of activity proposed for the Landfill is Class 5 of the Third Schedule of the Waste Management Act (1996 to 2003) namely:

'*Specially engineered landfill, including placement into lined discrete cells which are capped and isolated from one another and the environment'.*

Other activities proposed for the proposed landfill are covered under the following classes of the Third and Forth Schedule:

Third Schedule (Waste Disposal Activities)

Class 4: *Surface impoundment, including placement of liquid or sludge discards into pits, ponds or lagoons*

This activity is limited to the management of leachate and surface water at the facility.

Class 6: *Biological treatment not referred to elsewhere in this Schedule which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of this Schedule*

This activity is limited to potential future treatment of leachate at the facility.

Class 7: *Physico-chemical treatment not referred to elsewhere in this Schedule (including evaporation, drying and calcination) which results in final compounds or mixtures which are disposed of by means of any activity referred to in paragraphs 1. to 10. of this Schedule (including evaporation, drying and calcinations).*

This activity involves the treatment of leachate by settlement, filtration or by chemical precipitation or other physio-chemical means at the leachate treatment plant.

Class 11 Blending or mixture prior to submission to any activity referred to in a preceding paragraph of this Schedule

This activity involves the mixing of sludge with other wastes during the landfilling process to ensure that the waste body is as homogeneous as possible.

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.

This activity is limited to the temporary storage of unacceptable wastes in the waste quarantine area prior to dispatch off-site to an alternative facility.

Fourth Schedule (Waste Recovery Activities)

Class 3: Recycling or reclamation of metals and metal compounds

This activity involves the storage of metals and metal compounds, including WEEE at the site.

Class 4: Recycling or reclamation of other inorganic materials

This activity is limited to the use of material reclaimed from construction and demolition waste for the purposes of fill, daily cover, road construction and other uses and the storage of inorganic materials at the facility prior to reuse or recycling off-site.

Class 9: Use of any waste principally as a fuel or other means to generate energy

This activity is limited to utilisation of landfill gas at the facility.

Class 11 Use of waste obtained from any activity referred to in a preceding paragraph of this Schedule

This activity is limited to the use of material reclaimed from construction and demolition waste for the purposes of fill, daily cover, road construction and other uses.

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.

This activity involves the temporary storage prior to use of material reclaimed from construction and demolition waste for the purposes of fill, daily cover, road construction and other uses. This activity also includes for the temporary storage of material at the public recycling facility for the purpose of recycling pending collection.

A.1.3 Quantity and Nature of Waste

The types of wastes to be received at the landfill for disposal include:

- Non-Hazardous Municipal Waste
- Industrial Non-Hazardous Waste
- Construction and Demolition Waste
- Biological sludge produced as a waste by-product of the on site leachate treatment system
- Residues from Water and Wastewater Treatment
- Non-hazardous bottom ash from non-hazardous Waste to Energy Plants

Waste for disposal will be accepted only from permitted waste hauliers. No hazardous waste will be accepted for landfill at the facility.

The quantities of waste to be accepted at the proposed landfill site for disposal are given in the table below.

WASTE TYPE	TONNES PER ANNUM (proposed) (Notes1, & 2)
Household	200,000
Commercial	148,000
Sewage Sludge	10,000
Construction and Demolition	50,000 Note 3
Industrial Non-Hazardous Sludges	2,000
Industrial Non-Hazardous Solids	90,000 Note 4

Note 1. While the total quantity of waste proposed to be accepted does not exceed 500,000 tpa, flexibility is sought on the allowable quantities to be accepted of the individual non-sludge waste types shown in the table.

Note 2. The acceptance of 500,000 tpa will be reviewed downwards following the commencement of WTE in the Region.

Note 3: During the baseline assessment, an area within the site where previous disposal of waste took place was discovered in the south-east of the site. Trial pits and boreholes drilled in this area indicate that this material is principally construction and demolition waste. As part of the waste licence application a risk assessment has been prepared and a proposal made to the EPA (Refer to Attachment H.1) that this area be remediated, capped and monitored since there is no evidence at this stage of negative environmental impacts from this site. In the alternative, this material will be removed and landfilled within the proposed engineered landfill. The capacity requirement for this material (in addition to the stated construction and demolition quantities of 50,000 tpa) would only be in Year 1 of operation.

Note 4: It is proposed to accept non-hazardous bottom ash from non-hazardous waste to energy treatment plants. The bottom ash material from these plants is non-hazardous and is normally recycled and used as a road construction material. While recycling of this material is the intention of all plant operators in Ireland at present and they do not intend landfilling this

material, provision for the storage of this material at Fingal Landfill will be required. Storage provision will be required for the material for a period of time to allow for CO_2 stabilisation before the recycling activity can commence. If Fingal Landfill is to accept this material in the short or long term, separate cells will be provided for the storage of the material and separate leachate collection systems installed. The leachate concentrations from bottom ash are significantly lower than that from fresh waste landfilled since a minimal organic fraction remains, similarly landfill gas generation from this material is predicted to be minimal. No leachate recirculation systems or sacrificial vertical landfill gas collection systems will be installed within these cells. In drier climatic conditions the spraying of water over the ash may be required in order to mitigate against dust generation.

The proposed waste categories and quantities of waste to be accepted at the public recycling facility are given in the table below.

Material	Approximate quantity per annum
Textiles (tonnes)	15
Glass (tonnes)	65
Aluminium Cans (kg)	4,090
Steel Cans (kg)	6,050
Heavy Cardboard (tonnes)	75
Wood (tonnes)	755
Metal (tonnes)	185
Paper/Magazines (tonnes)	30
Tetra Pak (tonnes)	1
Plastic Bags & Bottles (tonnes)	40
Oil (litres)	12,150
Batteries Lead/Acid (kg)	23,315
Batteries Primary (kg)	510
WEEE (tonnes)	400
White Goods (including Fridges) (tonnes)	100
Gas Cylinders (No.) (tonnes)	365
Paints (tonnes)	0.5
Fluorescent Light Bulbs (tonnes)	0.5
Green Waste (tonnes)	1,500
Household C&D Waste (tonnes)	500
Bagged Household Waste (for final disposal to landfill) (tonnes)	5,000
Estimated Total (Tonnes)	8,800

A.1.4 Raw and Ancillary Facilities

The following indicates the typical amounts of materials to be used on site to facilitate the operation of the landfill:

The annual usage of fuel and energy at the site has been estimated from resources used at Balleally Landfill. The table below presents a summary of the quantities of electricity and diesel used on the Balleally site for the 2005 period. Electricity consumed on site was used for the purpose of heating, lighting and for the operation of office equipment.

Resource	Usage (per Annum)
Electricity	115,050 KWh
Diesel	313,320 L

A.1.5 Site Plant, Methods and Operating Procedures

Introduction

The proposed development of the landfill facility covers an area of approximately 210 hectares and comprises two distinct areas:

- Buffer zone consisting of landscape/screening/infrastructure areas; and
- Waste disposal area

The waste disposal area will cater for up to 9,400,000 tonnes of waste over its lifetime. The waste disposal area will consist of approximately 20-25 individual cells each with approximate areas of 2.5 ha or 25,000m^2.

Buffer Zone and Excavated Material

The buffer zone surrounding the proposed waste disposal area serves three main functions. The first is to provide a physical separation between the landfill area and local residents; the second is to provide an area for the disposal of excavated material for screening and landscaping purposes and the third is to provide an area for associated site infrastructure.

Approximately 3,000,000 m^3 of soil and rock will be excavated from the site over the lifetime of the development. As the material is removed it will be deposited in the buffer zone and shaped, seeded and planted so that a natural landscape will be created to mitigate against negative views and operational and construction noise from the landfill.

The proposed screening/landscaping areas will have a maximum height of 7m and will cover a total area of approximately 60 ha.

Waste disposal area and phasing of cell construction

The waste disposal area comprises an area of approximately 57 hectares in size and will be developed in a number of construction phases, with construction phases typically occurring every 2-4 years depending on waste intake volumes. Between 20-25 individual cells in total will be constructed with a number of cells being constructed in each phase. The cells will have areas of up to 2.5 hectares and will on average hold 400,000 tonnes of waste and it is anticipated that it will take between 1 and 1½ years to fill each cell with the initial cells being filled in less than a year.

The phasing sequence will allow for the progressive use of the landfill area so that construction, operation and restoration can occur simultaneously within the site.

Leachate Collection

Leachate is generated as a result of rainfall on the landfill, which percolates through the solid waste thereby becoming contaminated by various chemical and biological processes within the waste and also includes moisture, which leaches directly from the waste.

Leachate will be collected from each individual cell and either recirculated back into filled cells or pre-treated on site. A leachate management system will be installed which will include monitoring, collection and recirculation infrastructure, removal of leachate from each discrete cell, 7 day storage capacity of raw leachate in a covered fully engineered lined tank, primary treatment system to allow for discharge of treated leachate to sewer for final treatment at a municipal wastewater treatment facility off site. The detailed design, installation and commissioning of the leachate management system will be in accordance with the EPA Landfill Site Design Manual.

Extraction and Utilisation of Landfill Gas

The biodegradation processes in a landfill produces gas, which is primarily composed of methane, carbon dioxide and water vapour. Typically gas will continue to be generated for between 20 and 50 years after placement, (depending on the site conditions), with a peak in production after 2 to 5 years.

A gas management system including gas collection, extraction and flaring will be installed at the site from the outset and extended during progressive capping of the cells. Gas will be utilised as an energy source with the gas being burned in a gas engine to produce electricity.

Closure and Aftercare

Closure and restoration of the landfill will be carried out in accordance with the EPA Manual "Landfill Restoration and Aftercare" (1999) or with any conditions set down by the EPA. The final capping system will be progressively installed and sown/planted after the landfill cells/construction phases reach full capacity.

After the landfill facility has ceased accepting waste, the monitoring and management systems will continue to operate as normal until such time as the EPA determines that the landfill no longer poses an environmental risk and the Waste Licence has been surrendered.

Operational Principles

The site will be operated in accordance with best international practices for similar facilities and having regard to the Waste Management Act, 1996 as amended; Waste Management Licensing Regulations 2002; EPA Landfill *"Operational Practices"* manual (1997); the EU Directive on Landfill of Waste 1999; such Waste Licence as may be issued by the EPA; and any subsequent legislation and licences.

A comprehensive Environmental Management Plan (EMP) will be prepared for the site pursuant to these objectives. The purpose of the EMP is to set out the measures, procedures and guidance *"to prevent or reduce as far as possible negative effects on the environment, in particular the pollution of surface water, groundwater, soil and air, as well as the resulting risk to human and animal health, from landfilling of waste"* (from Article 1 of the EU Directive on the Landfill of Waste (99/31/EC)). This Environmental Management Plan will

be updated as part of the requirements of any licence that may be issued for the development by the EPA.

The proposed facility is a municipal waste facility and as such is required to accept waste during normal working hours. In order to facilitate the volume of waste traffic expected and to ensure as little queuing of waste trucks occurs as possible permission is being sought for the following opening hours:

Landfill and Associated Activities:

- Waste acceptance at the facility, for disposal to the landfill, between the hours of 8.00am and 4.30pm Monday to Saturday inclusive.
- Landfill operations between the hours of 7.30am to 8.00pm Monday to Friday inclusive, 7.30am - 6:30pm on Saturdays and 8:00am to 4:30pm on Sundays and Bank Holidays (Operations on Sundays and Bank Holidays to be limited to essential maintenance only)
- Construction activities at the facility between the hours of 7:30am to 8:00pm Monday to Friday inclusive, 7:30am to 6:30pm on Saturdays. No construction on Sundays or Bank Holidays

Public Recycling Centre Activities:

- The Public Recycling Centre will accept waste between the hours of 8:00am to 4:30pm Monday to Friday, 8.00am to 4.00pm Saturdays and Sundays.
- The Public Recycling Centre operations will be carried out between the hours of 7.30am to 6.30pm seven days a week and 8:00am to 4:30pm on Bank Holidays.

A.1.5 Determination of Section 40(4) of the Act

To comply with the requirements of the Waste Management Act 1996 as amended, the activity concerned (waste disposal by landfill) must comply with Sections 40(4)(a) to 40(4)(t).

These issues relate to compliance with emission standards, the avoidance of environmental pollution, application of BAT principles, the technical competence and site management by the operator and financial provisions made.

(a) Compliance with Emission Standards

Fingal County Council will ensure compliance with proposed emission standards conditioned under Waste Licence by the EPA.

(b) Avoidance of Environmental Pollution

The Licence Application sets out control/monitoring procedures, which will prevent as far as practicable the specific issues of environmental pollution defined in Section 4 of the Waste Management Act, 1996.

(c) Best Available Techniques (BAT)

The facility will employ BAT principles as appropriate to reduce emissions from the existing facility as far as is practicable which will include operation in accordance with the Waste Licence conditions. The proposed facility will incorporate engineered cells with composite liner systems, leachate and landfill gas collection.

(d) Technical Competence and Site Management

The Fingal objective is to secure a private sector partner with the appropriate landfill design, construction and operations experience to develop and operate the facility.

Fingal as applicant propose to subcontract the operational responsibility for the landfill to the private partner subject to confirmation of compliance with the requisite operational competences. It is not possible therefore at this stage to provide details of designated staff at the facility and Attachment C1 sets out competence requirements for the key staff.

(e) Financial Provisions

Fingal County Council will ensure that funding is available to operate the Landfill Facility in accordance with relevant legislation.

A.1.7 Nature of Emissions at the site

The emissions from a landfill site are: leachate, landfill gas, noise, dust and odours. Each of these individual emissions is considered in this licence application and supporting EIS attachments. The position with regard to each of the above emissions is summarised below:

- ***Leachate*** – To comply with the EU Landfill Directive, the Fingal Landfill will be designed so as to meet the necessary conditions for preventing pollution of the soil, groundwater or surface water and to ensure efficient collection of leachate. The landfill will be fully contained with a composite lining and leachate collection system. Leachate will be collected in a network of slotted pipes laid in a collection blanket in the base of each cell and drain to a leachate collection chamber constructed at the lowest point of each cell from where it will be pumped to the leachate treatment plant.

- ***Landfill Gas*** - A gas management system including gas collection, extraction and flaring system will be installed at the site from the outset and extended during progressive capping of the cells. Gas will be utilised as an energy source with the gas being burned in a gas engine to produce electricity. BAT principles will apply to all future gas extraction and utilisation systems.

- ***Dust*** – There is a potential for dust emissions to have an impact at the site. Dust emissions may arise from vehicles travelling along access roads and activities such as capping. In order to ensure that no dust nuisance occurs during the operation phase of the landfill a series of mitigation measures and good working practices will be implemented as part of a dust minimisation plan. These measures include cleaning of site roads, use of wheel washes, un-surfaced roads restricted to essential site traffic only, water misting or sprays will be used as required if particularly dusty activities, such as capping, are necessary during dry or windy periods. Furthermore, any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and/or windy conditions. With these measures in place, the impact of dust emissions will be slight with no significant impact beyond the landfill boundary.

- ***Noise*** –The results of noise modelling at the site indicated that that noise levels from plant during the construction phase of the development will be similar to existing baseline levels. The potential noise impacts from the proposed landfill during its operational phase will primarily be as a result of increased traffic flows along existing routes within and surrounding the development coupled with the operation of both mobile and stationary site plant and machinery. Screening will be erected between properties along the western and northern boundaries of the site and the proposed county road, which will reduce noise levels from this source. This will be extended as far as the site entrance. It was concluded that the predicted noise levels from site plant and machinery during the operational phase of the landfill will not be significant.

- ***Odours*** –In order to ensure that no odour nuisances occur during the operational phase of the landfill a series of mitigation measures will be implemented which will include, all trucks delivering waste to the facility will be covered, all waste will be incorporated into the active face as soon as possible, the deposited waste material will be covered on a daily basis and a landfill gas collection, utilisation/flaring system will be installed.

- ***Surface Water*** – The only emissions to surface water from the proposed facility will be the discharge from the storm water attenuation pond to the local drainage network.

A.1.8 Assessment of Environmental Impacts

The potential impacts of the proposed landfill operation on the surrounding environment are detailed in Volume 2, Chapter 3 of the EIS. Impacts have been described and assessed under the following headings.

- Human Beings – Public Health
- Human Beings – Community
- Human Beings – Disamenity Effect
- Air Quality
- Climate
- Noise
- Landscape and Visual
- Water – Surface Water
- Water – Aquatic Ecology
- Bird Hazards
- Terrestrial Ecology
- Material Assets – Agriculture
- Material Assets – Non-Agriculture
- Material Assets – Utilities and Services
- Cultural Assets – Architectural Heritage
- Cultural Assets – Archaeology
- Traffic
- Hydrogeology/Geology/Soils

A.1.9 Monitoring and Sampling Arrangements

Dust, ecological, groundwater, landfill gas, leachate, meteorological data, noise, odour and surface water monitoring will be carried out according to frequencies and analysis methods specified in the Waste Licence. Monitoring at these locations will be undertaken in accordance with the guidelines set out in the Environmental Protection Agency, Manual on Landfill Monitoring. A nominated competent person, who sanctions appropriate measures to mitigate any problems identified, will assess all monitoring data.

A.1.10 Waste Recovery

Recyclable household wastes (including glass, newspaper, magazines, cans, oil, cardboard, mixed metals, plastics, batteries and WEEE) will be accepted at the public recycling facility. These wastes will be recycled or recovered at off-site treatment locations. These recyclable wastes will be stored on site in recycling banks/skips in the public recycling facility and collected for recycling/recovery as required.

Off-Site Treatment of Liquid Waste
Leachate will be collected from each individual cell and either re-circulated back into filled cells or pre-treated on site. A leachate management system will be installed which will include monitoring, collection and recirculation infrastructure, removal of leachate from each discrete cell, 7 day storage capacity of raw leachate in a covered fully engineered lined tank, primary treatment system to allow for discharge of treated leachate to sewer for final treatment at a municipal wastewater treatment facility off site. The detailed design, installation and commissioning of the leachate management system will be in accordance with the EPA Landfill Site Design Manual.

A.1.11 Emergency Procedures

The following measures and procedures will be implemented on site for the following situations;

- Fire fighting procedures
- Breakdown situations
- Emergency situations
- Management of accidental emissions

Emergency Response Procedures (ERP's) will be put into action in the event of one of the following incidences occurring or being imminent.

- Fire/Explosion –occurring both within the cells and outside the cells but within the facility.
- Migration of landfill gas- within the site office, elsewhere within the facility or off-site.
- Damage to the integrity of the on site leachate management system which would consist of damage to the leachate storage tank.

- Contamination of stormwater attenuation pond.
- The quantity and/or quality of the local wells being impacted.
- Side slope failure within the landfill.

The appointed safety supervisor for the site or safety representative shall activate the required ERP at the time of the incident.

A Safety Statement for all specified engineering works carried out at the proposed facility will be forwarded to the Agency prior to the commencement of any works.

A.1.12 Closure, Restoration and Aftercare Measures

Closure and restoration of the landfill will be carried out in accordance with the EPA Manual "Landfill Restoration and Aftercare" (1999) or with any conditions set down by the EPA. The final capping system will be progressively installed and sown/planted after the landfill cells/construction phases reach full capacity. The capping system at a minimum will consist of:

- Gas collection layer;
- Compacted mineral layer of minimum 0.6m thickness;
- Drainage layer of 0.5m thickness;
- Subsoil; and
- Topsoil – such that the subsoil and topsoil have a total thickness of 1m.

After the landfill facility has ceased accepting waste, the monitoring and management systems will continue to operate as normal until such time as the EPA determines that the landfill no longer poses an environmental risk and the Waste Licence has been surrendered.

SECTION B GENERAL

B.1 Applicant's Details

Name*:	Fingal County Council
Address:	PO Box 174
	Fingal County Hall
	Main Street
	Swords
	Co. Dublin
Tel:	01-8905000
Fax:	01-8905809
e-mail:	

* This should be the name of the applicant which is current on the date this Waste Licence Application is lodged with the Agency. It should be the name of the legal entity (which can be a limited company or a sole trader). A trading/business name is not acceptable.

Name and Address for Correspondence

Only application documentation submitted by the applicant and by the nominated person will be deemed to have come from the applicant.

Name:	Mr Gilbert Power, Director of Services
Address:	Fingal County Council
	PO Box 174
	Fingal County Hall
	Main Street
	Swords
	Co. Dublin
Tel:	01-8905000
Fax:	01-8905809
e-mail:	gilbert.power@fingalcoco.ie

Address of registered or principal office of Body Corporate (if applicable)

Address:	Not Applicable
Tel:	
Fax:	
e-mail:	

If the applicant is a body corporate, the following information must be attached as **Attachment B1**:

a) a Certified Copy of the Certificate of Incorporation or Memorandum and Article of Association;
b) the Company's Registration Number from the Companies Registry Office; and