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SITE-SPECIFIC

CONSTRUCTION & DEMOLITION WASTE AND BY-PRODUCT MANAGEMENT PLAN

RE: STRATEGIC HOUSING DEVELOPMENT (SHD)

AT

CHARLESTOWN PLACE AND ST. MARGARET'S ROAD, CHARLESTOWN, DUBLIN 11

APPLICANT – PUDDINHILL PROPERTY LTD

1st May 2021

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1.0 INTRODUCTION

This document presents a site-specific Construction & Demolition Waste Management and By-Product Management Plan (CDWMP) for the control, management and monitoring of waste associated with the construction of the proposed Strategic Housing Development at residential development at Charlestown Place and St. Margaret's Road, Charlestown, Dublin 11.

The proposed CDWMP has been prepared to demonstrate how the Construction Phase will comply with the following relevant legislation 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)

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

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.

Fingal County Council Development Plan 2017 – 2023 – Construction & Demolition Waste Management Objectives

Objective WM18
Ensure that construction and demolition Waste Management Plans meet the relevant recycling / recovery targets for such waste in accordance with the national legislation and regional waste management policy.

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.

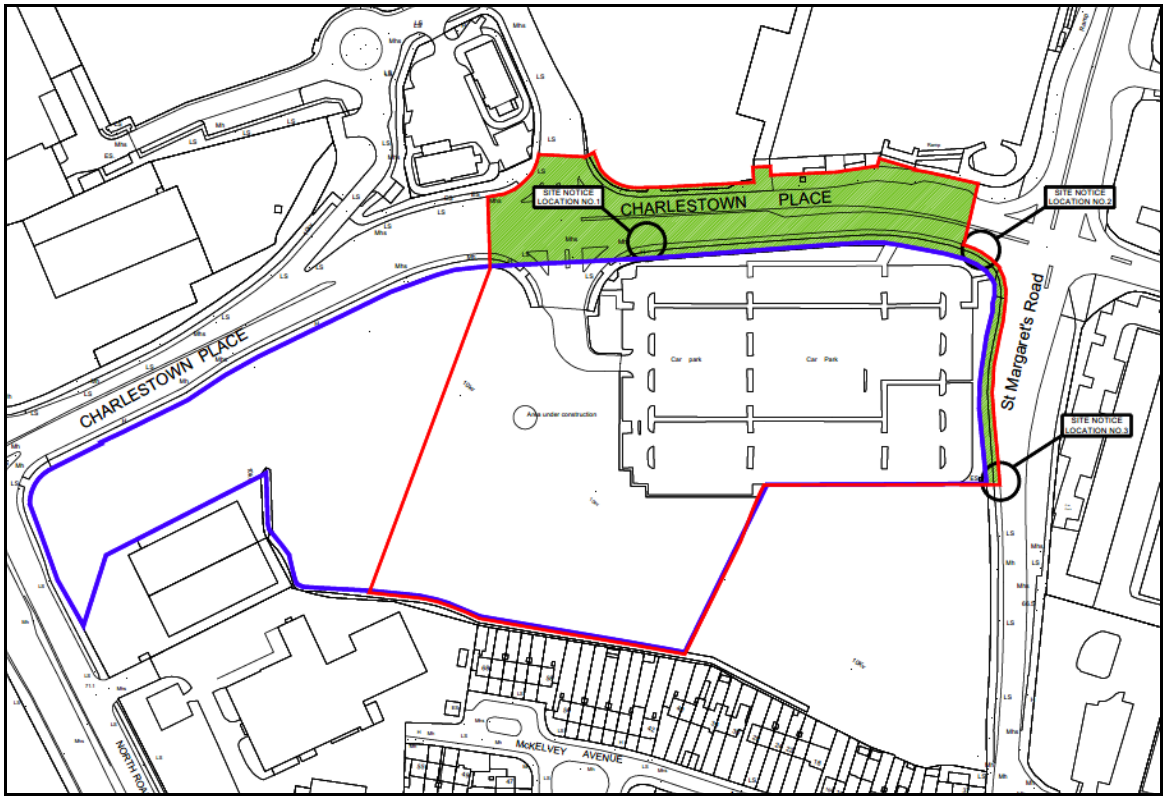
2.0 DEVELOPMENT DESCRIPTION

The development will consist of 590 no. apartment units comprising of 235 no. 1 bed units, 315 no. 2 bed units and 40 no. 3 bed units. The proposed apartments are arranged in 4 no. 2 to 10 storey blocks (Blocks 1 to 4).

Permission is also sought for non-residential uses at ground floor level within Blocks 1 and 2 comprising 2no. retail/ commercial units totalling 350 sq.m, a creche of 542 sq.m (plus external play space of 124sq.m), office space of 224 sq.m and 1no. unit medical facility of 525 sq.m.

The proposed development also includes a central landscaped public open space extending to c.4737 sq.m. The proposed public open space is linked to a north south pedestrian street connecting to the Charlestown Centre to the north of the site. Communal open spaces are provided within the courtyard areas at the ground floor levels of Blocks 1 to 4.

FIGURE 1 SITE LOCATION



3.0 DESCRIPTION OF SITE ACTIVITIES & WASTE ARISINGS

The development of the subject site will initially require the removal of ground surfaces and the stripping of top and sub soils, piling works around the perimeter of the basement area and the excavation of ground to basement level. The range of works required for the Demolition & Construction Phases 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 - 5 below.

Table 1 Sequence of Construction 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, hard surfaces, utilities removal
Infrastructure installation	Drainage, Utility ducts, power
Substructure	Piling works
Substructure	Basement excavation Rebar, Formwork
Superstructure	Rebar, Formwork and Pour
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 & Demolition Waste Composition

Description of Waste	%
Soils & Stones	76.7
Mixed C&D	7.0
Metals	3.0
Concrete Bricks Tiles, Gypsum	12.0
Wood, Glass, Plastic	0.3
Bitumen Waste	1.0
Totals	100

Source EPA Sept 2020

Table 3 Predicted Demolition Waste Generation

Waste Type	Predicted tonnage to be produced	Re-Use		Recyclable		Disposal	
		Tonnage	%	Tonnage	%	Tonnage	%
Car Park Area							
Gravels	4590	400	40	1250	100	0	
Bulk Excavation							
Soils	127,500	0	0	0	0	127,500	100

Table 4 Predicted Construction Waste Generation

Waste Type	Predicted tonnage to be produced	Re-Use		Recyclable		Disposal	
		Tonnage	%	Tonnage	%	Tonnage	%
Mixed C&D	1202	-	-	601	50	601	50
Metals	515	-	-	515	100	-	-
Concrete, Blocks, Gypsum	2060	1030	80	-	-	1030	20
Wood Glass Plastic	52	-	-	5.2	10	46.8	90
Bitumen	172			172	100	-	-
Total	4000	1030		1293.2		1676.8	

Table 5 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
Bituminous mixtures containing other than those mentioned ir 17 03 01	17 03 02
Bituminous Mixtures including Coal Tar and Tarred products	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
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	17 05 04
Mixed Municipal Waste	20 03 01
Hydraulic oils	13 01 01*
Fuel oils and diesel	13 07 01*

4.0 PRINCIPALS OF CONSTRUCTION OF DEMOLITION WASTE MANAGEMENT PLAN

Waste materials generated by construction 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* and with regard to *Fingal County Council Development Plan 2017 – 2023 – Construction & Demolition Waste Management Objectives.*

The CDWMP 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
- Hazardous Waste Handling Procedures
- Waste Storage Procedures
- Waste Disposal Procedures
- Waste Auditing
- Record Keeping
- Waste Collection and Facility Permit Management

5.0 WASTE MANAGEMENT & RESPONSIBILITIES

5.1 Roles and Responsibilities

Project Manager

The Project Manager will be responsible for the overall implementation of the CDWMP. The 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.

A technically competent and appropriately trained C&D Waste Officer will be appointed by the 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 CDWMP (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). The C&D Waste Officer shall be responsible for the management of the construction waste compound.

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.

6.0 DEMOLITION & 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, will be established within the active construction phase of the development site.

- Spill kits shall be located within the waste compound with clearly labelled instructions on how they shall be used to clean up fuel/oil spills.

- 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 in the waste compound.

- In order to ensure that the construction contractor correctly segregate waste materials, it is the responsibility of the C&D waste officer 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 C&D waste officer 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 C&D waste officer 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 European Waste Catalogue (EWC) as detailed in Table 4.

- 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 C&D waste officer 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 C&D waste 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.

Construction Waste Compound Design

A dedicated and secure construction waste storage compound shall be located adjacent to the site offices. The C&D Waste Manager shall be responsible for the management of the construction waste compound. The area shall be demarcated by fencing and shall be of sufficient size to house a minimum of 4 x 20 cubic yard roll on roll off skips for construction waste materials and 1 x 14 cubic yard covered skip for mixed municipal wastes generated by site staff.

All subcontractors shall be instructed by the C&D Waste Officer to remove their waste off-site from their work areas on a daily basis

Signage shall be installed at each skip to clearly identify the nature of waste that may be placed within it.

Spill kits and mobile bunds as shown in Figures 2 & 3 will located within the waste compound.

Figure 1 Construction waste segregation compound design

Individual construction waste skips shall accommodate waste wood, metal, plastics, gypsum products.

Figure 2 Oil Spill Kit

Figure 3 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 and site infrastructure construction. 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.
- Sub-Contractors will be instructed to remove off-site all waste generated from their activities on a daily basis.
- 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.

- 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 Manager. 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 Manager. 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

Soils at the site have been classified following WAC testing by IGSL and the completion of a Waste Classification Assessment (dated 08.02.21) by O'Callaghan Moran & Associates. The assessment concludes that soils classified as 17 09 04 and 17 05 04 may be classified as non-hazardous.

Excavated rock, soils and stones shall be removed off-site throughout the development and exported by the groundworks contractor to permitted facilities listed in the groundworks contractors Waste Collection Permit as detailed in Appendix I.

Excavated excess soils that are required to be exported off-site **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 volume of soils that may be declared as a By-Product will be assessed as the development progresses and the Project Manager shall inform Fingal County Council of the volumes of soils, if any, declared as an Article 27 by-product.

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

Invasive Species
Species listed on the Third Schedule of S.I. 477/2011 (as amended)

An ecological assessment included in the Screening Report for Appropriate Assessment for the development prepared by Openfield Ecological Services, June 2020 did not identify the presence of any invasive species at the development site.

8.0 WASTE RECORD KEEPING

It is the responsibility of the C&D Waste Officer that a written record of all quantities and natures of all wastes reused / recycled and exported off-site 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 Fingal 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 C&D waste taken from site will be subject to documentation and recording. An indicative template is contained in Appendix II to ensure that full traceability of materials to its final destination.

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.

9.0 CONSTRUCTION WASTE MANAGEMENT AUDITING

The effectiveness of a Waste Management Plan (WMP) 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 will 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 C&D Waste Officer 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.

10.0 WASTE EXPORT PERMITS/LICENCES

It is the responsibility of the C&D Waste Officer that a written record of all quantities and natures of all wastes reused / recycled and exported off-site during the project are maintained in a Waste File at the Project office.

The groundworks contractor will be responsible for the excavation of soils and their subsequent transport off-site to a permitted waste acceptance facility.

The groundworks contractor's vehicles exporting material off-site will operate under a valid Waste Collection Permit.

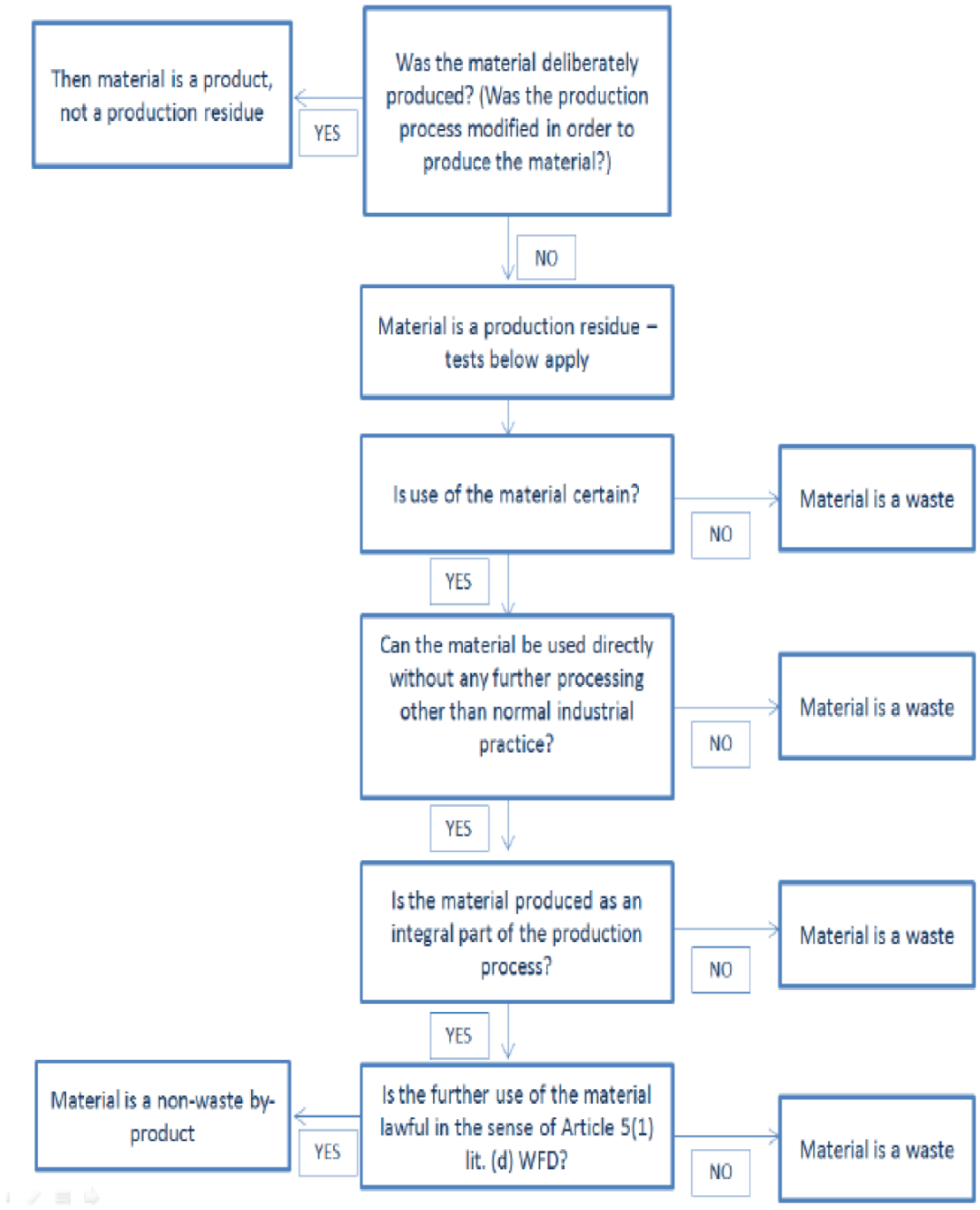
The groundworks contractor's vehicles shall transport waste materials from the site to appropriately permitted / licenced facilities.

Copies of all relevant Waste Collection Permits and Waste Facility Permits / Waste Licences shall be maintained by the C&D Waste Officer and are detailed below in Appendix I.

All monthly waste logs shall include the gate receipt from the facility accepting the waste load. This receipt shall correspond with the load removed from site.

Appendix I

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



APPENDIX II

Exported waste off-site Monthly Log

Date	Haulier	Waste Collection Permit #	Vehicle Reg	Waste Description	LoW Code	Load Size (tonnes)	Facility to which waste sent	Facility Waste Permit / Licence Number	Waste Receipt Filed Y / N	Waste Descriptions	LoW Code
				Soil and Stones	17 05 04					17 05 04	Soils and Stones other than those mentioned in 17 05 03
										17 01 07	Mixture of concrete, bricks, tiles and ceramics other than those mentioned in 17 01 06
										17 01 01	Concrete
										17 01 02	Brick
										17 01 03	Tiles and Ceramics
										13 02 08*	Engine, gear and lubricating oils
										16 01 07	Ferrous Metal
										20 03 01	Mixed municipal waste (Canteen)
										17 02 01	Wood
										17 02 02	Glass
										17 02 03	Plastic
										17 04 07	Mixed Metals
										17 08 02	Gypsum based construction materials
										NOTE	This list is not final and shall be expanded as wastes are generated