15.0 WASTE MANAGEMENT

15.1 ASSESSMENT METHODOLOGY

Section 39 (2) (c) (iii) of the Transport (Railway Infrastructure) Act 2001, requires that proposed developments are examined in regard to the elimination of waste resulting from the proposed development.

A Construction and Demolition Waste Management Plan (C&D WMP) has been prepared for the construction and demolition phase of the proposed Luas Line A1. A Waste Management Strategy (WMS) has been prepared for the operation of the proposed Luas Line A1. Both of these (presented in Appendix 15A and in Appendix 15B) will continue to be developed through the detailed design, construction and operation of Luas Line A1.

The C&D WMP was prepared following the methodology outlined in the Best Practice Guidelines – Preparation of Waste Management Plans for C&D Waste, issued by the National Construction & Demolition Waste Council on behalf of the Department of the Environment in July, 2006.

Typical waste composition data used in the modelling exercise for the operational phase was obtained from the Irish EPA 2005 Waste Database Report (EPA, Johnstown Castle, Wexford, 2006), operational waste data from the Luas Red Line and Green Line and data from similar projects in different countries.

This section also addresses the targets and aims of the Waste Management Plan for the Dublin Region (2005 – 2010) produced by the combined Councils of Fingal, Dublin City, South Dublin and Dun Laoghaire Rathdown County.

15.2 RECEIVING ENVIRONMENT

The Strategic Review Committee to the Minister for the Environment and Local Government produced a report in 1997, entitled "Report on the Strategic Review of the Construction Industry". This report produced 86 recommendations for the construction industry, with a number of them concerned with how to manage C&D waste.

The Government issued a Policy Statement in September 1998, known as 'Changing Our Ways', which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. A strong emphasis was placed on reducing our reliance on landfill, and finding alternative methods of managing waste. The target for C&D waste in this Strategy was to recycle at least 50% of C&D waste within a five year period, with a progressive increase to at least 85% over fifteen years.

In response to the "Changing Our Ways" report, a task force (Task Force B4) representing the waste group of the already established Forum for the Construction Industry, released a report titled 'Recycling of Construction and Demolition Waste' concerning the development and implementation of a voluntary construction industry programme to meet the government's objectives for the recovery of construction and demolition waste. This report included a list of 66 recommendations to ensure that the targets in the government report were met.

The National Construction and Demolition Waste Council (NCDWC) was launched in June 2002, as one of the recommendations of the Forum for the Construction Industry, in the Task Force B4 final report. Their first Annual Report was published in 2003, which detailed achievements and aims of the Council.

The establishment of this Council has been the most significant development to date regarding C&D waste management in Ireland, as defined targets are being achieved by the Council, with many work programmes currently underway. The main achievements of the Council so far are that research into the feasibility and economics of establishing C&D waste processing plants countrywide has been completed and a survey of existing processing facilities has been completed (but is yet to be published).

The Dublin Region produced a Waste Management Plan in 1999, which encompasses the Local Authorites of Dublin City, South County Dublin, Dun Laoghaire Rathdown County Council and Fingal County Council. The Plan has been revised for the period 2005 – 2010.

The recycling rates for C&D waste adopted by the Dublin Region are 82% by the year 2013. The 2001 EPA Waste Database showed 65.4% recycling of C&D waste in Ireland, including a large portion of recovery from landfill. The 2004 EPA report showed an increase to 85% recycling.

In July, 2006, Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects were published by the NCDWC, on behalf of the Department of the Environment. These Guidelines outline the issues that need to be addressed at the pre-planning stage of a development all the way through to its completion. The Guidelines request that a C&D Waste Management Plan should address the following aspects:

- analysis of the waste arisings/material surpluses
- specific waste management objectives for the project
- methods proposed for prevention, reuse and recycling of wastes
- material handling procedures
- proposals for education of workforce and plan dissemination programme.

The proposed Luas Line A1 is located within the South Dublin City Council administrative area. In terms of waste management, the receiving environment is characterised by waste collection services provided by South Dublin County Council and private waste contractors.

15.3 CONSTRUCTION IMPACTS AND MITIGATION

15.3.1 Impacts

During the C&D phase, there will be waste generated, such as excavated materials from the track bed, off-cuts of timber, oversupply of materials, along with packaging materials such as cardboard, plastic and polystyrene.

The main waste streams which will be produced during the C&D phase and European Waste Code (EWC) Classification for each waste stream is presented in Table 15.1 below.

Without implementation of a C&D WMP, it is likely that the construction and demolition works involved in the development of the the proposed Luas Line A1, would result in failure to meet the target recycling rates outlined in the Waste Management Plan 2005-2010 for the Dublin Region and the government policy document 'Changing Our Ways', 2001. The target rate for C&D waste from both of these documents is 85% recycling by 2013.

Table 15.1 Waste types and EWC Classification

Waste Material	Four-Digit EWC Code
Concrete, Bricks, Tiles and Ceramics*	17 01
Wood, Glass and Plastic*	17 02
Bituminous Mixtures, Coal Tar and Tarred Products*	17 03
Metals (including their alloys)*	17 04
Soil, Stones and Dredging Spoil*	17 05
Insulation Materials and Asbestos Containing Construction Materials*	17 06
Gypsum-Based Construction Material (eg: plasterboard)*	17 08
Other Construction and Demolition Waste*	17 09
Electrical and Electronic Equipment*	16 02
Batteries and Accumulators*	16 06
Liquid Fuels*	13 07
Waste Packaging*	15 01

** Individual waste types may contain hazardous materials*

In addition, if waste is not managed and stored correctly on site, this may lead to litter or pollution issues on the site or adjacent sites.

15.3.2 Mitigation Measures

A project specific C&D WMP for the construction phase has been developed based on design to date. The aim of this is to ensure effective waste management and recycling of waste generated as a result of the works. The C&D WMP takes into account the "Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects", published by the National Construction & Demolition Waste Council in July 2006, on behalf of the Department of the Environment Heritage and Local Government.

The C&D WMP details the procedures to be followed during the construction and demolition phase, including segregation of waste at source, using permitted and licensed waste contractors and keeping comprehensive records for the waste taken off-site.

The C&D WMP will also ensure that the correct procedures are followed when dealing with the import and export on and off the site of materials such as soil and stones. The C&D WMP provides that a recycling/reuse rate of approximately 85% will be achieved, in keeping with the targets outlined in the Waste Management Plan 2005-2010 for the Dublin Region.

The further development and implementation of the C&D WMP will ensure that there is proper management and significant recycling of wastes likely to be generated as a result of development of the proposed Luas Line A1.

15.4 OPERATIONAL IMPACTS AND MITIGATION

15.4.1 Impacts

From a review of waste audits carried out on similar rail and light rail projects it was found that newspapers and magazines constitute a significant proportion of passenger waste. In a study of Virgin West Coast trains in the UK, some 45% of the total on-board waste was newspaper and magazines. On Eurostar trains between Paris, Brussels and London, this figure is 59%. The percentage of newspaper falls in audits of passenger waste from waiting and stop areas alone. On average, newspaper arising from these sources constitutes approximately 20% of the total waste. As far as newspaper waste from all sources is concerned, the levels of contamination were found to be low.

Luas

In terms of the wastes generated by passengers on Luas, a similar trend is expected to occur in that the majority of the waste stream is likely to be made up of newspapers and magazines.

All stops on the proposed Luas Line A1 will have ticket machines. Tickets can become a litter issue if discarded. In order to provide a more flexible travel option; the Luas Smart Card will be available for use on the proposed Luas Line A1. The Smart card will avoid the need to buy numerous cards and thus prevent waste generation.

Information relating to the operational waste at several Luas stops has been incorporated to model the predicted waste from the operational phase of the proposed Luas Line A1. Table 4.1 presents the latest figures for operational waste generation. General waste is placed in 1100l bins, mixed recyclables are also placed in 1100l bins.

Table 15.2: Current and Predicted Waste Generation Figures, Luas Line

Stop	Time Period	General		Recyclables		Total	
		Kg	%	Kg	%	Kg	%
Luas Red Cow	Apr 04-Jan 06	25515	51	23856	49	49371	100
Luas Sandyford	Apr 04-Jan 06	155	20	624	80	779	100
Green Line (13 stops)	Jan 05 – Dec 05	13365	58	9936	42	23301	100
Green Line (1 stop)	Jan 05 – Dec 05	1028	57	764	43	1792	100
Luas Line A1 (5 stops)	Predicted	5140	57	3822	43	8962	100

Based on current information the predicted recycling rate at the proposed Luas Line A1 is 43%.

The likely impacts of the operational phase on the environment should a WMS not be put in place, would include the necessity to send large volumes of waste to landfill, with low levels of segregation of wastes into recyclable materials.

There may also be litter pollution created from the incorrect storage of waste.

15.4.2 Mitigation Measures

A WMS for the operation of the proposed Luas Line A1 has been developed. The aim of this is to ensure effective waste management and recycling of waste during the operational phase of Luas Line A1. This will be reviewed and developed in light of industry best practices in advance of the commencement of operations.

Compliance with this strategy will ensure that waste is managed in compliance with the provisions of the Waste Management Act 1996, and associated Regulations, the Litter Act of 1997, the Waste Management Plan 2005-2010 for the Dublin Area and the South Dublin County Council Bye-Laws, 2004 relating to the storage, presentation and collection of waste. This will help to achieve the optimum levels of waste reduction, re-use and recycling.

The further development and implementation of the WMS will help to achieve the targets outlined in the Waste Management Plan for the Dublin Region such as recycling of 35% of municipal waste and a reduction in biodegradable waste to landfill by 65%. The impacts, in terms of waste disposal to landfill, will therefore be minimised by the implementation of a comprehensive WMS.