

**CONSTRUCTION PHASE
WASTE AND BY-PRODUCT MANAGEMENT PLAN**

FOR

**CORNEL LIVING LIMITED
RIVERSIDE ONE
SIR JOHN ROGERSON'S QUAY
DUBLIN 2**

RELATING TO A PROPOSED

RESIDENTIAL DEVELOPMENT

AT

**LANDS AT CORNELSCOURT VILLAGE, OLD BRAY ROAD, CORNELSCOURT,
DUBLIN 18**

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1.0 INTRODUCTION

This document presents the Construction Phase Waste & By-Product Management Plan (CWMP) for the control, management and monitoring of waste associated with the development of a proposed residential development on lands at Cornelscourt Village, Old Bray Road, Cornelscourt, Dublin 18.

The proposed development shall provide for the construction of a new residential development of 468 no. units in the form of 452 no. apartment units (41 no. studio apartment units, 257 no. 1 bed apartment units, 136 no. 2 bed apartment units; and 18 no. 3 bed apartment units) and 16 no. house units (10 no. 3 bed semi-detached house units and 6 no. 1 bed bungalow units). A café / restaurant of c. 140 sq m; office space of 149 sq m; concierge of c. 149 sq m and central residential tenant amenity space of c. 458 sq m is also proposed.

The Construction and Demolition Waste Management Plan has been prepared to demonstrate how the Construction Phase will comply with the following relevant legislation, guidance and relevant Best Practice Guidelines:

Waste Management Acts 1996

Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)

Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)

Department of the Environment, Heritage and Local Government – Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects – July 2006.

The Eastern-Midlands Region Waste Management Plan 2015-2021.

EPA “Guidance on Soil and Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations – Version 3 June 2019

The Construction Phase Waste Management Plan has been prepared with regard to the strategy, policy and objectives contained in *Chapter 5.1.2-Waste Management* of the *Dun Laoghaire Rathdown County Development Plan 2016 – 2022* as follows:

DLR Co Co- Waste Management Strategy

To promote and facilitate best practice in prevention, re-use, recovery, recycling and disposal of all waste and environmental emissions produced in the County.

DLR Co Co- Waste Re-Use and Recycling

It is the policy of the Council, to promote the increased re-use and the re-cycling of materials from all waste streams.

The **Objective of this Waste Management Plan** is to minimise the quantity of waste generated by construction activities, to maximise the use of materials in an efficient manner and to maximise the segregation of construction waste materials on-site to produce uncontaminated waste streams for off-site recycling.

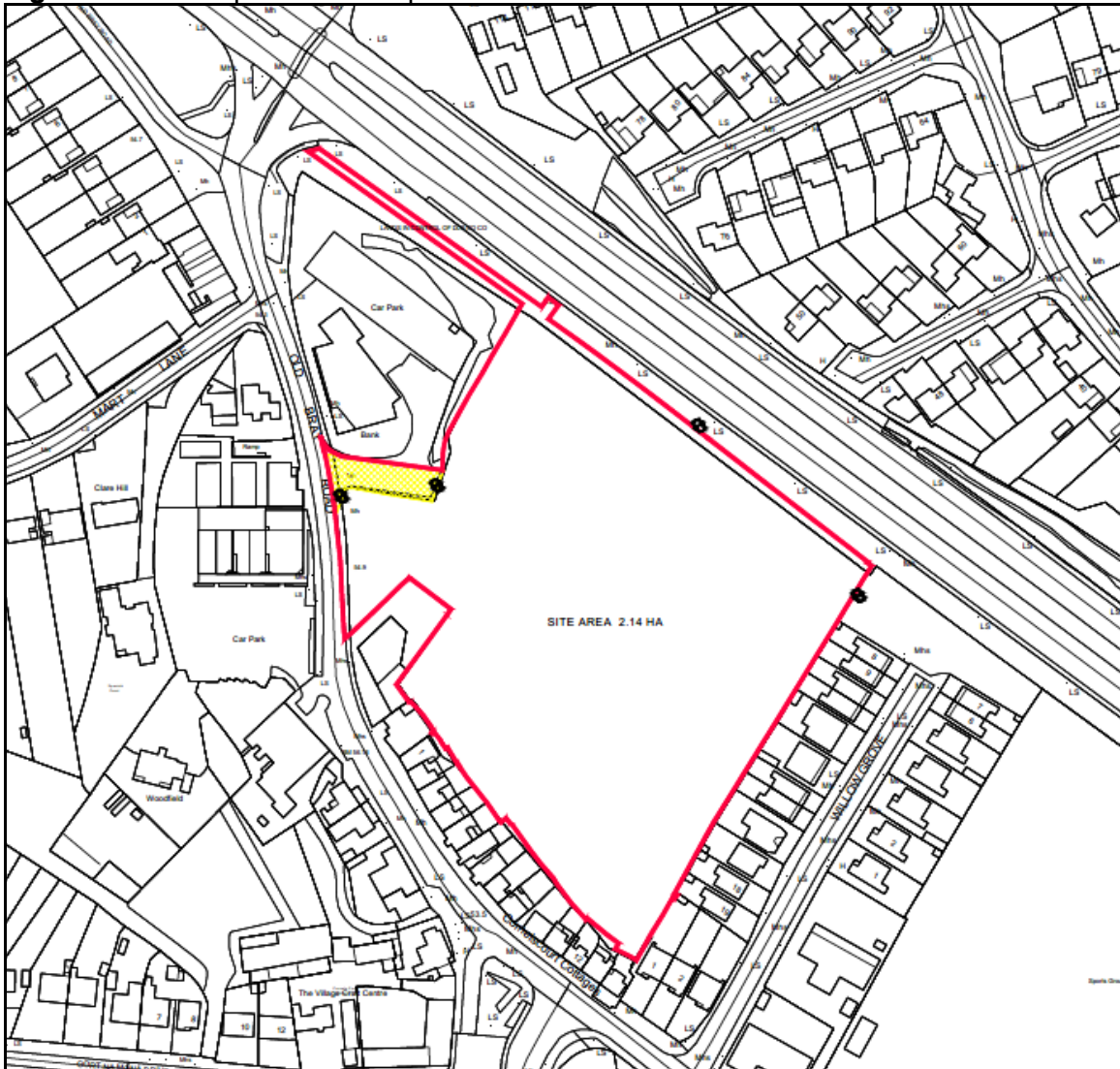
The Waste Management Plan shall be implemented throughout the construction phase of the development to ensure the following:

- That all site activities are effectively managed to minimise the generation of waste and to maximise the opportunities for on-site reuse and recycling of waste materials.
- To ensure that all waste materials are segregated into different waste fractions and stored on-site in a managed and dedicated waste storage area.
- To ensure that all waste materials generated by site activities are removed from site by appropriately permitted waste haulage contractors and that all wastes are disposed of at approved waste licensed / permitted facilities in compliance with the *Waste Management Act 1996* and all associated Waste Management Regulations.

2.0 DEVELOPMENT LOCATION

The subject site extends to c. 2.14ha on vacant undeveloped lands bounded to the northeast by the N11 dual carriageway, to the southeast by Willow Grove housing, to the southwest by Cornelscourt Village and to the northwest by AIB lands as indicated in Figure 1 below.

Figure 1 Proposed Development Site



3.0 DESCRIPTION OF SITE ACTIVITIES & WASTE ARISING

The development of the subject site will require the the stripping of top and sub soils and the excavation of ground to basement level. The range of works required for the Construction Phase are summarised in Table 1. The expected construction and demolition waste that will be generated throughout the course of the development are described in Tables 2 - 4 below.

Table 1 Sequence of Construction & Demolition Works

Activity Sequence	General Description
Identification of Existing Utility Services	Set up bunting, mark location of live services, including E.S.B., Gas etc.
Removal of Vegetation	e.g. Trees and vegetation
Site preparation	Soil stripping, stockpiling and export
Transport of material off site	Segregation of materials on site
Substructure	Rebar, Formwork and Pour, Foundations
Superstructure	Rebar, Formwork and Pour, Blockwork
Roof	Rebar, Formwork and Pour and Waterproof
External Envelope	Place façade to superstructure
Internal Finishes	Mechanical & Electrical etc.
External Landscaping	Hard and soft landscaping

Table 2 Typical Construction Waste Composition

Description of Waste	%
Mixed Construction & Demolition Waste	33
Wood	28
Plasterboard (Gypsum materials)	10
Ferrous Metals	8
Concrete	6
Mixed other wastes	15
<i>Total</i>	<i>100</i>

Table 3 Typical Construction Waste Types

Description of Waste	Corresponding LoW Code
Concrete, Bricks, Tiles and Ceramics	17 01
Concrete	17 01 01
Bricks	17 01 02
Tiles and Ceramics	17 01 03
Mixture of concrete, bricks tiles & ceramics	17 01 07
Wood, Glass and Plastic	17 02
Wood	17 02 01
Glass	17 02 02
Plastic	17 02 03
Bituminous mixtures, coal tar and products	17 03 01*
Bituminous mixtures containing other than those mentioned in 17 03 01	17 03 02
Metals (including their alloys)	17 04
Copper, Bronze, Brass	17 04 01
Aluminium	17 04 02
Lead	17 04 03
Zinc	17 04 04
Iron and Steel	17 04 05
Tin	17 04 06
Mixed Metals	17 04 07
Insulation and Construction Materials	17 06 04
Construction materials containing Asbestos	17 06 05*
Gypsum based construction material	17 08 02
Mixed Construction and Demolition Waste other than those mentioned in 17 09 01, 17 09 02, 17 09 03	17 09 04
Sewage Screenings	19 08 01
Paper and Cardboard	20 01 01
Wood other than that mentioned in 20 01 37	20.01 38
Soil and Stones	20 02 02
Mixed Municipal Waste	20 03 01
Hydraulic oils	13 01 01*
Fuel oils and diesel	13 07 01*

Table 4 Predicted Waste Generation

Waste Type	Predicted tonnage to be produced	Re-Use		Recyclable		Disposal	
		Tonnage	%	Tonnage	%	Tonnage	%
Mixed C&D	1250	125	10	1000	80	125	10
Timber	1000	400	40	550	55	50	5
Plasterboard	500	150	30	300	60	50	10
Metals	250	12.5	5	225	90	12.5	5
Concrete	200	60	30	130	65	10	5
Mixed waste	800	160	20	480	60	160	20
Total	4000	907.5		2685		407.5	

It is estimated that c. 80,000m³ of topsoil of subsoils will be excavated to facilitate the development.

Landscaping of the development will re-use a quantity of the stockpiled topsoil.

4.0 PRINCIPALS OF THE DEMOLITION & CONSTRUCTION WASTE MANAGEMENT PLAN

Waste materials generated by construction and demolition activities will be managed according to the *Department of the Environment, Heritage and Local Government's 2006 Publication - Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects*.

The Waste Management Plan specifically addresses the following points:

- Analysis of waste arisings / material surpluses
- Waste Management Responsibilities and Training
- Specific Waste Management
- objectives for the Project including the potential to re-use existing on-site materials for further use in the construction phase.
- Methods proposed for Prevention, Reuse and Recycling
- Waste Handling Procedures
- Waste Storage Procedures
- Waste Disposal Procedures
- Waste Auditing
- Record Keeping

5.0 WASTE MANAGEMENT & RESPONSIBILITIES

Construction Project Manager

The Construction Project Manager will be responsible for the overall implementation of the plan and associated procedure. The Construction Project Manager will ensure that the reporting and recording requirements are met and all necessary resources are in place to support the implementation of the plan.

Nominated C&D Waste Manager

A technically competent and appropriately trained C&D Waste Officer will be appointed by the Construction Project Manager. The nominated person will be responsible for all aspects waste management throughout the different stages of the project including waste assessment and characterisation, implementation of the CWMP (and associated target recycling rates), and effective communication of the objectives with all the operatives associated with the project (including site staff, external contractors and suppliers).

A key objective of the nominated person will be the maintenance of accurate records on the quantities of waste / surplus materials generation and management. The recording of summary information will further assist the implementation of the plan.

Site Personnel

All personnel on site will be responsible for the effective implementation of the plan and associated procedures. All staff will receive training on waste prevention, segregation and best practice guidelines.

Staff Training

Copies of the CWMP will be made available to all relevant personnel on site. The Construction Project Manager will arrange for all site personnel and sub-contractors to be instructed about / receive training on the objectives of the CWMP and materials management, and be informed of the responsibilities that fall upon them as a consequence of its provision. The topics to be covered will include;

Project programme and requirements

Health and Safety requirements

CWMP

Materials to be segregated

Segregation systems and protocols

Arrangement for the storage and handling of reusable materials and recyclables

Document control requirements

Where source segregation and materials re-use techniques apply, each member of staff will be given instructions on how to comply with the CWMP and will be displayed for the benefit of site staff.

6.0 CONSTRUCTION WASTE MANAGEMENT & DISPOSAL

- It is proposed that from the outset of construction activities, a dedicated and secure compound containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, shall be established within the active construction phase of the development site (Figure 2).
- Spill kits shall be located within the site compound with clearly labelled instructions on how they shall be used to clean up fuel/oil spills (Figure 3).
- All vehicle and plant oils and liquid construction materials shall be stored in impermeable storage units.
- All diesel-powered generators shall be inspected on at least a weekly basis by a delegate of the project manager to ensure it is not leaking diesel or oils.
- All empty containers containing residual quantities of oils, greases and hydrocarbon-based liquids shall be stored in a dedicated bunded receptacle (Figure 4).
- In order to ensure that the construction contractors correctly segregate waste materials, it is the responsibility of the Construction Project Manager to ensure all staff are informed by means of clear signage and verbal instruction and made responsible for ensuring site housekeeping and the proper segregation of construction waste materials.
- It will be the responsibility of the Construction Project Manager to ensure that a written record of all quantities and natures of wastes exported off-site are maintained on-site in a Waste File at the Project office.
- It is the responsibility of the Construction Project Manager or his/her delegate that all contracted waste haulage drivers hold an appropriate Waste Collection Permit for the transport of waste loads and that all waste materials are delivered to an appropriately licenced or permitted waste facility in compliance with the following relevant Regulations:

Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)

Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)

Waste Management (Facility Permit and Registration) Regulations S.I.821 of 2007 and the Waste Facility Permit under the Waste Management (Facility Permit and Registration) Amendment Regulations S.I.86 of 2008.

- Typical Waste materials that are to be generated or anticipated to be generated by construction works are classified as follows under *Section 17 Construction and Demolition Wastes* of the EPA's Classification of Hazardous Wastes as detailed in Table 1.

- It is proposed that waste materials will be collected and stored in separate clearly labelled skips in a predefined waste storage area in the site compound and that these materials will be collected by a Permitted Waste Contractor holding an appropriate Waste Collection permit in compliance with *Waste Management (Collection Permit) Regulations 2007 (SI No. 820 of 2007)* and *Waste Management (Collection Permit) Amendment Regulations 2008 (SI No. 87 of 2008)* and that they will be sent for disposal or further processing to appropriately Permitted / Licensed Waste Facilities in compliance with *Waste Management (Facility Permit and Registration) Regulations S.I. No. 821 of 2007* and the *Waste Management (Facility Permit and Registration) Amendment Regulations S.I. No. 86 of 2008*.
- Prior to the commencement of the project, the Construction Project Manager shall identify a permitted Waste Contractor who shall be employed to collect and dispose of all inert and hazardous wastes arising from the project works. In addition, the Construction Project Manager shall identify all waste licensed / permitted facilities that will accept all expected waste exported off-site and will maintain copies of all relevant Waste Permits / Licences as required.
- All waste soils prior to being exported off-site, shall be classified as inert, non-hazardous or hazardous in accordance with the *EPA's Waste Classification Guidance – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* document dated 1st June 2015 to ensure that the waste material is transferred by an appropriately permitted waste collection permit holder and brought to an appropriately permitted or licensed waste facility.

Figure 2 Waste segregation skips



Figure 3 Spill Kit



Figure 4 Bund for waste oil container storage



7.0 ON-SITE WASTE REDUCTION REUSE RECYCLING AND MANAGEMENT

Waste will arise on the project mainly from bulk excavation and general construction activities relating to the roads and services. The site management team will order materials and arrange storage in order to minimise the potential for waste on site.

- Materials will be ordered on an “*as needed*” basis to prevent over supply
- Materials shall be correctly stored and handled to minimise the generation of damaged materials
- Materials shall be ordered in appropriate sequence to minimise materials stored on site
- All staff and Sub contractors shall be advised through tool box talks on how to dispose of their waste correctly on-site.
- Concrete blocks, engineering bricks and clay bricks that are surplus will be broken up and used for hardstanding areas.
- Excess wood will be segregated in separate skips and sent for recycling. The site management will police to make sure that the segregation of the wood skip is kept exclusively for wood.
- Plastic arising from general waste or packaging will be segregated and stored in separate skips. Again, the site management team will ensure that there is no contamination of the segregated skips on site.
- Any excess metal generated on site from reinforcement steel and from the demolition element of the project will be kept in the one area and removed off site to a licenced metal recycling facility. The C&D Waste Officer will keep certification of this on file on site.

- Top soil that is required for the soft landscaping will be measured and this quantity will be retained on site. The soil that will have to be removed off site will be removed to a licenced landfill facility. The C&D Waste Officer will keep records of the removal and the certification on file on site.
- Any hazardous material discovered during the course of the construction shall be reported to the C&D Waste Officer. The relevant authorities will be informed and an agreed method for the removal of the hazardous material.
- Construction waste material such as damaged or broken concrete slabs, blocks, bricks and tiles generated that is deemed by the Project Engineer to be suitable for reuse on the project site for ground-fill material will be processed if necessary, by on-site mobile crushing plant. This initiative shall provide a positive environmental impact to the construction phase as follows:
 - Reduction in the requirement for virgin aggregate materials from quarries
 - Reduction in energy required to extract, process and transport virgin aggregates
 - Reduced HGV movements associated with the delivery of imported aggregates to the site
 - Reduced noise levels associated with reduced HGV movements
 - Reduction in the amount of landfill space required to accept C&D waste

Waste Soils & Stones Export & Article 27 Declarations

Top and subsoils will be characterised as being inert, non-inert or hazardous in accordance with *Landfill Directive (2003/33/EC)* by conducting site investigations. The classification of the soils shall be established by Waste Acceptance Criteria testing.

Excavated rock, soils and stones shall be removed off-site throughout the development and exported by an appropriately permitted haulage contractor to an appropriately permitted/licenced waste acceptance facility.

The Construction Project Manager shall inform Dun Laoghaire Rathdown County Council of the waste facilities to which inert and hazardous soils and the volumes of which shall be exported to.

Excavated excess soils that are required to be exported off-site shall be tested to determine their classification as hazardous or non-hazardous in accordance with EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous. Non-Hazardous soils may be suitable for re-use in other construction sites and may be declared as a by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011*. Article 27 requires that the material classified not a waste but a by-product must meet specific criteria and that that a declaration of a material as a by-product is notified to the EPA. The EPA publication *“Guidance on Soil and Stone By-Products in the context of Article 27 of the European Communities (Waste Directive) Regulations – Version 3 June 2019* shall be considered

in this regard. Appendix I presents the schematic process by which a material is determined as a waste or a by-product.

The records of all WAC tests shall be maintained in the site's Waste File including the destination of the facility that contaminated soils are exported to and the details of the permitted haulier's Waste Collection Permit.

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Inert Wastes

The waste material generated by site construction works will be mixed Construction & Demolition (C&D) waste, comprising of soil and stone, concrete, tiles, ceramics, and bricks. Material may be processed on site if necessary, using an on-site crusher unit, which will process fill material into suitable size classes for the reuse as on-site construction materials. Mixed C&D waste with large non-uniform stone or compacted soils may be passed through a mobile crusher unit which will render the material into a uniform shape and size which will allow for improved backfilling and compaction to required engineering standards.

Hazardous Wastes

The management of all hazardous waste arisings if they occur, shall be coordinated by the C&D Waste Officer and the Health and Safety Manager.

Hazardous wastes such as waste oils and construction liquids shall be stored in dedicated clearly labelled impermeable containers in the waste compound prior to removal off-site.

Contaminated Soil

Where contaminated soils/materials are discovered or occur as a result of accidental spillages of oils or fuels during the construction phase, these areas of ground will be isolated and tested in accordance with the *2002 Landfill Directive (2003/33/EC)* for contamination, and pending the results of laboratory WAC testing, will be excavated and exported off-site by an appropriately Permitted Waste Contractor holding an appropriate Waste Collection permit and that this hazardous material will be sent for appropriate treatment / disposal to an appropriately Permitted / Licenced Waste Facility.

Invasive Species

Japanese knotweed & Giant Hogweed

A competent and experienced ecologist shall survey the site prior to any works commencing to determine the presence of any invasive plant species, particularly Japanese knotweed (*Fallopia japonica*) & Giant Hogweed (*Heracleum mantegazzianum*).

The Construction Project Manager shall ensure proper site management to prevent the spread of Japanese knotweed. The Construction Project Manager shall manage the site to prevent the spread of Japanese knotweed in accordance with:

Best Practice Management Guidelines: Japanese knotweed *Fallopia japonica*: Invasive Species Ireland. Published 2008.

<http://invasivespeciesireland.com/wp-content/uploads/2011/09/Japaneseknotweed-BPM.pdf>

Knotweed Code of Practice: UK Environment Agency. Published 16th January 2014.
<http://www.environment-agency.gov.uk/homeandleisure/wildlife/130079.aspx>

Guidelines on The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads: National Roads Authority. Published December 2010.

<http://www.nra.ie/environment/environmental-constructionguidelines/Management-of-Noxious-Weeds-and-Non-Native-Invasive-Plant-Species-on-National-Road-Schemes.pdf>

The Construction Project Manager shall retain a suitably qualified specialist experienced in the control and management of invasive species who shall treat and dispose of Japanese knotweed and any other invasive plant species identified on the site in accordance with the Local Authority's Invasive Species Protocols.

A full record of all treated and disposed Japanese Knotweed and Giant Hogweed shall be made available to the Local Authority to assist in the establishment of an Invasive Plant Species Database.

8.0 RECORD KEEPING

It is the responsibility of the Construction Project Manager or his/her delegate that a written record of all quantities and natures of all wastes reused / recycled and exported off-site and Article 27 declarations during the project are maintained in a Waste File at the Project office

The following information shall be recorded for each load of waste exported off-site:

- Waste Type EWC Code and description.
- Volume of waste collected.

- Waste collection contractor's Waste Collection Permit Number and collection receipt including vehicle registration number.
- Destination of waste load including Waste Permit / Licence number of facility.
- Description of how waste at facility shall be treated i.e. disposal / recovery / export
- Details of all Article 27 declarations

The waste records shall be issued to Dun Laoghaire Rathdown County Council as required / requested.

Where practicable, a computerised monitoring tool may be employed. This system will enable the Contractor to measure and record the quantity of waste generated, and identify possible savings on wastage. Thus, each consignment of construction waste taken from site will be subject to documentation and recording.

Verifiable and validated tracking and authorisation documentation will be maintained for all wastes destined for re-use, recovery, recycling or disposal. Justification will also be provided where a disposal option had been employed.

In addition a record will be kept of all materials as they arrive on site detailing the assignment of specific uses within the works. This will enable the monitoring of the quantity and type of waste produced at various stages throughout the project.

9.0 CONSTRUCTION WASTE MANAGEMENT AUDITING

The effectiveness of the Construction Waste Management Plan and its implementation, will be subject to regular audits by the C&D Waste Officer throughout the duration of the project in accordance with the Audit Plan (to be developed during the works).

The regular audits shall focus on materials inputs to the project and the waste outputs for each operation identifying additional opportunities for waste reduction, re-use and recycling.

The audits will also investigate the operational factors and management policies that contribute to the generation of waste and identify appropriate corrective actions, where necessary.

Performance targets will be developed, e.g. an 85% overall recycling target, successes and failures will be recorded and Action Plans will be developed to address any issue which arise.

Inspections of the waste storage areas will be undertaken on a weekly basis, issues relating to housekeeping, inappropriate storage and / or segregation will be actioned at the earliest practicable opportunity.

The Construction Project Manager will record the findings of the audits, including waste types identified, quantities of waste arising, final treatments and cost, in a report to be available to the Local Authority as required during the course of the works.

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 the Final Waste Audit, which will identify the amount, nature and composition of the waste generated on the site.

The Final 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 measure waste quantities will be used to qualify 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.

Appendix I

Decision tree for determining whether a material is a by-product

