

CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN

AT

LANDS AT THE FORMER
TEDCASTLES SITE, OLD
DUNLEARY ROAD,
CUMBERLAND STREET,
DUN LEARY HILL, DUN
LAOGHAIRE, CO. DUBLIN

Report Prepared For

Ted Living Limited

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1.0 INTRODUCTION

AWN Consulting Ltd. (AWN) has prepared this Outline Construction & Demolition Waste Management Plan (C&D WMP) on behalf of Ted Living Limited, for a predominantly build to rent residential development comprising of 146 no. apartment units. The development also includes 1 no. retail unit, co-working unit, open spaces, waste storage facilities and associated car and bicycle parking provision at lands at the former Ted Castles site, Old Dun Leary Road, Cumberland Street, Dun Leary Hill, Dun Laoghaire, Co. Dublin.

The purpose of this plan is to provide information necessary to ensure that the management of construction and demolition (C&D) waste at the site is undertaken in accordance with current legal and industry standards including the *Waste Management Acts 1996 - 2011* and associated Regulations ¹, *Protection of the Environment Act 2003* as amended ², *Litter Pollution Act 1997* as amended ³ and the *Eastern-Midlands Region Waste Management Plan 2015 – 2021* ⁴. In particular, this plan aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill, wherever possible. It also seeks to provide guidance on the appropriate collection and transport of waste from the site to prevent issues associated with litter or more serious environmental pollution (e.g. contamination of soil and/or water).

This C&D WMP includes information on the legal and policy framework for C&D waste management in Ireland, estimates of the type and quantity of C&D waste to be generated by the proposed development and makes recommendations for management of different waste streams.

2.0 CONSTRUCTION & DEMOLITION WASTE MANAGEMENT IN IRELAND

2.1 National Level

The Irish Government issued a policy statement in September 1998 known as '*Changing Our Ways*' ⁵, which identified objectives for the prevention, minimisation, reuse, recycling, recovery and disposal of waste in Ireland. The target for C&D waste in this report was to recycle at least 50% of C&D waste within a five year period (by 2003), with a progressive increase to at least 85% over fifteen years (i.e. 2013).

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 entitled '*Recycling of Construction and Demolition Waste*' ⁶ concerning the development and implementation of a voluntary construction industry programme to meet the Government's objectives for the recovery of C&D waste.

In September 2020 the Irish Government released a policy document outlining a new action plan for Ireland to cover the period of 2020-2025. This plan '*A Waste Action Plan for a Circular Economy*' ⁷ was prepared in response to the 'European Green Deal' which sets a roadmap for a transition to a new economy, where climate and environmental challenges are turned into opportunities.

It aims to fulfil the commitment in the Programme for Government to publish and start implementing a new National Waste Action Plan. It is intended that this new national waste policy will inform and give direction to waste planning and management in Ireland over the coming years. It will be followed later this year by an All of Government Circular Economy Strategy. The policy document shifts focus away from waste disposal and moves it back up the production chain. To support the policy, regulation is already being used (Circular Economy Legislative Package) or in the pipeline (Single Use Plastics Directive). The policy document contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer

Protection & Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

One of the first actions to be taken is the development of a high-level, whole of Government Circular Economy Strategy to set a course for Ireland to transition across all sectors and at all levels of Government toward circularity. This strategy was issued for public consultation in April 2021.

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. The NCDWC subsequently produced '*Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects*'⁸ in July 2006 in conjunction with the then Department of the Environment, Heritage and Local Government (DoEHLG). The guidelines outline the issues that need to be addressed at the pre-planning stage of a development all the way through to its completion. These guidelines have been followed in the preparation of this document and include the following elements:

- Predicted C&D wastes and procedures to prevent, minimise, recycle and reuse wastes;
- Waste disposal/recycling of C&D wastes at the site;
- Provision of training for waste manager and site crew;
- Details of proposed record keeping system;
- Details of waste audit procedures and plan; and
- Details of consultation with relevant bodies i.e. waste recycling companies, Dún Laoghaire–Rathdown County Council etc.

Section 3 of the Guidelines identifies thresholds above which there is a requirement for the preparation of a C&D Waste Management Plan for developments. This development requires a C&D WMP under the following criterion:

- New residential developments of 10 houses or more; and
- Demolition/renovation/refurbishment project generating in excess of 100m³ in volume, of C&D waste

Other guidelines followed in the preparation of this report include '*Construction and Demolition Waste Management – a handbook for Contractors and Site Managers*'⁹ published by FÁS and the Construction Industry Federation in 2002.

These guidance documents are considered to define best practice for C&D projects in Ireland and describe how C&D projects are to be undertaken such that environmental impacts and risks are minimised and maximum levels of waste recycling are achieved.

2.2 Regional Level

The proposed development is located in the Local Authority area of Dún Laoghaire–Rathdown County Council (DLRCC).

The *Eastern-Midlands Region Waste Management Plan 2015 – 2021* is the regional waste management plan for the DLRCC area published in May 2015. Currently the regional waste management plans are under review with new “draft” versions available for review and comment.

The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of “70% preparing for reuse, recycling and other recovery of construction and demolition waste” (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

The DLRCC *County Development Plan 2016 – 2022* (2016) ¹⁰ sets out a number of objectives for Dún Laoghaire–Rathdown County Council in line with the objectives of the regional waste management plan.

Waste policies with a particular relevance to this proposed development are:

Policy:

- **Policy EI12: Waste Management Strategy:** It is Council policy to conform to the European Union and National Waste Management Hierarchy as follows:
 - Waste prevention
 - Minimisation
 - Re-use
 - Waste recycling
 - Energy recovery and
 - Disposal
 subject to economic and technical feasibility and Environmental Assessment.
- **Policy EI13: Waste Plans:** It is Council policy to publish plans for the collection, treatment, handling and disposal of waste in accordance with the provisions of the Waste Management Acts 1996 (as amended) and Protection of the Environment Act 2003 (as amended).
- **Policy EI14: Private Waste Companies:** It is Council policy to ensure that all waste that is disposed of by private waste companies is done so in compliance with the requirements of the Environmental Protection Agency and the Waste Management Legislation and in accordance with the Planning Code.
- **Policy EI16: Waste Re-use and Recycling:** It is Council policy to promote the increased re-use and re-cycling of materials from all waste streams. The Council will co-operate with other agencies in viable schemes for the extraction of useful materials from refuse for re-use or re-cycling and will adopt the National targets as stated in the 'Dublin Regional Waste Management Plan 2005-2010'

With regard to C&D waste specifically the Development Plan requires that the 'Construction and Demolition Waste Management Plan, as a minimum, should include provision for the management of all construction and demolition waste arising on site, and make provision for the reuse of said material and / or the recovery or disposal of this waste to authorised facilities by authorised collectors.' It also requires that where appropriate, excavated material from development sites should be reused on the subject site.

The Draft *Dún Laoghaire-Rathdown County Development Plan 2022 – 2028* ¹⁵ sets out a number of policies for the Dún Laoghaire-Rathdown area in line with the objectives of the waste management plan.

Proposed waste policies with a particular relevance to the proposed development are as follows:

Policy Objective EI12: Resource Management

It is a Policy Objective to implement the Eastern-Midlands Region Waste Management Plan 2015-2021 and subsequent plans, in supporting the transition from a waste management economy towards a circular economy, to enhance employment and increase the value recovery and recirculation of resources. Underpinning this objective is the requirement to conform to the European Union and National Waste Management Hierarchy of the most favoured options for waste as illustrated below subject to economic and technical feasibility and Environmental Assessment.

Policy Objective EI13: Waste Management Infrastructure, Prevention, Reduction, Reuse and Recycling

- To support the principles of the circular economy, good waste management and the implementation of best international practice in relation to waste management in order for the County and the Region to become self-sufficient in terms of resource and waste management and to provide a waste management infrastructure that supports this objective.
- To support the principles of the circular economy, good waste management and the implementation of best international practice in relation to waste management in order for the County and the Region to become self-sufficient in terms of resource and waste management and to provide a waste management infrastructure that supports this objective.
- To provide for civic amenity facilities and bring centres as part of an integrated waste collection system in accessible locations throughout the County and promote the importance of kerbside source segregated collection of household and commercial waste as the best method to ensure the quality of waste presented for recycling is preserved.
- To ensure any waste amenity facilities adhere to the Waste Regional Offices Waste Management Infrastructure siting guidelines.
- To develop a County wide network of multi material recycling centres, bring centres and a re-use centre and to require the provision of adequately-sized recycling facilities in new commercial and large-scale residential developments, where appropriate.
- To require the inclusion of such centres in all large retail developments to maximise access by the public. To ensure new developments are designed and constructed in line with the Council's Guidelines for Waste Storage Facilities

Policy Objective EI14: Hazardous Waste

It is a Policy Objective to adhere to the recommendations of the 'National Hazardous Waste Management Plan 2014-2020' and any subsequent plan, and to co-operate with other agencies, to plan, organise, authorise and supervise the disposal of hazardous waste streams, including hazardous waste identified during construction and demolition projects.

2.3 Legislative Requirements

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

- Waste Management Act 1996 as amended. Sub-ordinate legislation includes:
 - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended
 - Waste Management (Collection Permit) Regulations (S.I No. 820 of 2007) as amended
 - Waste Management (Facility Permit and Registration) Regulations 2007, (S.I No. 821 of 2007) as amended
 - Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended
 - Waste Management (Packaging) Regulations 2014 (S.I. 282 of 2014) as amended
 - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)

- Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
- European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
- European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended
- Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009), as amended
- European Union (Household Food Waste and Bio-waste) Regulation 2015 (S.I. No. 191 of 2015)
- Waste Management (Hazardous Waste) Regulations, 1998 (S.I. No. 163 of 1998) as amended
- Waste Management (Shipments of Waste) Regulations, 2007 (S.I. No. 419 of 2007) as amended
- Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998)
- European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)
- European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended
- Environmental Protection Act 1992 as amended.
- Litter Pollution Act 1997 as amended.
- Planning and Development Act 2000 as amended ¹¹.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the *Waste Management Act 1996 - 2001* 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 recycling, recovery or disposal (including its method of disposal). As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final destination, waste contractors will be employed to physically transport waste to the final destination. 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 transportation and disposal/recovery/recycling of waste).

It is therefore imperative that the client ensures that the waste contractors engaged by construction contractors are legally compliant with respect to waste transportation, recycling, recovery and disposal. This includes the requirement that a contractor handle, transport and recycle/recover/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

A collection permit to transport waste must be held by each waste contractor which is issued by the National Waste Collection Permit Office (NWCPO). Waste receiving facilities must also be appropriately permitted or licensed. Operators of such facilities cannot receive any waste, unless in possession of a Certificate of Registration (COR) or waste permit granted by the relevant Local Authority under the *Waste Management (Facility Permit & Registration) Regulations 2007 and Amendments* or a waste or IE licence granted by the EPA. The COR/permit/licence held will specify the type and quantity of waste able to be received, stored, sorted, recycled, recovered and/or disposed of at the specified site.

2.4 Local Authority Guidelines

DLRCC’s Waste Management Division have issued *Guidance Notes for Environmental Management of Construction Projects* (2020) ¹² which provide good practice guidance for the preparation of Construction & Demolition Waste Management Plans for in

accordance with the DOEHLG “*Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects*”.

The objective of the guidelines is to allow developers and designers to demonstrate to local planning and waste management authorities that they have considered how the design and the operation of waste management services will enable construction and demolition contractors to effectively manage their wastes arising.

The Plan should document proposals for the management of C&D waste as concisely as possible. For clarity, besides assisting assessment and implementation, the Project C&D Waste Management Plan should be organised systematically. Individual headings should be provided, describing the following:

- Description of the Project;
- Wastes arising including proposals for minimisation/reuse/recycling;
- Estimated cost of waste management;
- Demolition Plan;
- Roles including training and responsibilities for C&D Waste;
- Record keeping procedures; and
- Waste auditing protocols

This C&D WMP has been prepared to demonstrate exactly that and aims to do that in a comprehensive manner.

3.0 DESCRIPTION OF THE PROJECT

3.1 Location, Size and Scale of the Development

The proposed development at the former Ted Castles site and DunLeary House (a proposed Protected Structure), Old Dun Leary Road, Cumberland Street and Dun Leary Hill, Dun Laoghaire will consist of:

- The provision of 146 no. apartment units (Build to Rent) and all associated ancillary facilities (including residential amenities) in a building with an overall height ranging from 6 storeys (with set backs from 4th & 5th storey) addressing Dun Leary Hill, to 5 and 8 storeys (with set back from 7th storey) addressing Old Dun Leary Road and 6-7 storeys (with set backs at 8th storey) addressing Cumberland Street. The proposal provides for private and communal open spaces in the form of balconies and terraces throughout.
- A retail unit (c.290m²) at ground floor level addressing Old Dun Leary Road and Cumberland Street
- The refurbishment, partial removal and adaptation of a 4 storey building on site known as “DunLeary House” (a proposed Protected Structure) to provide co-working office suites (c.247m²) at Levels 01,02 and 03. The works will include partial removal of original walls and floors, removal of non original extensions to DunLeary House, repointing and repair of brickwork and granite fabric, reinstatement of timber sash windows, removal of existing roof, removal; alteration and reinstatement of internal floor layouts, reinstatement of entrance point on DunLeary Hill, removal of non original level 00 and linking the existing building to the new development from level 00 to level 03 with the construction of 3 new floors of development (with set back at roof level) above the existing building. It is proposed to repair, reinstate and improve the existing boundary treatment to DunLeary House.

- Provision of 52 no. car parking spaces in total - 44 no. car parking spaces provided at level 00. At Cumberland Street 11 no. existing on street car parking spaces will be removed and 8 no. on street car parking spaces provided. Provision of 277 bicycle parking spaces (94 no. cycle parking spaces accommodated in bicycle stands and 183 no. long term bicycle parking spaces within a secure storage area) and 4 no. motorbike parking spaces, all at Level 00. A new vehicular entrance/cycle path (off the Old Dun Leary Road), ancillary plant areas, ESB substation and storage areas.
- Extensive hard and soft landscaping throughout, green roof, public lighting, signage, boundary treatments and public realm improvements.
- The demolition of the existing open fronted shed on site and all associated ancillary site services and site development works.

3.2 Details of the Non-Hazardous Wastes to be produced

There will be waste materials generated from the demolition of the existing building on site, as well as general site clearance. It is envisaged that some of the site wall will be retained for use in landscaping. The volume of waste generated from demolition will be more difficult to segregate than waste generated from the construction phase, as many of the building materials will be bonded together or integrated i.e. plasterboard on timber ceiling joists, steel embedded in concrete etc.

There will also be soil and stones excavated to facilitate construction of the new building foundations, installation of services and carpark for the building. The volume of material to be excavated has been estimated by the project engineers (DBFL) at c. 6,000m³. Any suitable excavated material will be reused on site, where possible, however it is anticipated that there will be limited chances to reuse on site and all of the excavated material will be required to be removed offsite for appropriate reuse, recycling or disposal.

During the construction phase there may be a surplus of building materials, such as timber off-cuts, broken concrete blocks, cladding, plastics, metals and tiles generated. There may also be excess concrete during construction which will need to be disposed of. Plastic and cardboard waste from packaging and supply of materials will also be generated.

Waste will also be generated from construction workers e.g. organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

3.3 Potential Hazardous Wastes to be produced

3.3.1 Contaminated Soil

Soil and site investigations were undertaken by Ground Investigation Ireland Ltd. (GII) between April and June 2019 for the purpose of investigating subsurface conditions. Samples were selected from the exploratory holes for a range of geotechnical and environmental testing to assist in the classification of soils and to provide information for the proposed design. Environmental testing, including Waste Acceptance Criteria (WAC) was carried out by Jones Environmental Laboratory in the UK.

The samples were analysed for metals (lead, nickel, copper, zinc, arsenic, cadmium, chromium, and mercury), total organic carbon (TOC), BTEX (benzene, toluene, ethylbenzene and xylene) aliphatic and aromatic hydrocarbons, polychlorinated

biphenyls (PCB), mineral oil, polycyclic aromatic hydrocarbons (PAH) and asbestos. Leachate generated from the samples was tested for arsenic, barium, cadmium, chromium, copper, mercury, molybdenum, nickel, lead, antimony, selenium and zinc, chloride, fluoride, soluble sulphate, phenols, dissolved organic carbon (DOC), total dissolved solids (TDS).

This parameter range facilitates an assessment of the hazardous properties of the waste, and also allows a determination of appropriate off-site management options for the materials based on a comparison with the waste acceptance criteria (WAC) for Inert, Non-Hazardous and Hazardous Waste Landfills.

The analytical methods were all ISO/CEN approved and the method detection limits were below the relevant guidance/threshold values.

In the event that any potentially contaminated material is encountered, it will need to be segregated from clean/inert material, tested and classified as either non-hazardous or hazardous in accordance with the EPA publication entitled '*Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous*'¹³ using the *HazWasteOnline* application (or similar approved classification method). The material will then need to be classified as clean, inert, non-hazardous or hazardous in accordance with the *EC Council Decision 2003/33/EC*¹⁴, which establishes the criteria for the acceptance of waste at landfills.

3.3.2 Fuel/Oils

As fuels and oils are classed as hazardous materials, any on-site storage of fuel/oil, all storage tanks and all draw-off points will be bunded (or stored in double-skinned tanks) and located in a dedicated, secure area of the site. Provided that these requirements are adhered to and site crew are trained in the appropriate refuelling techniques, it is not expected that there will be any fuel/oil wastage at the site.

3.3.3 Invasive Plant Species

A site walkover was conducted by an ecologist from Openfield Ecology on the 19th of June 2019, and it has been determined that there are no invasive species located on the proposed development site.

3.3.4 Asbestos

A Refurbishment/Demolition Asbestos Survey was carried out at this site in March 2019 by Envirotrade. The buildings were surveyed for the purpose of detecting and recording incidences of asbestos containing materials (ACMs). A report was issued which contains a register showing the location and type of asbestos and the risks and recommendations in relation to the material found and can be found in Appendix A of this report. The scope of the asbestos survey was confined to all accessible areas of the existing building.

During the course of the survey, ACMs were identified in a number of locations including but not limited to cement roof slates, wall cladding, pipe work and permanent shuttering. All areas surveyed containing asbestos were included on the Asbestos Register.

The ACMs and suspected ACMs identified by the Asbestos survey will be required to be removed by a suitably trained and competent person prior to commencement of demolition works. ACMs will only be removed from site by a suitably permitted waste haulier and will be brought to a suitably licenced facility. Where required, the HSA should be contacted in relation to the handling of asbestos and material should be dealt with in accordance with the *Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006*, as amended and associated approved Codes of

Practice. The contractor will also be required to refer to the *Construction & Demolition Management Plan* in relation to asbestos identification and removal.

3.3.5 Other known Hazardous Substances

Paints, glues, adhesives and other known hazardous substances will be stored in designated areas. They will generally be present in small volumes only and associated waste volumes generated will be kept to a minimum. Wastes will be stored in appropriate receptacles pending collection by an authorised waste contractor.

In addition, WEEE (containing hazardous components), printer toner/cartridges, batteries (Lead, Ni-Cd or Mercury) and/or light bulbs and other mercury containing waste may be generated from during C&D activities or temporary site offices. These wastes (if encountered) will be stored in appropriate receptacles in designated areas of the site pending collection by an authorised waste contractor.

3.4 Main C&D Waste Categories

The main non-hazardous and hazardous waste streams that could be generated by the construction activities at a typical site are shown in Table 3.1. The List of Waste (LoW) code (as effected from 1 June 2015) (also referred to as the European Waste Code or EWC) for each waste stream is also shown.

Table 3.1 Typical waste types generated and LoW codes (*individual waste types may contain hazardous substances)

Waste Material	LoW/EWC Code
Concrete, bricks, tiles, ceramics	17 01 01-03 & 07
Wood, glass and plastic	17 02 01-03
Treated wood, glass, plastic, containing hazardous substances	17-02-04*
Bituminous mixtures, coal tar and tarred products	17 03 01*, 02 & 03*
Metals (including their alloys) and cable	17 04 01-11
Soil and stones	17 05 03* & 04
Gypsum-based construction material	17 08 01* & 02
Paper and cardboard	20 01 01
Mixed C&D waste	17 09 04
Green waste	20 02 01
Electrical and electronic components	20 01 35 & 36
Batteries and accumulators	20 01 33 & 34
Liquid fuels	13 07 01-10
Chemicals (solvents, pesticides, paints, adhesives, detergents etc.)	20 01 13, 19, 27-30
Insulation materials	17 06 04
Organic (food) waste	20 01 08
Mixed Municipal Waste	20 03 01

4.0 WASTE MANAGEMENT

Demolition works at the site will involve the demolition of the existing structures and hard standing areas on site. Demolition figures published by the EPA in the '*National Waste Reports*'¹⁵ and data from previous projects have been used to estimate the approximate break-down for indicative reuse (offsite), recycling and disposal targets of demolition waste. Estimates have been based on the building and hard standing areas. This breakdown is shown in Table 4.1.

Table 4.1 Estimated off-site reuse, recycle and disposal rates for demolition waste

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Concrete, Bricks, Tiles, Ceramics	660.0	30	198.0	65	429.0	5	33.0
Metal	2.7	5	0.1	85	2.3	10	0.3
Asbestos	0.2	0	0.0	0	0.0	10	0.2
Total	662.9		198.1		431.3		33.3

The appointed demolition contractor will be required to prepare a detailed demolition management plan prior to work commencing which should refine the above estimated worst-case waste figures

4.1 Construction Waste Generation

Table 4.2 shows the breakdown of C&D waste types produced on a typical site based on data from the EPA *National Waste Reports, the GMIT*¹⁶ and other research reports.

Table 4.2 Waste materials generated on a typical Irish construction site

Waste Types	%
Mixed C&D	33
Timber	28
Plasterboard	10
Metals	8
Concrete	6
Other	15
Total	100

Table 4.3 shows the predicted construction waste generation for the proposed development based on the information available to date along with the targets for management of the waste streams. The predicted waste amounts are based on an average largescale development waste generation rate per m², using the waste breakdown rates shown in Table 4.2 and the schedule of areas supplied by the project architects (Mola Architects).

Table 4.3 Estimated off-site reuse, recycle and disposal rates for construction waste

Waste Type	Tonnes	Reuse		Recycle/Recovery		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	272.0	10	27.2	80	217.6	10	27.2
Timber	230.8	40	92.3	55	126.9	5	11.5
Plasterboard	82.4	30	24.7	60	49.5	10	8.2
Metals	65.9	5	3.3	90	59.3	5	3.3
Concrete	49.5	30	14.8	65	32.1	5	2.5
Other	123.6	20	24.7	60	74.2	20	24.7
Total	824.2		187.1		559.6		77.5

In addition to the information in Table 4.2, the quantity of soil and stone generated is expected to be around c. 6,000m³ as advised by the project engineers, as the site will require excavation for building foundations, installation of services and carpark for the building. Any suitable excavated material will be temporarily stockpiled and reused on

site, where possible, however it is anticipated that there will be limited chances to reuse on site and all of the excavated material will be required to be removed offsite for appropriate reuse, recycling or disposal.

It should be noted that until final materials and detailed construction methodologies have been confirmed, it is difficult to predict with a high level of accuracy the construction waste that will be generated from the proposed works as the exact materials and quantities may be subject to some degree of change and variation during the construction process.

4.2 Proposed Waste Management Options

Waste materials generated will be segregated on site, where it is practical. Where the on-site segregation of certain wastes types is not practical, off-site segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source where feasible. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled. There are numerous waste contractors in the DL RCC Region that provide this service.

All waste arisings will be handled by an approved waste contractor holding a current waste collection permit. All waste arising's requiring disposal off-site will be reused, recycled, recovered or disposed of at a facility holding the appropriate registration, permit or licence, as required.

Written records will be maintained by the contractor(s) detailing the waste arising throughout the C&D phases, the classification of each waste type, waste collection permits for all waste contractors who collect waste from the site and COR/permit or licence for the receiving waste facility for all waste removed off site for appropriate reuse, recycling, recovery and/or disposal

Dedicated bunded storage containers will be provided for hazardous wastes which may arise such as batteries, paints, oils, chemicals etc, if required.

The management of the main waste streams is outlined as follows:

Soil, Stone, Gravel & Clay

The Waste Management Hierarchy states that the preferred option for waste management is prevention and minimisation of waste, followed by preparing for reuse and recycling/recovery, energy recovery (i.e. incineration) and, least favoured of all, disposal. It is intended to export some excavated material onsite so the preferred option of prevention can not be accommodated.

It is anticipated that all of the excavated material will be taken off site. When material is removed off-site it could be reused as a by-product (and not as a waste), if this is done, it will be done in accordance with Article 27 of the *European Communities (Waste Directive) Regulations 2011*. Article 27 requires that certain conditions are met and that by-product notifications are made to the EPA via their online notification form. Excavated material should not be removed from site until approval from the EPA has been received. It is not envisaged that article 27 will be used to export excavated material off this site.

The next option (beneficial reuse) may be appropriate for the excavated material pending environmental testing to classify the material as hazardous or non-hazardous in accordance with the EPA *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* publication. Clean inert material may be used as fill material in other construction projects or engineering fill for waste licensed sites. Beneficial reuse of surplus excavation material as engineering fill may be subject to

further testing to determine if materials meet the specific engineering standards for their proposed end-use.

If any soils/stones are imported onto the site from another construction site as a by-product, this will also be done in accordance with Article 27. It is not envisaged that article 27 will be used to import material onto this site.

If the material is deemed to be a waste, then removal and reuse/recovery/disposal of the material will be carried out in accordance with the *Waste Management Acts 1996 – 2011* as amended, the *Waste Management (Collection Permit) Regulations 2007* as amended and the *Waste Management (Facility Permit & Registration) Regulations 2007* as amended. Once all available beneficial reuse options have been exhausted, the options of recycling and recovery at waste permitted and licensed sites will be considered.

In the event that contaminated material is encountered and subsequently classified as hazardous, this material will be stored separately to any non-hazardous material. It will require off-site treatment at a suitable facility or disposal abroad via Transfrontier Shipment of Wastes (TFS).

Bedrock

It is not anticipated that bedrock will be encountered during the excavation phase of this development.

Silt & Sludge

During the construction phase, silt and petrochemical interception should be carried out on runoff and pumped water from site works, where required. Sludge and silt will then be collected by a suitably licensed contractor and removed offsite.

Concrete Blocks, Bricks, Tiles & Ceramics

The majority of concrete blocks, bricks, tiles and ceramics generated as part of the construction works are expected to be clean, inert material and should be recycled, where possible.

Hard Plastic

As hard plastic is a highly recyclable material, much of the plastic generated will be primarily from material off-cuts. All recyclable plastic will be segregated and recycled, where possible.

Timber

Timber that is uncontaminated, i.e. free from paints, preservatives, glues etc., will be disposed of in a separate skip and recycled off-site.

Metal

Metals will be segregated where practical and stored in skips. Metal is highly recyclable and there are numerous companies that will accept these materials.

Plasterboard

There are currently a number of recycling services for plasterboard in Ireland. Plasterboard from the construction phases will be stored in a separate skip, pending collection for recycling. The site manager will ensure that oversupply of new plasterboard is carefully monitored to minimise waste.

Glass

Glass materials will be segregated for recycling, where possible.

Waste Electrical and Electronic Equipment (WEEE)

Any WEEE will be stored in dedicated covered cages/receptacles/pallets pending collection for recycling.

Other Recyclables

Where any other recyclable wastes such as cardboard and soft plastic are generated, these will be segregated at source into dedicated skips and removed off-site.

Non-Recyclable Waste

C&D waste which is not suitable for reuse or recovery, such as polystyrene, some plastics and some cardboards, will be placed in separate skips or other receptacles. Prior to removal from site, the non-recyclable waste skip/receptacle will be examined by a member of the waste team (see Section 7.0) to determine if recyclable materials have been placed in there by mistake. If this is the case, efforts will be made to determine the cause of the waste not being segregated correctly and recyclable waste will be removed and placed into the appropriate receptacle.

Other Hazardous Wastes

On-site storage of any hazardous wastes produced (i.e. contaminated soil if encountered and/or waste fuels) will be kept to a minimum, with removal off-site organised on a regular basis. Storage of all hazardous wastes on-site will be undertaken so as to minimise exposure to on-site personnel and the public and to also minimise potential for environmental impacts. Hazardous wastes will be recovered, wherever possible, and failing this, disposed of appropriately.

It should be noted that until a construction contractor is appointed it is not possible to provide information on the specific destinations of each construction waste stream. Prior to commencement of construction and removal of any construction waste offsite, details of the proposed destination of each waste stream will be provided to DLRCC by the project team.

4.3 Tracking and Documentation Procedures for Off-Site Waste

All waste will be documented prior to leaving the site. Waste will be weighed by the contractor, either by weighing mechanism on the truck or at the receiving facility. These waste records will be maintained on site by the nominated project Waste Manager (see Section 7.0).

All movement of waste and the use of waste contractors will be undertaken in accordance with the *Waste Management Acts 1996 - 2011*, *Waste Management (Collection Permit) Regulations 2007* as amended and *Waste Management (Facility Permit & Registration) Regulations 2007* and amended. This includes the requirement for all waste contractors to have a waste collection permit issued by the NWCPO. The nominated project waste manager (see Section 7.0) will maintain a copy of all waste collection permits on-site.

If the waste is being transported to another site, a copy of the Local Authority waste COR/permit or EPA Waste/IE Licence for that site will be provided to the nominated project waste manager (see Section 7.0). If the waste is being shipped abroad, a copy of the Transfrontier Shipping (TFS) notification document will be obtained from DCC (as the relevant authority on behalf of all local authorities in Ireland) and kept on-site along with details of the final destination (COR, permits, licences etc.). A receipt from the final destination of the material will be kept as part of the on-site waste management records.

All information will be entered in a waste management recording system to be maintained on site.

5.0 ESTIMATED COST OF WASTE MANAGEMENT

An outline of the costs associated with different aspects of waste management is provided below.

The total cost of C&D waste management will be measured and will take into account handling costs, storage costs, transportation costs, revenue from rebates and disposal costs.

5.1 Reuse

By reusing materials on site, there will be a reduction in the transport and recycle/recovery/disposal costs associated with the requirement for a waste contractor to take the material off-site.

Clean and inert soils, gravel, stones etc. which cannot be reused on site may be used as access roads or capping material for landfill sites etc. This material is often taken free of charge or a reduced fee for such purposes, reducing final waste disposal costs.

5.2 Recycling

Salvageable metals will earn a rebate which can be offset against the costs of collection and transportation of the skips.

Clean uncontaminated cardboard and certain hard plastics can also be recycled. Waste contractors will charge considerably less to take segregated wastes, such as recyclable waste, from a site than mixed waste.

Timber can be recycled as chipboard. Again, waste contractors will charge considerably less to take segregated wastes such as timber from a site than mixed waste.

5.3 Disposal

Landfill charges are currently at around €130 - €150 per tonne which includes a €75 per tonne landfill levy specified in the *Waste Management (Landfill Levy) Regulations 2015*. In addition to disposal costs, waste contractors will also charge a collection fee for skips.

Collection of segregated C&D waste usually costs less than municipal waste. Specific C&D waste contractors take the waste off-site to a licensed or permitted facility and, where possible, remove salvageable items from the waste stream before disposing of the remainder to landfill. Clean soil, rubble, etc. is also used as fill/capping material, wherever possible.

6.0 DEMOLITION PROCEDURES

The demolition stage will involve the removal of some of the existing structures and hard standing areas. A formal demolition plan should be prepared for the site; however, in general, the following sequence of works should be followed during the demolition stage.

6.1 Check for Hazards

Prior to commencing works, buildings and structures to be demolished will be checked for any likely hazards including asbestos, ACMs, electric power lines or cables, gas reticulation systems, telecommunications, unsafe structures and fire and explosion hazards, e.g. combustible dust, chemical hazards, oil, fuels and contamination.

6.2 Removal of Components

All hazardous materials will be removed first. All components from within the buildings that can be salvaged will be removed next. This will primarily include metal however may also include timbers, doors, windows, wiring and metal ducting, etc.

6.3 Removal of Roofing

Steel roof supports, beams etc. will be dismantled and taken away for recycling/salvage.

6.4 Excavation of Services, Demolition of Walls and Concrete

Services will be removed from the ground and the breakdown of walls will be carried out once all salvageable or reusable materials have been taken from the buildings. Finally, any existing foundations and hard standing areas will be excavated.

7.0 TRAINING PROVISIONS

A member of the construction team will be appointed as the project waste manager to ensure commitment, operational efficiency and accountability during the C&D phases of the project.

7.1 Waste Manager Training and Responsibilities

The nominated waste manager will be given responsibility and authority to select a waste team if required, i.e. members of the site crew that will aid them in the organisation, operation and recording of the waste management system implemented on site. The waste manager will have overall responsibility to oversee, record and provide feedback to the client on everyday waste management at the site. Authority will be given to the waste manager to delegate responsibility to sub-contractors, where necessary, and to coordinate with suppliers, service providers and sub-contractors to prioritise waste prevention and material salvage.

The waste manager will be trained in how to set up and maintain a record keeping system, how to perform an audit and how to establish targets for waste management on site. The waste manager will also be trained in the best methods for segregation and storage of recyclable materials, have information on the materials that can be reused on site and be knowledgeable in how to implement this C&D WMP.

7.2 Site Crew Training

Training of site crew is the responsibility of the waste manager and, as such, a waste training program should be organised. A basic awareness course will be held for all site crew to outline the C&D WMP and to detail the segregation of waste materials at source. This may be incorporated with other site training needs such as general site induction, health and safety awareness and manual handling.

This basic course will describe the materials to be segregated, the storage methods and the location of the Waste Storage Areas (WSAs). A sub-section on hazardous wastes will be incorporated into the training program and the particular dangers of each hazardous waste will be explained.

8.0 RECORD KEEPING

Records should be kept for all waste material which leaves the site, either for reuse on another site, recycling or disposal. A recording system will be put in place to record the waste arising's on site.

A waste tracking log should be used to track each waste movement from the site. On exit from the site the waste collection vehicle driver should stop at the site office and sign out as a visitor and provide the security personnel or waste manager with a waste docket (or WTF for hazardous waste) for the waste load collected. At this time, the security personnel should complete and sign the Waste Tracking Register with the following information:

- Date
- Time
- Waste Contractor
- Company waste contractor appointed by e.g. Contractor or subcontractor name
- Collection Permit No.
- Vehicle Reg.
- Driver Name
- Docket No.
- Waste Type
- EWC/LoW

The waste vehicle will be checked by security personal or the site waste officer to ensure it is has the waste collection permit no. displayed and a copy of the waste collection permit in the vehicle before they are allowed to remove the waste from the site.

The waste transfer dockets will be transferred to the site waste manager on a weekly basis and can be placed in the Waste Tracking Log file. This information will be forwarded onto the DLRCC Waste Regulation Unit when requested.

Alternatively, each subcontractor that has engaged their own waste contractor will be required to maintain a similar waste tracking log with the waste dockets/WTF maintained on file and available for inspection on site by the main contractor as required.

Waste receipts from the receiving waste facility will also be obtained by the site contractor(s) and retained.

A copy of the Waste Collection Permits, CORs, Waste Facility Permits and Waste Licences will be maintained on site at all times. Subcontractors who have engaged their own waste contractors, should provide the main contractor with a copy of the waste collection permits and COR/permit/licence for the receiving waste facilities and maintain a copy on file available for inspection on site as required.

9.0 OUTLINE WASTE AUDIT PROCEDURE

9.1 Responsibility for Waste Audit

The appointed waste manager will be responsible for conducting a waste audit at the site during the C&D phase of the development.

Contact details for the nominated Waste Manager will be provided to the DLRCC Waste Regulation Unit after the main contractor is appointed and prior to any material being removed from site.

9.2 Review of Records and Identification of Corrective Actions

A review of all the records for the waste generated and transported off-site should be undertaken mid-way through the project. If waste movements are not accounted for, the reasons for this should be established in order to see if and why the record keeping system has not been maintained. The waste records will be compared with the established recovery/reuse/recycling targets for the site.

Each material type will be examined, in order to see where the largest percentage waste generation is occurring. The waste management methods for each material type will be reviewed in order to highlight how the targets can be achieved.

Waste management costs will also be reviewed.

Upon completion of the C&D phase, a final report will be prepared, summarising the outcomes of waste management processes adopted and the total recycling/reuse/recovery figures for the development.

10.0 CONSULTATION WITH RELEVANT BODIES

10.1 Local Authority

Once construction contractors have been appointed and prior to removal of any C&D waste materials offsite, details of the proposed destination of each waste stream will be provided to DLRCC.

DLRCC will also be consulted, as required, throughout the excavation and construction phases in order to ensure that all available waste reduction, reuse and recycling opportunities are identified and utilised and that compliant waste management practices are carried out.

10.2 Recycling/Salvage Companies

Companies that specialise in C&D waste management will be contacted to determine their suitability for engagement. Where a waste contractor is engaged, each company will be audited in order to ensure that relevant and up-to-date waste collection permits and facility COR/permits/licences are held. In addition, information regarding individual construction materials will be obtained, including the feasibility of recycling each material, the costs of recycling/reclamation and the means by which the wastes will be collected and transported off-site, and the recycling/reclamation process each material will undergo off site.

11.0 REFERENCES

1. Waste Management Act 1996 as amended. Sub-ordinate and associated legislation includes:
 - European Communities (Waste Directive) Regulations 2011 (S.I. No. 126 of 2011) as amended.
 - Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended.
 - Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007) as amended.
 - Waste Management (Licensing) Regulations 2000 (S.I. No. 185 of 2000) as amended.
 - European Union (Packaging) Regulations 2014 (S.I. No. 282 of 2014) as amended.
 - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997) as amended.
 - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015)
 - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
 - European Union (Batteries and Accumulators) Regulations 2014 (S.I. No. 283 of 2014) as amended.
 - Waste Management (Food Waste) Regulations 2009 (S.I. No. 508 of 2009) as amended.
 - European Union (Household Food Waste and Bio-waste) Regulations 2015 (S.I. No. 191 of 2015)
 - Waste Management (Hazardous Waste) Regulations 1998 (S.I. No. 163 of 1998) as amended.
 - Waste Management (Shipments of Waste) Regulations 2007 (S.I. No. 419 of 2007) as amended.
 - European Communities (Shipments of Hazardous Waste exclusively within Ireland) Regulations 2011 (S.I. No. 324 of 2011)
 - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015) as amended
2. Protection of the Environment Act 2003, as amended.
3. Litter Pollution Act 1997 as amended
4. Eastern-Midlands Region Waste Management Plan 2015 – 2021 (2015).
5. Department of Environment and Local Government (DoELG) *Waste Management – Changing Our Ways, A Policy Statement* (1998).
6. Forum for the Construction Industry – *Recycling of Construction and Demolition Waste*.
7. Department of Communications, Climate Action and Environment (DCCA), *Waste Action Plan for the Circular Economy - Ireland's National Waste Policy 2020-2025* (Sept 2020).
8. Department of Environment, Heritage and Local Government, *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (2006).
9. FÁS and the Construction Industry Federation (CIF), *Construction and Demolition Waste Management – a handbook for Contractors and Site Managers* (2002).
10. Dún Laoghaire–Rathdown County Council - *County Development Plan 2016 – 2022* (2016)
11. Planning and Development Act 2000 (S.I. No. 30 of 2000) as amended
12. EPA, *Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous* (2015)

13. Council Decision 2003/33/EC, establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC.
14. Environmental Protection Agency (EPA), *National Waste Database Reports 1998 – 2012*.
15. EPA and Galway-Mayo Institute of Technology (GMIT), *EPA Research Report 146 – A Review of Design and Construction Waste Management Practices in Selected Case Studies – Lessons Learned* (2015).

Appendix A – Asbestos Survey



Asbestos Refurbishment/Demolition Survey



Client:	Ardstone Homes 48 Fitzwilliam Square Dublin 2
Contact:	Brian Morrow
Site Address:	Ted Castles Old Dunleary Road Dun Laoghaire Co. Dublin
Date:	9th April 2019
Surveyor:	Neal Christopher
Survey No.:	A1903024
Report Issue:	Final

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1. Executive Summary

An Asbestos Refurbishment/Demolition Survey has been undertaken to Ted Castles, Old Dunleary Road, Dun Laoghaire, Co. Dublin by Envirotrade. The survey was intrusive and was limited to accessible areas.

The survey was carried out by Neal Christopher and completed on 21st March 2019.

During the survey the following Asbestos Containing Materials (ACMs) were identified:

Sample No.	Relevant Report Section	Location – Description	Result	Material Assessment Algorithm
1903024-01	8	Shed roof – Asbestos Cement sheeting	Chrysotile	3
	8	Shed roof – Asbestos Cement gutters	Chrysotile	5
	8	Shed roof – Asbestos Cement ridge cappings	Chrysotile	3
1903024-02	8	House roof – Asbestos Cement slate	Chrysotile	3

No other Asbestos Containing Materials (ACMs) were detected during the survey.

This report cannot be used for contractual or engineering purposes unless this sheet is signed where indicated by the surveyor. The report must also be designated 'final' on the cover sheet.

Please note that Envirotrade cannot be held responsible for the way in which a client interprets or acts upon the results.

This report must be read in its entirety including any appendices. Envirotrade accepts no responsibility for sub-division of this report.

Signed: *Neal Christopher*

Date: 9th April 2019

2. Introduction

At the request of Ardstone Homes, Envirotrade have carried out an asbestos refurbishment/demolition survey to Ted Castles, Old Dunleary Road, Dun Laoghaire, Co. Dublin on the 21st March 2019.

Envirotrade have been requested to provide the following services:

- To provide an experienced asbestos survey team to site to carry out a refurbishment/demolition survey, as outlined in HSG 264 Asbestos: The Survey Guide.
- To take representative samples of any materials suspected of containing asbestos and to analyse these in accordance with HSE document HSG 248 – ‘Asbestos: The analysts’ guide for sampling, analysis and clearance procedures’.
- To prepare a detailed written report showing the location, extent and condition of all identified asbestos installations along with any remedial recommendations necessary.
- The data from the reports will also be used to assist in the customer’s duty to manage asbestos and to provide suitable & sufficient risk assessments for staff & contractors.

NOTE: Material risk assessment scores have been included in this report to assist the customer in future management plans.

This document was written by Neal Christopher on 9th April 2019.

This survey report must be read in conjunction with any other associated asbestos survey reports, and also read in conjunction with Section 1 Executive Summary, 8 Asbestos Data Sheets, 9 Laboratory Analysis Results, 10 Asbestos Register, 11 Specific Exclusions and Caveats, and 13 Conclusions and Recommendations.

3. Survey Type

Management Survey

A management survey is the standard survey. Its purpose is to locate, as far as reasonably practicable, the presence and extent of any suspect ACMs in the building which could be damaged or disturbed during normal occupancy, including foreseeable maintenance and installation, and to assess their condition.

Management surveys will often involve minor intrusive work and some disturbance. The extent of intrusion will vary between premises and depend on what is reasonably practicable for individual properties, ie it will depend on factors such as the type of building, the nature of construction, accessibility etc. A management survey should include an assessment of the condition of the various ACMs and their ability to release fibres into the air if they are disturbed in some way. This 'material assessment' will give a good initial guide to the priority for managing ACMs as it will identify the materials which will most readily release airborne fibres if they are disturbed.

The survey will usually involve sampling and analysis to confirm the presence or absence of ACMs. However, a management survey can also involve presuming the presence or absence of asbestos. A management survey can be completed using a combination of sampling ACMs and presuming ACMs or, indeed, just presuming. Any materials presumed to contain asbestos must also have their condition assessed (ie a material assessment).

Refurbishment & Demolition Survey

A refurbishment and demolition survey is needed before any refurbishment or demolition work is carried out. This type of survey is used to locate and describe, as far as reasonably practicable, all ACMs in the area where the refurbishment work will take place or in the whole building if demolition is planned. The survey will be fully intrusive and involve destructive inspection, as necessary, to gain access to all areas, including those that may be difficult to reach. A refurbishment and demolition survey may also be required in other circumstances, eg when more intrusive maintenance and repair work will be carried out or for plant removal or dismantling.

In this type of survey, the asbestos is identified so it can be removed (rather than managed). This survey does not normally assess the condition of the asbestos, other than to indicate areas of damage or where additional asbestos debris may be present. Where the materials sampled are found to contain asbestos, other similar materials or components have been presumed to contain asbestos. As part of the Refurbishment & Demolition Survey the current condition of any proven or presumed ACMs will be recorded. Any urgent remedial works required to reduce the risk of exposure to airborne asbestos fibres will be highlighted. Any areas which need further investigation will also be highlighted.

4. Survey Methodology

The external and internal areas were inspected to visually locate those materials suspected of containing asbestos. Where required, representative samples of materials suspected of containing asbestos were taken in a safe and controlled manner as per guidelines set out in HSG 264. Materials of a similar type were representatively sampled on the assumption that surfaces identical to a sampled location were of a similar composition.

5. Sample Analysis

Bulk samples of suspected Asbestos Containing Materials were taken to determine the nature and extent of the material, and the results of the laboratory analysis can be found in section 8. Laboratory Analysis Results. The bulk sampling was carried out in accordance HSG 248 Asbestos: The analysts' guide for sampling, analysis and clearance procedures. Samples were taken in grip seal bags and the sample location has been safely sealed to reduce the risk of airborne asbestos fibre release.

Sample analysis was carried out by UKAS accredited laboratory G&L Consultancy Ltd. The analysis of the bulk samples is conducted using polarised light microscopy.

Photographs were taken of all sample locations unless otherwise stated. Materials of a similar type were only occasionally sampled, as it was assumed that other similar materials visually inspected were of a similar composition.

6. Asbestos Containing Materials in Buildings (ACMs)

Sprayed coatings applied in Ireland were typically a mixture of hydrated asbestos cement containing up to 85% asbestos, mainly amosite but crocidolite and mixtures have been used. Primarily used for anti-condensation and acoustic control and fire protection to structural steelwork. It is a friable material but if in a good condition and unlikely to be disturbed presents no immediate danger, however it is likely to release fibres, if disturbed especially during repair and maintenance work. As it ages the binding medium of sprayed asbestos may degrade with the consequent release of more fibres.

Thermal insulation to boilers, vessels, pipe work, valves, pumps etc also known as hand applied lagging. Lagging may have a protective covering of cloth, tape, paper, metal or a surface coating of cement. All types of asbestos may be found in lagging and the content can vary between 15 and 85% asbestos with the protective papers being up to 100% chrysotile. The likelihood of fibre release depends upon its composition, friability and state of repair, but it is particularly susceptible to damage and disturbance through maintenance work or the action of water leaks.

Asbestos insulating boards usually contain between 16 to 40% amosite, although boards may be found to contain other types of asbestos and in other quantities. Insulating boards were developed in the 1950s to provide an economical, lightweight, fire resisting insulating material. As insulation board is semi-compressed it is more likely to release fibres as a result of damage or abrasion. Work on asbestos insulation board can give rise to high levels of asbestos fibre.

Asbestos cement products as in roofing slates, wall cladding, permanent shuttering, flue, rain water and vent pipes generally contain 10 to 15% of asbestos fibre bounded in Portland cement, some flexible boards contain a small proportion of cellulose. All three types of asbestos have been used in the manufacture of asbestos cement. The asbestos fibres in asbestos cement are usually firmly bound in the cement matrix and will be released only if the material is mechanically damaged or as it deteriorates with age.

Ropes seals and yarns are usually high in asbestos content, approaching 100% and all three types of asbestos have been used in their manufacture. They were used as in the pipe lagging process and in pipe jointing and also for packing materials as in heat/fire resistant boiler, oven and flue sealing or anywhere thermal or fire protection was required. The risk of fibre release depends upon the structure of the material; bonded gasket material is unlikely to release asbestos but an unbonded woven material may give rise to high fibre release especially if when damaged or frayed.

Cloth, thermal insulation and lagging including fire resistant blankets, mattresses and protective curtains, gloves, aprons, overalls etc. All types of asbestos have been used in the manufacture but since the mid 60's the majority has been chrysotile, the content of which can be up to 100 %.

Millboard, paper and CAF gaskets usually have an asbestos content approaching 100% with all three types of asbestos being used in their manufacture. They were used for insulation of electrical equipment and for thermal insulation. Asbestos paper has been used as a laminate for fireproofing to various fibre panels. These materials are on some occasions not well bonded and will release asbestos fibres if subject to abrasion and wear.

Bitumen felts, coatings and sink pads may contain asbestos either bound in the bitumen matrix or as an asbestos paper liner. These materials are not likely to present a hazard during normal installation or use but, should be removed and disposed of in compliance with any regulation applicable.

Thermoplastic floor tiles can contain up to 25% asbestos usually chrysotile, PVC vinyl floor tiles and unbacked PVC flooring normally 7-10% chrysotile and asbestos paper backed PVC flooring the paper backing may contain up to 100% chrysotile. Fibre release is not normally an issue but may occur when the material is cut or subjected to abrasion.

Textured coatings or decorative coatings on walls and ceilings usually contain 3-5% chrysotile. Fibre release may occur when subjected to abrasion.

Mastics, sealants, putties and floor tile adhesives may contain small amounts of asbestos. The only possible risk is from sanding of hardened material when appropriate precautions should be taken.

Reinforced plastic and resin composites, used for toilet cisterns, seats, banisters, window seals, lab bench tops, brakes and clutches in machines. The plastics usually contain 1-10% chrysotile and were used in for example car batteries to improve the acid resistance. Resins may contain between 20 and 50% amosite, but because of its composition fibre release is likely to be low.

7. Material Assessment Algorithms

HSG 264 calls for all samples identified as being ACMs to be subject to a Material Assessment Algorithm, in order to assess the potential for fibre release when subject to a standard disturbance. The factors to be considered are;

A	Product Type	Scored 1-3
B	Extent of Damage or Deterioration	Scored 0-3
C	Surface Treatment	Scored 0-3
D	Asbestos Type	Scored 1-3

For each of these factors a score is allocated and the results are added together to give a result between 0 and 12. Scores are interpreted as follows:

<5:	Very Low
5-6:	Low
7-9:	Medium
>9:	High

This material assessment purely assesses the condition of the material. It identifies the materials that present a higher risk of fibre release if disturbed. This algorithm does not automatically mean that those materials with a higher score should be given a higher priority for remedial work. Rather, this score should be considered along with other factors involved, such as the location of the material (for example; outside, inside, in plant areas, by or in ventilation systems), its extent, occupancy and the type of activity likely to affect it. Factors effecting such activity are, for example, that it may be only accessed during major works or alternatively, occupants undertake actions which may easily disturb it during everyday activity.

8. Asbestos Data Sheets



ASBESTOS SAFETY DATA SHEET

Survey No.
Survey Type
Survey Date
Surveyor
Client Name
Site Address

A1903024
Refurbishment/Demolition
21/03/19
Neal Christopher
Ardstone Homes
Ted Castles Old Dunleary Road Dun Laoghaire Co. Dublin
Shed roof
1903024-01

Location
Sample Range



MATERIAL ASSESSMENT ALGORITHM

Product type	Asbestos Cement sheeting
Extent of damage/deterioration	Good damage
Surface treatment	Asbestos Cement products
Asbestos type	Chrysotile

Score	1
Score	0
Score	1
Score	1
Total	3

PRIORITY ASSESSMENT ALGORITHM

Normal Occupancy Activity

Main type of activity in area	N/A
Secondary activities for area	N/A

Score	
Score	
Average	

Likelihood of disturbance

Location	N/A
Accessibility	N/A
Extent/amount	288m2 approx

Score	
Score	
Score	
Average	

Human Exposure Potential

Number of occupants	N/A
Frequency of use of area	N/A
Average time area is in use	N/A

Score	
Score	
Score	
Average	

Maintenance Activity

Type of maintenance activity	N/A
Frequency of maintenance activity	N/A

Score	
Score	
Average	
Total	3

Total Material Assessment & Priority Assessment Score

RECOMMENDATIONS

The Asbestos Cement sheeting on the roof of the shed contains Chrysotile asbestos. Asbestos Cement products contain between 10-15% asbestos bound within the matrix. The Asbestos Cement sheeting is in good condition and poses a very low risk. It should be removed prior to demolition by a competent asbestos contractor. The resulting waste should be disposed of as 'Asbestos Waste' at a licensed facility. Once the ACMs have been removed a Certificate of Reoccupation should be issued by an independent asbestos analyst.



ASBESTOS SAFETY DATA SHEET

Survey No.
Survey Type
Survey Date
Surveyor
Client Name
Site Address

A1903024
Refurbishment/Demolition
21/03/19
Neal Christopher
Ardstone Homes
Ted Castles Old Dunleary Road Dun Laoghaire Co. Dublin
Shed roof

Location
Sample Range



MATERIAL ASSESSMENT ALGORITHM

Product type	Asbestos Cement gutters
Extent of damage/deterioration	Medium damage
Surface treatment	Asbestos Cement products
Asbestos type	Chrysotile

Score	1
Score	2
Score	1
Score	1
Total	5

PRIORITY ASSESSMENT ALGORITHM

Normal Occupancy Activity

Main type of activity in area	N/A
Secondary activities for area	N/A

Score	
Score	
Average	

Likelihood of disturbance

Location	N/A
Accessibility	N/A
Extent/amount	48LM approx

Score	
Score	
Score	
Average	

Human Exposure Potential

Number of occupants	N/A
Frequency of use of area	N/A
Average time area is in use	N/A

Score	
Score	
Score	
Average	

Maintenance Activity

Type of maintenance activity	N/A
Frequency of maintenance activity	N/A

Score	
Score	
Average	
Total	5

Total Material Assessment & Priority Assessment Score

RECOMMENDATIONS

The Asbestos Cement gutters on the roof of the shed contains Chrysotile asbestos. Asbestos Cement products contain between 10-15% asbestos bound within the matrix. The Asbestos Cement gutters have a medium level of damage and pose a low risk. It should be removed prior to demolition by a competent asbestos contractor. The resulting waste should be disposed of as 'Asbestos Waste' at a licensed facility. Once the ACMs have been removed a Certificate of Reoccupation should be issued by an independent asbestos analyst.



ASBESTOS SAFETY DATA SHEET

Survey No.
Survey Type
Survey Date
Surveyor
Client Name
Site Address

A1903024
Refurbishment/Demolition
21/03/19
Neal Christopher
Ardstone Homes
Ted Castles Old Dunleary Road Dun Laoghaire Co. Dublin
Shed roof

Location
Sample Range



MATERIAL ASSESSMENT ALGORITHM

Product type	Asbestos Cement ridge cappings
Extent of damage/deterioration	Good damage
Surface treatment	Asbestos Cement products
Asbestos type	Chrysotile

Score	1
Score	0
Score	1
Score	1
Total	3

PRIORITY ASSESSMENT ALGORITHM

Normal Occupancy Activity

Main type of activity in area	N/A
Secondary activities for area	N/A

Score	
Score	
Average	

Likelihood of disturbance

Location	N/A
Accessibility	N/A
Extent/amount	52LM approx

Score	
Score	
Score	
Average	

Human Exposure Potential

Number of occupants	N/A
Frequency of use of area	N/A
Average time area is in use	N/A

Score	
Score	
Score	
Average	

Maintenance Activity

Type of maintenance activity	N/A
Frequency of maintenance activity	N/A

Score	
Score	
Average	
Total	3

Total Material Assessment & Priority Assessment Score

RECOMMENDATIONS

The Asbestos Cement ridge cappings on the roof of the shed contains Chrysotile asbestos. Asbestos Cement products contain between 10-15% asbestos bound within the matrix. The Asbestos Cement ridge cappings are in good condition and poses a very low risk. It should be removed prior to demolition by a competent asbestos contractor. The resulting waste should be disposed of as 'Asbestos Waste' at a licensed facility. Once the ACMs have been removed a Certificate of Reoccupation should be issued by an independent asbestos analyst.



ASBESTOS SAFETY DATA SHEET

Survey No.
Survey Type
Survey Date
Surveyor
Client Name
Site Address

A1903024
Refurbishment/Demolition
21/03/19
Neal Christopher
Ardstone Homes
Ted Castles Old Dunleary Road Dun Laoghaire Co. Dublin
House roof
1903024-02

Location
Sample Range



MATERIAL ASSESSMENT ALGORITHM

Product type	Asbestos Cement slates
Extent of damage/deterioration	Good damage
Surface treatment	Asbestos Cement products
Asbestos type	Chrysotile

Score	1
Score	0
Score	1
Score	1
Total	3

PRIORITY ASSESSMENT ALGORITHM

Normal Occupancy Activity

Main type of activity in area	N/A
Secondary activities for area	N/A

Score	
Score	
Average	

Likelihood of disturbance

Location	N/A
Accessibility	N/A
Extent/amount	132m2 approx

Score	
Score	
Score	
Average	

Human Exposure Potential

Number of occupants	N/A
Frequency of use of area	N/A
Average time area is in use	N/A

Score	
Score	
Score	
Average	

Maintenance Activity

Type of maintenance activity	N/A
Frequency of maintenance activity	N/A

Score	
Score	
Average	
Total	3

Total Material Assessment & Priority Assessment Score

RECOMMENDATIONS

The Asbestos Cement slates on the roof of the house contain Chrysotile asbestos. Asbestos Cement products contain between 10-15% asbestos bound within the matrix. The Asbestos Cement slates are in good condition and pose a very low risk. It should be removed prior to demolition by a competent asbestos contractor. The resulting waste should be disposed of as 'Asbestos Waste' at a licensed facility. Once the ACMs have been removed a Certificate of Reoccupation should be issued by an independent asbestos analyst.

9. Laboratory Analysis Results



BULK MATERIAL SAMPLE REPORT

Reference No: J609125 Client Order No: N/A
Date Received: 28 Mar 2019
Client Name and Address: Envirotrade Ltd (IE), 44A Moyle Road, Dublin Ind. Est Dublin 11
Site Address: Ted Castles, Old Dunleary Road, Dun Laoghaire, Co. Dublin
Sampling Officer: Envirotrade Ltd (IE)
Date of Analysis: 29 Mar 2019
Analyst: Amber Baxter
Approving Officer: Siobhan Byrne Signed: *S Byrne*
Issue Date: 29 Mar 2019

ANALYSIS RESULTS

Sampling carried out by our own officers follows the procedures documented in our internal method M3: The Sampling of Bulk Materials, for Analysis to Determine the Presence of Asbestos. These samples have been analysed in accordance with internal method M2: The Identification of Asbestos, within Bulk Materials, by the Use of Optical Microscopy. Both these internal methods are based on the standard method as outlined in the HSE Document 'Asbestos: The analysts' guide for sampling, analysis and clearance procedures. Any deviations from these standard methods will be recorded in this report. No responsibility is taken for sampling that is not carried out by own officers. Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation. Any comments regarding percentage content is outside the scope of our UKAS accreditation. The material classification is the opinion of the analyst, based on the samples' appearance, as received, and may not accurately reflect the source material on site. All samples are analysed at one of our UKAS accredited laboratories in Somerset or Northern Ireland. This report must not be reproduced, except in full, without the written permission of the laboratory. These samples will be retained within this laboratory for a period of six months prior to disposal at a licensed asbestos disposal site, unless the client makes alternative arrangements. For advice concerning these materials, risk assessments, removal procedures or information regarding the current legislation for work with asbestos containing materials, please contact G&L Consultancy Ltd.

Site Ref	Lab Ref	Description	Analysis Result	Classification
A1903024-01	BS169261	AC Sheetting	Chrysotile	Asbestos Cement
A1903024-02	BS169262	AC Slate	Chrysotile	Asbestos Cement

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G&L Consultancy Ltd is a company registered in England and Wales with a Company Number: 3687929



10. Asbestos Register

Sample No.	Relevant Report Section	Location – Description	Qty	Result	Condition	Risk	Material Assessment Algorithm	Recommended Action
1903024-01	8	Shed roof – Asbestos Cement sheeting	288m2 approx.	Chrysotile	Good damage	Very low	3	Remove prior to demolition
	8	Shed roof – Asbestos Cement gutters	48LM approx.	Chrysotile	Medium damage	Low	5	Remove prior to demolition
	8	Shed roof – Asbestos Cement ridge cappings	52LM approx	Chrysotile	Good damage	Very low	3	Remove prior to demolition
1903024-02	8	House roof – Asbestos Cement slate	132m2 approx.	Chrysotile	Good damage	Very low	3	Remove prior to demolition

11. Specific Exclusions and Caveats

- No inspection was carried out on live internal electrical or mechanical plant
- No inspection was carried out of any areas outside the agreed scope of works

All reasonable steps have been taken to ensure that the contents and findings of this report are accurate and true. Although every effort is made to locate all asbestos containing materials, it is impossible to rule out the likelihood that undiscovered asbestos containing materials may be present. If the building is to undergo major refurbishment/demolition, it is recommended that the persons carrying out the work are made aware of this and take sufficient precautions, as may be appropriate, to ensure the health and safety of themselves or their employees and any other parties who may be affected by the works.

12. Legislation and Code of Practice

The Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006 amended 2010, apply to work where there is or maybe asbestos fibres present. These regulations apply to any person or employer working with or removing asbestos.

In addition, The Safety, Health and Welfare at Work (Construction) Regulations 2013 also apply to any building, installation, repair, demolition and asbestos removal works.

13. Conclusions and Recommendations

The AC sheeting, gutters and ridge cappings on the shed roof contain Chrysotile asbestos. The Asbestos Cement slates on the house roof contain Chrysotile asbestos. These Asbestos Containing Materials should be removed by a competent asbestos contractor and disposed of as 'Asbestos Waste' at a licensed facility prior to demolition works. On completion of the works a Certificate of Reoccupation should be issued by an independent asbestos analyst.