

**Shared Educational Campus for
Gaelscoil Na Camóige,
Gaelscoil Chluain Dolcáin
and Coláiste Chillian,
Old Nangor Road,
Clondalkin,
Dublin 22**

Feb 2017

TOBIN CONSULTING ENGINEERS



REPORT

PROJECT:

**Outline Construction & Demolition
Waste Management Plan**

CLIENT:

Department of Education and Skills

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DOCUMENT AMENDMENT RECORD

Client: Department of Education and Skills

Project: Shared Educational Campus, Old Nangor Road, Clondalkin, Dublin 22

Title: Outline Construction & Demolition Waste Management Plan

PROJECT NUMBER: 8064				DOCUMENT REF: C&D Plan			
A	Issued for Stage 2b	CS	07/02/17	AM	07/02/17	AM	07/02/17
Revision	Description & Rationale	Originated	Date	Checked	Date	Authorised	Date
TOBIN Consulting Engineers							

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1 INTRODUCTION

Tobin Consulting Engineers were commissioned by Department of Education and Skills to prepare and submit a planning application for the development of the proposed Shared Educational Campus which involves the construction of two new schools (i.e. Gaelscoil na Camóige and Gaelscoil Chluain Dolcain), a playing pitch and the addition of a new PE Hall to the existing Coláiste Chillian.

The following Construction and Demolition Waste Management Plan is prepared to support the above noted planning application.

2 DESCRIPTION OF WORKS

The proposed works will include the demolition of the existing play area (1,485m²) to the north side of the site) for the purpose of creating space for the construction of a new PE Hall to serve Coláiste Chillian and also excavation works during construction of roads, paths, foundations etc.

3 DEMOLITION PROCEDURES

The demolition works shall be undertaken in a manner, which maximises the potential for recycling, including source segregating waste where appropriate. Activities shall be carried out in the following sequence:

Table 3.1 Demolition Procedures

Demolition Activity Sequence	General Description
Disconnection of Services/Vermin Control	Shutoff of E.S.B., Gas etc.
Inventory of Hazardous Wastes	e.g. Asbestos etc.
Removal of Asbestos/Hazardous Materials	e.g. Application of H&S Procedures
Demolition of Structure Shell	Manual or Mechanical Demolition
Source Segregation of Material Fractions	Separation into Designated Material Fractions
Transport of Material from Site to Treatment Facilities	e.g. C&D Waste Recycling Facility
Transport of Material from Site to Controlled Disposal Sites	e.g. Inertised Hazardous Landfill Site
Site Preparation/Restoration	e.g. Hardstanding, Landscaping

4 WASTE MANAGEMENT

4.1 INTRODUCTION

This Outline Waste Management has been prepared in line with 'Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects' published by the Department of Environment, Heritage and Local Government in July 2006.

This is an Outline Waste Management Plan and must be developed in greater detail during detailed design and prior to the commencement of construction.

This Outline Waste Management Plan will address the following aspects,

- Analysis of waste arising/material surpluses;
- Defines the Waste Management Objectives of the project;
- Methods proposed for prevention, reuse and recycling of wastes;
- Material handling procedures; and
- Education of workforce and plan dissemination.

The proposed work will consist of the following:

- Demolition of approximately 1,485m² of a tarmacadam play area.
- Site Clearance of the above.
- Erection of security fence around the perimeter of the site.

4.2 OVERVIEW OF C&D WASTE MANAGEMENT IN IRELAND

4.2.1 National Level

The Strategic Review Committee to the Minister for the Environment, Heritage and Local Government (DoEHLG) produced a document in 1997, entitled *Report on the Strategic Review of the Construction Industry*. This report produced 86 recommendations for the construction industry, with a number related to the management of C&D waste.

One of the recommendations (No. 3.66) stated that "environmentally sustainable policies must be developed for the construction industry, detailing that all the various actors in the industry and their representative bodies are to have appropriate environmental sustainable policies. Such policies should cover relevant issues, including waste reduction, recycling, energy reduction, use of renewable natural materials and design for sustainability". It was also recommended that a Forum for the Construction Industry be formed, which was subsequently established in 1997.

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 heavy emphasis was placed on reducing 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% within a five year period (by 2003), with a progressive increase to at least 85% over fifteen years (by 2013), which are the recycling targets defined in the *Waste Management (Planning) Regulations 1997*.

In response to the *Changing Our Ways* report, a task force (Task Force B4) representing the waste sector of the already established Forum for the Construction Industry, released a report titled *Recycling of Construction and Demolition Waste*. This document addressed the development and implementation of a voluntary construction industry programme and included a list of 66 recommendations to help meet government objectives for the recovery of C&D waste as stated in the *Changing Our Ways* report.

The National Construction and Demolition Waste Council (NCDWC) were 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 to cover the period 2002/03, which detailed achievements and aims of the NCDWC. Subsequent reports have been published for 2003/04 and 2004/05.

Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects were published by the DoEHLG (in conjunction with the NCDWC). 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, which include the following:

- Predicted construction and demolition wastes
- Waste disposal/recycling of C&D wastes at the site
- List of sequence of operations to be followed
- Provision of training for waste manager and site crew
- Details of proposed record keeping system
- Details of waste audit procedures and plan
- Details of consultation with relevant bodies, i.e. waste recycling companies, Local Authorities etc

Section 3 of the Guidelines sets thresholds for the requirement for the preparation of C&D plans for developments. These include;

1. New residential developments of 10 houses or more;
2. New developments other than (1) above, including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,250 m².
3. Demolition/renovation/refurbishment projects generating in excess of 100m³ in volume, of C&D waste;
4. Civil Engineering projects producing in excess of 500m³ of waste, excluding waste materials used for development works on the site.

4.2.2 Legislative Requirements

One of the guiding principles of European waste legislation, which has in turn been incorporated into the Waste Management Act 1996 and subsequent Irish legislation, is the principle of "duty of care". This implies that the waste producer is responsible for waste from the time it is generated through until its legal disposal (including its method of disposal.) Following on from this is the concept of "polluter pays" whereby the waste producer is liable to be prosecuted for pollution incidents, which may arise from the incorrect management of waste produced, including the actions of any contractors engaged (e.g. for collection and transport of waste).

Waste contractors are typically engaged to transport waste off-site. Each contractor must comply with the provisions of the Waste Management Act 1996 and associated Regulations. This includes the requirement that a contractor handle, transport and dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities. A permit to transport waste must be held by the relevant contractor, which is issued by Dublin City Council (DCC) as the Permitting Authority.

Waste receiving facilities must also be appropriately licensed. Operators of such facilities are not permitted to receive any waste, unless in possession of a waste permit granted by DCC under the *Waste Management (Permit) Regulations 1998* or a waste licence granted by the EPA. The permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled and/or disposed of at the specified site.

4.3 ESTIMATED WASTE ARISING

4.3.1 Construction Phase

The construction phase of this project includes the demolition of the existing play area to the north of the site and site clearance.

4.3.2 Demolition Phase

The quantity of waste arising was estimated based on a review of the site and the make-up of the buildings currently on the site. An estimation of 100kg/m² was used for each waste material. Based on this, see table 4.1 for the estimated quantities of each waste material.

Table 4.1 Envisaged C&D Waste Arising on Site

C&D Waste Material	Material Quantity (tonnes)
Concrete, Bricks, Tiles, Ceramics	N/A
Glass	N/A
Plasterboard	N/A
Metals	N/A
Potential Hazardous Waste	N/A
General Non-Recyclable	N/A
Plastics	N/A
Asphalt Tar and Tar Products	circa. 50
Total Arisings	circa. 50

Please note the above quantities are **estimates only** and detailed Construction and Demolition Plan will be carried out by the contractor.

4.4 PROPOSALS FOR MINIMISATION, REUSE AND RECYCLING OF C&D WASTE

C&D waste will arise on the project mainly from the demolition and unavoidable construction waste/material surpluses. The Purchasing Manager shall ensure that materials are ordered so that the quantity, timing and storage of the delivery are not conducive to the creation of unnecessary waste.

The majority of the waste construction material will be clean, inert material and it is proposed to reuse it for construction purposes where possible or removed from the site by licensed contractors under the Waste Management Act 1996, Section 5 of the Waste Management (Permit) Regulations 1998, and the Waste Management (Collection Permit) Regulations 2001 and disposed of off-site.

Excavated clay will be carefully stored in segregated piles on the site for subsequent re-use and landscaping on site.

Concrete waste will be collected in receptacles with mixed C&D waste materials, for subsequent separation and recovery at a remote facility. This material could be sent to a facility such as a C&D Waste Recycling Centre. As this material is inert, it can be reused on-site as fill material, rather than importing additional clean fill material. Suitable uses include hardcore under paved areas (roads, parking, footpaths etc.), and as drainage layers under planted zones.

Masonry and wood will be collected in receptacles with mixed C&D waste materials, for subsequent separation and recovery at a remote facility.

Other C&D waste materials will be collected in receptacles with mixed C&D waste materials, for subsequent separation and disposal at a remote facility.

Hazardous wastes will be identified, removed and kept separate from other C&D waste materials in order to avoid further contamination.

Waste will be segregated on site. The C&D waste storage area will have skips and receptacles for all recyclable wastes, as outlined in more detail below. The appointed waste contractor will collect and transfer the recyclable wastes as receptacles are filled. The non-recyclable waste will be transferred to landfill.

It is the intention to engage specialist waste service Contractors, who will possess the requisite authorisations, for the collection and movement of waste off-site, and to bring the material to a facility, which currently holds a Waste Licence or Waste Permit.

European Waste Codes

In 1994, the European Waste Catalogue and Hazardous Waste List were published by the European Commission as two separate documents. The purpose of these documents was to provide for the classification of all wastes and hazardous wastes and they were designed to form a consistent waste classification system across the EU. In Ireland, they form the basis for all national and international waste reporting obligations, such as those associated with waste licences and permits, the National Waste Database and the transport of waste.

Most recently, the EPA has published a document titled the European Waste Catalogue and Hazardous Waste List (2002) which is a condensed version of both the original two documents and their subsequent amendments.

The European Waste Code (EWC) for typical waste materials expected to be generated during the construction of the proposed development are provided in Table 4.2 below.

Table 4.2 European Waste Code (EWC)

Waste Material	EWC
Non-Hazardous	
Concrete bricks, tiles and ceramics	17 01 00
Wood	17 02 01
Glass	17 02 02
Plastic	17 02 03
Bituminous mixtures, coal tar and tarred products	17 03 00
Metals (including their alloys)	17 04 00
Stones and soil not including those outlined in 17 05 03	17 05 04
Other construction and demolition waste	17 09 00

5 TRACEABILITY OF WASTE

A Manager shall be designated as the C&D Waste Manager and have overall responsibility for the implementation of the Project C&D Waste Management Plan. The C&D Waste Manager will be assigned the authority to instruct all site personnel to comply with the specific provisions of the Plan. At the operational level, a Foreman from the main contractor and Foreman from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the discrete operations stated in the Project C&D Waste Management Plan are performed on an on-going basis.

All waste from the site will be disposed of at a licensed facility and carried by a licensed carrier. Therefore, full records of collection and the disposal at the facility will be available.

5.1 TRAINING

Copies of the Final Project C&D Waste Management Plan will be made available to all relevant personnel on site. All site personnel and sub-contractors will be instructed about the objectives of the Project C&D Waste Management Plan and informed of the responsibilities which fall upon them as a consequence of its provisions. Where source segregation, selective demolition and material reuse techniques apply, each member of staff will be given instructions on how to comply with the Project C&D Waste Management Plan. Posters will be designed to reinforce the key messages within the Project C&D Waste Management Plan and will be displayed prominently for the benefit of site staff.

5.2 WASTE AUDITING

The C&D Waste Manager shall arrange for full details of all arising, movements and treatment of construction and demolition waste discards to be recorded during the construction and demolition stages of the Project. Each consignment of C&D waste taken from the site will be subject to documentation, which will conform to Table 5.1 and ensure full traceability of the material to its final destination.

Table 5.1 Details to be Included within Transportation Dockets

Detail	Particulars
Name of Project of Origin	e.g. New Harbour, Motorway
Material being Transported	e.g. Soil, Demolition Concrete, Crushed Asphalt etc.
Quantity of Material	e.g. 20.50 tonnes
Date of Material Movement	e.g. 01/01/2007
Name of Carrier	e.g. Authorised Carriers Ltd.
Destination of Material	e.g. Newtown Residential and Office Development
Proposed Use	e.g. Use as Hardcore in Dwelling Floors

Details of the inputs of materials to the construction site and the outputs of wastage arising from the Project will be investigated and recorded in a Waste Audit, which will identify the amount, nature and composition of the waste generated on the site. The Waste Audit will examine the manner in which the waste is produced and will provide a commentary highlighting how management policies and practices may inherently contribute to the production of construction and demolition waste. The measured waste quantities will be used to quantify the costs of management and disposal in a Waste Audit Report, which will also record lessons learned from these experiences which can be applied to future projects.

The total cost of C&D waste management will be measured and will take account of the purchase cost of materials (including imported soil), handling costs, storage costs, transportation costs, revenue from sales, disposal costs etc. Costs will be calculated for the management of a range of C&D waste materials, using the format shown in Table 5.2 below:

Table 5.2 Standard Record Form for Costs of C&D Waste Management (Sample relates to Soil – separate record forms should be compiled in respect of each waste material)

Material	Estimated Quantities & Costs (tonnes & Euro)
SOIL	
Quantity of Waste Soil (tonnes)	tonne
Purchase Cost i.e. Import Costs (€)	€/tonne
Materials Handling Costs (€)	€/tonne
Material Storage Costs (€)	€/tonne
Material Transportation Costs (€)	€/tonne
Revenue from Material Sales (€)	€/tonne
Material Disposal Costs (€)	€/tonne
Material Treatment Costs (€)	€/tonne
Total Waste Soil Management Costs (€)	€/tonne
Unit Waste Soil Management Costs (€)	€

Final details of the quantities and types of C&D Waste arising from the Project will be forwarded to DCC if required.

6 MEASURES TO MINIMISE ENVIRONMENTAL IMPACTS

There is a need to ensure that residents and businesses are protected from Environmental disturbance during the Demolition/Construction of both major and smaller developments.

6.1 DUST POLLUTION AND LOOSE DEBRIS

The following provisions should be adhered to wherever practicable:

- Burning of materials on site shall not be permitted.
- Emphasis should be placed on the following to minimize the risk of air pollution:-
 - (i) Using processes which do not generate hazardous fumes and hazardous dust
 - (ii) Ensuring that airborne hazards do not escape from the site to affect members of the public and surrounding environment.
- Dust pollution will be minimized during demolition by watering down any cutting processes which may generate dust.
- Stockpiles of earth shall be damped down or otherwise suitably treated to prevent the emission of dust from the site. Stockpiles should be planned and sited to minimize the

potential for dust generation. The handling of spoil should be kept to a minimum and when materials are deposited onto a stockpile it should be from the minimum possible height.

- The contractor shall ensure that the area around the site, including the public roads, are regularly and adequately swept to prevent any accumulation of dust and dirt.
- Skips and removal vehicles shall be properly covered when leaving the site. Spoil should be handled in such a way so that it does not give rise to excessive dust.
- Watering of rubble chutes shall be undertaken where necessary to prevent dust emission.
- The contractor should take all necessary precautions to prevent smoke emissions or fumes from plant or stored fuel oils from drifting into the surrounding areas. In particular, measures should be taken to ensure that all plant is well maintained and not left running for long periods when not in use.

7 SITE SECURITY

It is proposed to erect a 2.5m High security type steel fence around the perimeter of the site at the beginning of the works with access via 2.5m high steel gates.

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