

21.0 EFFECT ON THE ENVIRONMENT: Waste.

21.1 Introduction.

21.1.1 This chapter has been prepared by Malone O'Regan and will review the solid waste disposal infrastructure currently and proposed to serve the area, and identifies the potential impacts of the proposed Scheme on it during both construction and operational phases and the mitigation measures that may be employed to reduce/eliminate potential impacts.

21.2 Assessment Methodology.

21.2.2 The assessment of the potential impact of the proposed scheme on the environment in terms of waste was carried out using the methodology and data sources outlined below.

21.2.3 A desk study was carried out using information sourced from the following:

- *Dublin Waste Management Plan 2005-2010*;
- the latest '*National Waste Report*' 2006 published by the EPA;
- *EUROSTAT yearbook 2006-2007*;
- *Dublin City Development Plan 2005-2011*;
- *National Hazardous Waste Management Plan 2008-2012*;
- Government and EU publications; and
- *The Dublin Waste-to-Energy EIS*, published in June 2006 was also consulted.

21.3 The Receiving Environment.

21.3.1 National Level.

21.3.1.1 At national level, the volume of municipal solid waste requiring disposal is increasing though at a rate that is decreasing with time (7.3% between 2002 and 2003, 4% between 2003 and 2004, 0.51% between 2004 and 2005). The establishment of additional landfill sites is still considered the least desirable option for disposal and is also a contentious local issue. Local authorities are now seriously considering alternative options to deal with solid waste and ways to reduce the volume destined for landfill disposal. Accordingly, many companies in the waste sector are seeking to

develop their business toward biological treatments of waste (such as composting and anaerobic digestion). This trend has been amplified with the publication by the DoEHLG of a '*National Strategy for Biodegradable Waste*' (April 2006) which came in response to the phased restriction imposed by the *EU Landfill Directive (99/31/EC)* on the future landfilling of biodegradable waste.

21.3.2 *Dublin Region.*

21.3.2.1 A '*Waste Management Plan for the Dublin Region*' has been developed jointly by Dublin City Council, South Dublin County Council, Fingal County Council and Dún Laoghaire - Rathdown County Council. The Dublin Region adopted a '*Regional Waste Management Strategy*' in 1997, which set out to replace a system that over-relied on landfill disposal with a new approach based on integrated waste management over a 20 year period. The first '*Regional Waste Management Plan*' became effective in 2001 and the first formal Review of the Plan has taken place during 2004-2005, culminating in the '*Dublin Waste Management Plan 2005-2010*'.

21.3.2.2 Dublin's waste strategy goals are summarised by the EU waste hierarchy pyramid, which stresses that a new approach to managing waste is required to lead to more sustainable waste management. The strategy is to place emphasis on prevention, minimisation, reuse, recycling and recovery of energy in order to end the over-reliance on landfill disposal.

21.3.2.3 The latest figures, for 2006, as presented in Table 21.3.2.1 below, show the quantities of household waste collected by Dublin City Council, Dun Laoghaire - Rathdown County Council, Fingal County Council and South Dublin County Council. The percentage of household waste separated at the source in these administrative areas is also shown.

Table 21.3.2.1 Public and Privately Operated Collection Schemes

Local Authority	Waste collection by local authority (tonnes)	Percentage of Household waste separated at source (%)
Dublin City Council	176,094	13.1
Dun Laoghaire - Rathdown County Council	48,962	27.6
Fingal County Council	79,906	18.3
South Dublin County Council	75,160	18.4

Source: EPA: National Waste Report 2006.

21.3.2.4 A breakdown of household waste arisings in 2006 for the Dublin Region is presented in Table 21.3.2.2 below.

Table 21.3.2.2 Total Household Waste Arising in 2006 for the Dublin Region (tonnes)

Local Authority	Dublin	Dun Laoghaire-Rathdown County Council	Fingal County Council	South Dublin County Council	Dublin Region
Mixed residual collection (black bin)	153,048	35,466	65,302	61,301	315,117
Separate kerbside collection of mixed dry recyclables (green bin)	21,635	13,211	12,633	13,859	62,338
Separate kerbside collection of food and garden waste (brown bin)	411	285	1,971	0	2,667
Household waste delivered directly to landfill face by householders	0	0	0	0	0
"Uncollected" household waste	0	246	0	0	246
Estimate of home composting	4,000	2,305	875	1,037	8,217
Household waste brought to bring banks	11,140	5,747	4,085	4,752	25,724

Local Authority	Dublin	Dun Laoghaire- Rathdown County Council	Fingal County Council	South Dublin County Council	Dublin Region
Household waste brought to CA sites	7,715	18,270	11,533	21,675	60,193
Total household waste	198,949	75,530	96,399	103,624	474,502

Source: EPA: National Waste Report 2006.

21.3.2.5 Furthermore, it should be noted that:

- Over 400,000 householders in the Dublin Region now have a green wheelie bin for the recycling of dry recyclable household materials. Oxigen on behalf of the four Dublin Local Authorities are responsible for the collection and sorting of household dry recyclables collected in the household green bins or bags.
- Since May 2007 the green bin collection service has been improved with an expanded service from a monthly to fortnightly collection.
- Changes in collections also allow householders to recycle plastic bottles in their green bin or bag.
- The Dublin Local Authorities also propose to further introduce widespread separate household collection service for food and garden waste with brown bins which will decrease the reliance on landfill and help recycle potential waste into a valuable resource. This will be on a phased basis over the next two to three years as the necessary treatment facilities are made operational.

21.3.3 *Commercial Waste.*

21.3.3.1 As far as commercial waste generation is concerned, an estimated 1,327,000 tonnes of commercial, or non-household municipal waste, was managed in Ireland in 2006, an increase of 7.4% since 2005. In 2006, the National recovery rate of the commercial waste stream was 54.7%. The latest data available for the Dublin Region, 2003, indicates that commercial waste arisings were 480,682 tonnes during this year, 33% of which was recycled.

21.3.3.2 In September 2007, Dublin City Council has introduced a Brown Bin collection service also for its commercial customers to allow commercial businesses separate the organic part of their waste and have it collected separately for removal to a designated composting facility.

21.3.4 *Recycling Facilities & Issues.*

21.3.4.1 Introduced in 2004, the Dublin Waste Management Plan set a recycling rate target of 60% for the Region household waste. In response, the Dublin Local Authorities are improving the recycling infrastructure available to householders by increasing the number of recycling centres (9) and bring centres (11) in operation, in addition to the 336 bring banks and 8 civic amenity sites in the Dublin region.

21.3.4.2 Recycling centres accept glass, cans, paper, plastics, textiles, fridges, mobile phones and batteries, as well as many other materials and for the most part free of charge.

21.3.5 *Municipal Waste Recycling.*

21.3.5.1 The overall municipal waste recycling rate in Dublin Region has jumped from 7% in 1997 to 26% in 2003, and has continued to increase ever since. In 2003, 16% of household waste was recycled through the Green Bin collection, Bring Banks, Recycling Centres (North Strand, Ballyogan, Coolmine) and the two green waste composting sites. Recycling of commercial/ industrial waste reached 35% in 2006, as a result of the introduction of separate collection and recycling of packaging and other waste streams. These figures were expected to increase substantially for 2007¹.

21.3.6 *Landfills in Operation.*

21.3.6.1 At present the Dublin Region reliance on landfill for residual waste management is still high, since the latest data available shows that 74% of municipal waste generated in the region was landfilled in 2005. Since the closure of Ballyogan Landfill in 2005, there are three facilities in operation; Balleally Landfill, Arthurstown Landfill and the privately operated KTK Landfill in Co. Kildare, which fulfil the current municipal and industrial landfill requirement in the region of approximately 800,000 tonnes per

¹ Waste Management Plan 2005-2010

annum. Landfill extensions have been secured and developed by both South Dublin County Council (Arthurstown) and Fingal County Council (Balleally) to provide short term capacity for the Region's disposal needs, but these landfills are currently nearing capacity and under current authorisations are due to close within two years². A new baling station has been developed by Dun Laoghaire-Rathdown County Council as part of the Ballyogan Recycling Park, which enabled the closure and restoration of the landfill. In addition, a significant volume of commercial/ industrial waste is landfilled at the private KTK landfill in Kildare.

- 21.3.6.2 A critical shortage of municipal landfill capacity is imminent and that is why the local authorities are developing a replacement landfill in Fingal to serve the long term disposal requirements of the region, in accordance with '*Dublin Waste Management Plan 2005-2010*'. In September 2007, the Environmental Protection Agency (EPA) announced details of its Proposed Decision to grant a licence to Fingal County Council to develop an engineered landfill facility and public recycling facility at Nevitt, Lusk, County Dublin. The proposed decision provides for the development of an engineered landfill with a maximum annual intake of 500,000 tonnes of non-hazardous residual waste and an associated public recycling facility.
- 21.3.6.3 While the Dublin Waste to Energy facility (if built) will divert significant volumes of waste from landfill (as described below), there will remain a significant requirement for residual disposal.
- 21.3.6.4 The policy of the '*Waste Management Plan 2005-2010*' is to make the best use of residual waste – that is waste collected by the grey/ black bin collection or otherwise not suitable for recycling – by extracting thermal energy. The Plan policy is to develop the Waste to Energy plant at the preferred location in Poolbeg. This will have a capacity of between 400,000 and 600,000 tonnes/annum, and will treat non-hazardous municipal waste. By using this facility, the Region can ensure that the obligations of the EU Landfill Directive and the National Biodegradable Waste Strategy to reduce landfilling of biodegradable waste are met. As well as generating electricity, the possibility of using heat energy in a 'district heating' network is being explored. As of

² Data presented in Section 1.2.4 of the proposed Dublin Waste to Energy Incinerator EIS, 2006

December 2007, the planning application for the construction of the Waste to Energy facility at Poolbeg has been approved. The waste license was granted on 1st December 2008.

21.3.6.5 Overall, there are still significant deficits in infrastructure to manage waste generated in Dublin and this is increasing costs and making it more difficult to achieve recycling and energy recovery targets.

21.3.7 *Construction & Demolition Waste.*

21.3.7.1 Construction and Demolition (C&D) waste is the single largest waste stream in Dublin Region. An improvement in the construction industry in association with Local Authorities is required to achieve minimisation through good practice, higher recycling and more sustainable land use.

21.3.7.2 The total quantity of construction and demolition waste collected in 2006, as reported by local authorities, is estimated at 16,819,904 tonnes. Generally, construction and demolition waste includes fractions such as soil and stones, concrete and rubble, wood, glass, metal and plastic. The soil and stone fraction, representing approximately 83% of total construction and demolition waste collected, is the easiest to recover. Collection and management of construction and demolition waste, soil and stones, at national level in 2006, accounted for a recovery rate of 89%, while all other construction and demolition waste accounted for a recovery rate of 36%.

21.3.8 *Hazardous Waste.*

21.3.8.1 A total of 284,185 tonnes of hazardous waste generated by the Irish industry and society was reported for the year 2006, which represents an increase of 10% when compared with 2001. The figures are dominated by organic solvents generated principally by the pharmaceutical and chemical sectors. Approximately 31% of the hazardous waste generated in 2006 was treated on site at IPPC licensed facilities, 21% was treated off-site but in Ireland, while 48% was sent abroad for treatment.

21.4 Relevant Characteristics of the Draft Planning Scheme.

21.4.1 Approximately 0.75 million square meters of development will be provided on the Peninsula and approximately 26,100 people will be living and working in the area. The split between residential and commercial will be approximately 65% residential to 35% commercial.

21.4.2 The construction and demolition phase has the potential to generate construction and demolition waste including contaminated soil for disposal as waste. The quantities of waste soil cannot be calculated for this document as the extent of removal would be subject to further investigation and risk assessment.

21.5 Likely Impact of the Draft Planning Scheme.

21.5.1 The potential impacts of the proposed development on the waste environment during the construction and operational phases are outlined below.

21.5.2 Construction Phase.

Soil Removal and Disposal

21.5.2.1 It is likely that a Soil Deposition Strategy (or Strategies) will be developed for the construction works. The amount of material to be removed may be reduced if re-use of the excavated gravels for concrete aggregate is possible, or where the natural subsoils - uncontaminated - are re-used for site works such as burying of services, landscaping etc. Where gravel materials are unsuitable for site use then these may be sold on for reuse within the construction industry.

21.5.2.2 Where technically and economically feasible and environmentally favourable, contaminated soil from the area should be treated preferentially *in situ* or at authorised facilities in Ireland, in preference to export, thus allowing for the use of treated soil in Ireland. These options will be considered where site specific risk assessments and/or after consideration of other factors e.g. space to carry out treatment deem them appropriate. Materials classified as unsuitable for direct reuse in any form or treatment

in situ will be excavated and loaded into trucks for removal off site and transferred to an appropriately licensed or permitted facility for treatment (as in the case of hazardous materials) or final disposal (as in the case of non-hazardous materials).

Other Construction Activities

21.5.2.3 The construction phase will lead to the generation of a significant quantity of solid waste generally due to the following activities:

- Demolition of defunct structures giving rise to large quantities of construction and demolition waste for removal off site to licensed landfill facilities or for re-use elsewhere;
- Removal of existing road and other surfaces across the site for re-surfacing and ground works;
- Packaging arising from construction raw materials, waste oils and small quantities of domestic waste.

21.5.3 *Operational Phase.*

21.5.3.1 Solid waste streams envisaged during the operational phase of the development are likely to include packaging waste, kitchen waste from commercial and retail uses and domestic waste generated by residential units. According to the 'Waste Against Race' website, approximately 0.75 tonnes of waste arose per person in 2004. Therefore approximately 19,575 tonnes of municipal waste per annum could arise as a result of the proposed development based on a population of 26,100. The amount of municipal waste likely to be recovered would be approximately 33.6% based on 2004 figures. The waste quantities likely to be generated are therefore significant (as with any development where 26,100 people will be living and working). Mitigation measures are set out below.

21.5.3.2 Given the nature and characteristics of the proposed development at Poolbeg, it is not likely to give rise to hazardous waste materials, other than small items such as batteries and fluorescent lighting tubes, as well as possible waste from interceptors where used at the site. This waste type will be disposed of in accordance with the relevant hazardous waste regulations.

'Do Nothing' Scenario.

- 21.5.3.3 All new development has the potential for waste generation. Accordingly, the 'Do Nothing' scheme would not result in increased waste generation in the Dublin area impacting on existing strained waste infrastructure compared with the 'Do Something' scenario.

21.6 Mitigation.

- 21.6.1 Suitable mitigation measures to reduce waste generation and recover waste generated will be put in place during both the construction and operational phase are outlined below.

21.6.2 Construction Phase

Soil Removal & Disposal

- 21.6.2.1 A Soil Deposition Strategy (or Strategies for individual sites) will be required by developers based on existing and/or further site investigations and/or risk assessment of contaminants present. Some materials may be suitable for remaining on site. However where material requires removal, the *European Communities Council Decision (2003/33/EC) of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfill pursuant to Article 16 and Annex II to Directive 1999/31/EC* will be referred to when establishing the criteria and procedures for the acceptance of waste at landfill sites. This Decision defines the criteria for the acceptance of three types of waste at landfill sites:

- inert;
- non-hazardous, and
- hazardous waste.

- 21.6.2.2 For the Draft Planning Scheme, a number of categories of disposal routes will be established depending on the concentrations of contaminants within the materials. Typically, the following categories are likely to be established:

Category 1.

- 21.6.2.3 Waste materials not contaminated (i.e. inert) and which may be suitable for disposal and re-use at sites, providing a Waste Management Permit has been issued by the Local Authority, under the *Waste Management (Facility Permit and Registration) Regulations, 2007 and 2008 amendments*.

Category 2.

- 21.6.2.4 Materials which would be suitable for acceptance at an inert waste landfill site, licensed by the EPA. Such materials have low contaminant concentrations, which are not acceptable at Waste Management Permitted sites. The screening values used to assess materials suitable to fall within this category are those taken from the landfill licence, which relate to those in the *European Communities Council Decision 2003/33/EC*.

Category 3.

- 21.6.2.5 Materials within this category would be accepted at a licensed landfill site within Ireland able to take non-hazardous waste. The EC Decision does not specify criteria for non-hazardous waste for some organic contaminants. Therefore, criteria are defined by the EPA within the licence for the landfill site. Should materials fail to meet these criteria, they may still be acceptable at landfill sites in mainland Europe, which are able to accept non-hazardous waste (see Category 4).

Category 4.

- 21.6.2.6 Materials defined as non-hazardous waste but which do not fall below the criteria for landfill sites able to accept non-hazardous waste in Ireland. Hence, they have to be treated/ disposed of in mainland Europe.

Category 5.

- 21.6.2.7 This includes materials defined as hazardous waste in accordance with the 'Hazardous Waste Classification Tool'. Within Ireland, there are no landfill sites able to accept hazardous waste. Therefore, such materials will require in situ treatment or export to an appropriate licensed waste facility in mainland Europe.

- 21.6.2.8 The transport of contaminated soils of a hazardous nature for onward disposal/recovery requires compliance with the *Waste Management (Shipment of Wastes) Regulations, 2007* for movement between countries in the EU.
- 21.6.2.9 Where soil has non-hazardous concentrations of contaminants, its movement off-site is subject to the *Waste Management (Collection Permit) Regulations 2007 and 2008 amendments*, which require the haulier to hold a waste collection permit issued by a Local Authority. The waste collection permit specifies which facilities a haulier is permitted to transport waste to and lists the registration numbers of the vehicles to be used. Hauliers are liable to prosecution if they transfer waste to a site not listed on their waste collection permit.
- 21.6.2.10 For the purposes of determining the appropriate disposal route, the permit/ licence for the respective disposal site(s) will be obtained with regard to the chemical concentrations acceptable at the sites, prior to excavation on site. Before the materials are transported from the site to the waste permitted/ licensed site, the chemical data will be provided to the permit / licence holder to ensure that the materials are acceptable at the particular site. Generally and in addition to above, all contaminated soil removed offsite will be managed in accordance with the requirements of the Waste Management Act 1996, subsequent amendments and associated regulations.
- 21.6.3 *Other Construction Waste.*
- 21.6.3.1 Construction and demolition waste will be removed off site using an approved and licensed waste contractor. Waste generation on site during the construction works will be properly supervised with designated waste storage and segregation areas located away from nearby sensitive receptors, fuel storage areas and the adjacent waterbodies, in line with Construction Environmental Management Plans for individual parcels of land on the Peninsula.
- 21.6.3.2 Where possible, materials will be salvaged and recycled on site.
- 21.6.3.3 Topsoil (where found not to be contaminated) will be stored on site to facilitate landscaping, thereby reducing the requirement for topsoil to be removed off site.

21.6.3.4 The use of separate bins and recycling facilities at the site will encourage waste segregation at source and also maximise the potential for recycling during the construction phase.

21.6.3.5 A Construction Waste Management Plan will be prepared where significant quantities of waste are to be removed by developers or operators. In doing so, the Best Practise Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects, July 2006 will be taken into account.

21.6.4 Operational Phase.

21.6.4.1 A sustainability toolkit has been developed for the Draft Planning Scheme and this sets out measures to be taken with regard to waste minimisation and prevention and waste separation. Some of the main specifications are set out below:

- Developers will be required to design buildings and facilities which will aid waste segregation into streams for recycling. For example, space and equipment should be provided for occupant/user separation.
- Provision of adequate delivery areas for raw materials and goods and adequate storage/circulation and transfer areas should be provided for commercial areas to prevent waste generation.
- Provision of safe and environmentally friendly central separation and transfer areas should be provided and adequate compacting and baling facilities.
- Waste areas should be covered and controlled.

21.6.4.2 In addition, the Draft Scheme will have designated bring centres including glass bottle banks.

21.6.4.3 In the long term, waste collection/ removal contractors for the proposed development will operate in accordance with the *Waste Management Act, 1996* and subsequent amendments and regulations.

21.7 References.

Dublin Waste Management Plan 2005-2010.

National Waste Report, EPA, 2006.

EUROSTAT Yearbook 2006-2007.

Dublin City Development Plan 2005-2011.

Dublin Waste to Energy Project, Ringsend, Dublin, EIS, Elsam Engineering, June 2006.

National Hazardous Waste Management Plan 2008-2012.