Waterman Moylan
Engineering Consultants

Construction and Demolition Waste Management Plan

Phase 2 Proposed Development at Tandy's Lane Village, Adamstown, Co. Dublin

April 2022

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Comments

Tables

1. Introduction

1.1 Background of Report

This report has been prepared by Waterman Moylan in support of a planning application for a Phase 2 proposed residential development at Tandy's Lane Village, Adamstown, Co. Dublin.

This document has been setup to be a 'living document' which will be updated by the Developer and Main Contractor as the project progresses.

The Construction Management Plan sets out typical arrangements and measures which may be undertaken during the construction phase of the project to mitigate and minimise disruption/disturbance to the area surrounding the site. The purpose of this report is to summarise the possible impacts and measures to be implemented and to guide the Main Contractor who will be required to develop and implement the Construction Management Plan on site during the construction period.

As is normal practice, the Main Contractor (yet to be appointed) for the project is responsible for the following:

- method in which construction works are carried out
- ensuring best practices and compliance with all legal obligations (including Local Authority requirements and Health and Safety legislation).

The Main Contractor is responsible for the design and installation of all temporary works required to complete the permanent works. This plan should be used by the Main Contractor to develop their, operational stage Construction Management Plan.

2. Site Description

2.1 Site Location

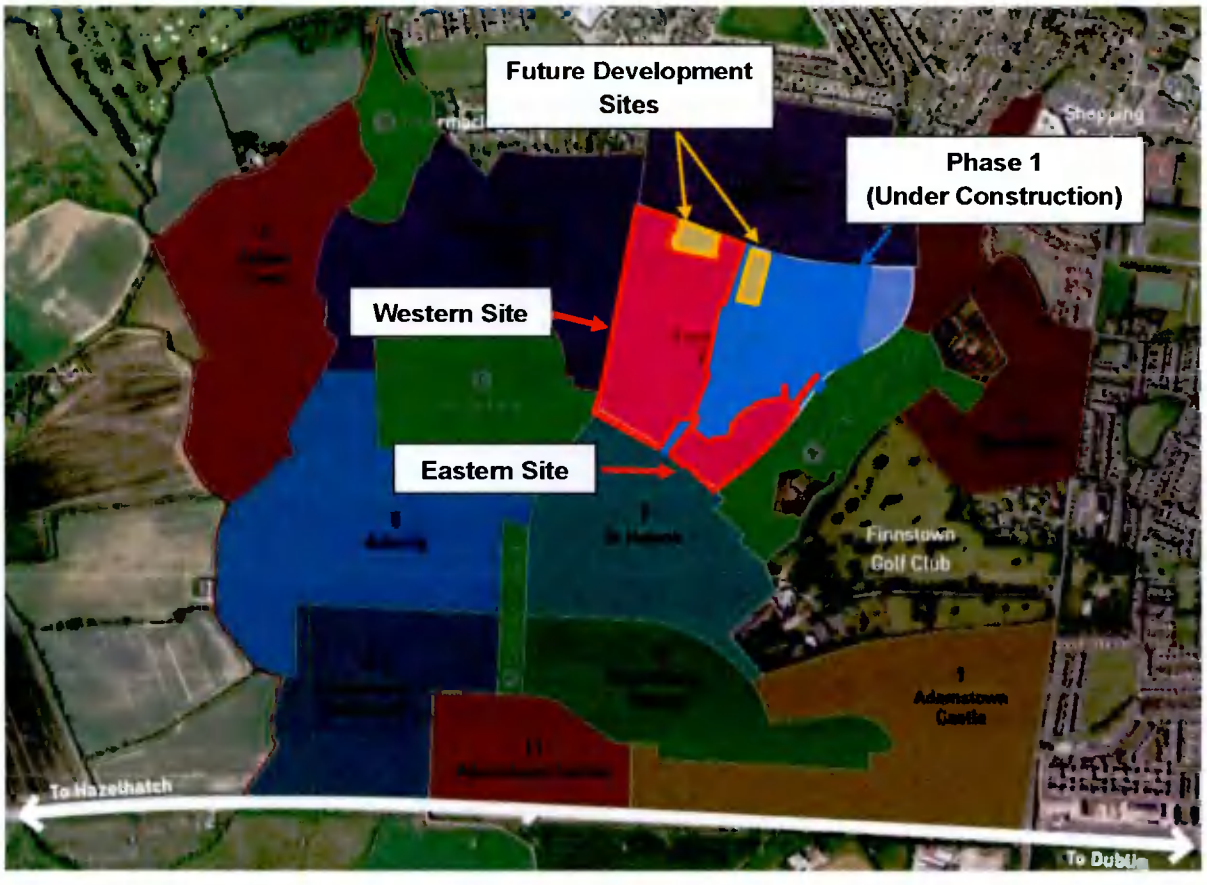
The development lands are located within the Tandy's Lane Village Development Area 6 of the Adamstown Strategic Development Zone (ASDZ) and is situated on 2 No. sites separated by the permitted Tandy's Lane Phase 1 Development (SDCC Reg. Ref. SDZ19A/0011) with a total site area of c. 10.24 hectares at Tandy's Lane, in the townlands of Doddsborough and Finnstown, Adamstown, Lucan, Co. Dublin.

The western site (8.06 hectares) is generally bounded to the west by Adamstown Boulevard, to the north by Adamstown Drive (L1030), to the east by the Tandy's Lane Phase 1 Development which is currently under construction (SDCC Reg. Ref. SDZ19A/0011) and undeveloped lands, and to the south by Tandy's Lane which links Adamstown Boulevard with Adamstown Park Road.

The eastern site (2.18 hectares) is generally bounded to the west / north-west by the permitted Tandy's Lane Phase 1 Development, to the east by Adamstown Park Road and to the south by Tandy's Lane.

Figure 1 below shows the Tandy's Lane Village Development Area 6 and subsequent phases. For the exact site location please refer to the accompanying architects' drawings.

Figure 1: Tandy's Lane Village Development Location



2.2 Surrounding Environs

The proposed development is located to the north of the St Helens Development tile and south of the Gandon Park/Paddocks lands (Airlie Stud Tile) that are nearing completion during application.

The existing road network in the area of interest consists of Adamstown Drive on the northern boundary, Adamstown Park (Loop Road 1) on the eastern boundary of the eastern site and revised alignment of Tandy's Lane which lies to the south of the subject site. Adamstown Park (Loop Road 1) to the east of the development connects the proposed development to the north onto Adamstown Drive and to the south onto Adamstown Avenue and Adamstown Link Road.

The site is connected to the wider roads network via Adamstown Drive and its junction with Newcastle Road (R120) to the east and via Adamstown Park (Loop Road 1) and its two junctions with Adamstown Avenue or Station Road to the south.

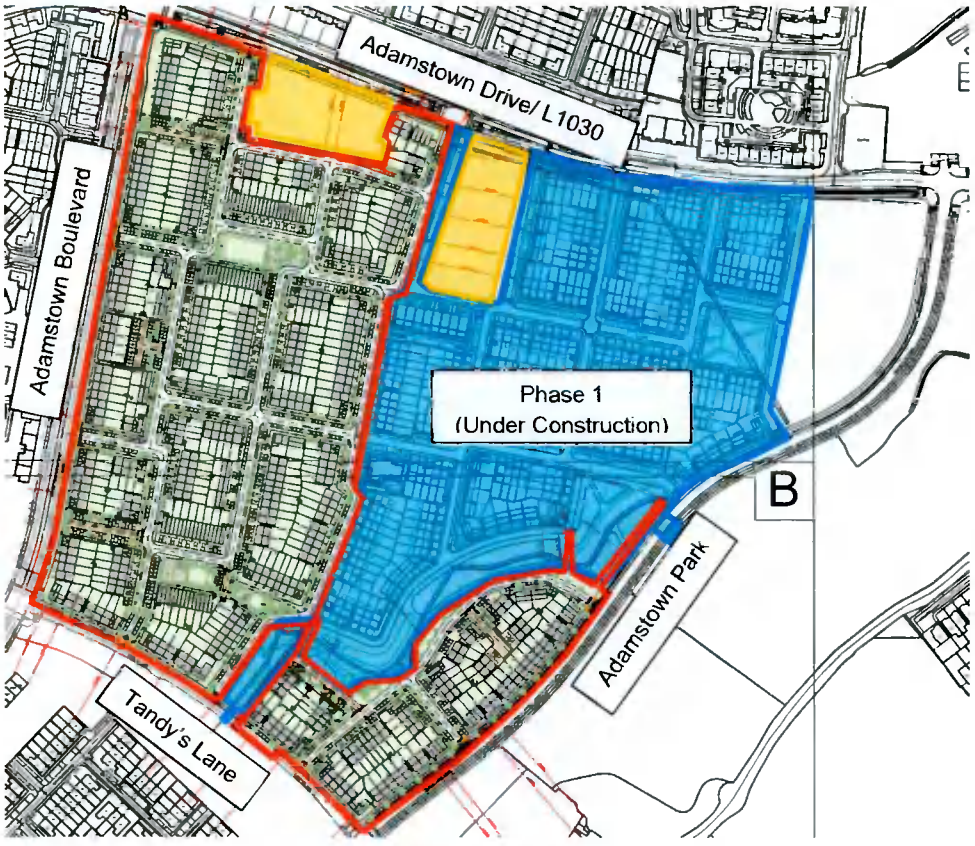
2.3 Proposed Development

This application is being made in accordance with the Adamstown Planning Scheme 2014, (as amended) and relates to a proposed development within the Adamstown Strategic Development Zone Planning Scheme. The lands are located within the Tandy's Lane Village Development Area.

The development will principally consist of: the construction of 352 No. residential units (terraced, semi-detached and detached) comprising 253 No. two storey houses (15 No. two bed units and 238 No. three bed units ranging in size from c. 87 sq m to c. 118 sq m) and 99 No. three storey houses (18 No. three bed units and 81 No. four bed units and ranging in size from c. 147 sq m to c. 181 sq m). The total gross floor area of the development is c. 43,272 sq m.

The development will also comprise the provision of 2 No. vehicular accesses from Adamstown Boulevard, 1 No. vehicular access from Adamstown Drive (L1030), 2 No. vehicular accesses from Adamstown Park Road and 2 No. vehicular accesses from Tandy's Lane; vehicular connections will also be provided to permitted roads in Tandy's Lane Phase 1; internal routes; 535 No. car parking spaces including on-curtilage and off-curtilage spaces; bicycle parking; bin storage; plant; ESB Substations; boundary treatments; lighting; hard and soft landscaping; and all other associated site works.

Figure 2: Proposed Development layout



The proposed development includes, in broad terms the following: -

- Site clearance and site set up including the removal of: -
    - historical site stockpile and
    - topsoil striping
- Excavating and Filling
    - historical fill removal if not suitable
    - replacing the above excavated historic fill if deemed unsuitable
- Construction of site access points
- Construction of infrastructure
- Construction of residential units

3. Waste Management on Site

3.1 Scope, Policy and Legislation

This report is a preliminary Construction and Demolition Waste Management Plan to form the basis of a full **Construction and Demolition Waste Management Plan** prepared by the contractor. The report does not address operational waste management, nor construction waste that may result from site development activities.

The principles and objectives to deliver sustainable waste management for this project have been incorporated in the preparation of this report and are based on the following strategic objectives; -

- National Policy: The Waste Management Acts 1996 to 2005
- Local Policy: Waste Management Plan for the Dublin Region 2005 – 2010, November 2005

This **Construction Waste & Demolition Management Plan** is also in accordance with the following guidance note published by the Department of the Environment, Heritage and Local Government.

- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition (C&D) Projects.

This framework is the guide by which the waste generated on this project will be managed. The concept ranges from the 'Most favoured to the least favoured options, as follows:

1. **Prevention**-This proposes the prevention of generation of waste. This entails an efficient method of management of the construction processes to prevent, where possible, the generation of waste in the first instance.
2. **Minimisation**-Reducing the quantities of waste generated where prevention is not fully possible.
3. **Re-use** of materials where that may be possible. Example would be the re-use of excavated materials as fill materials elsewhere within the Adamstown Project.
4. **Recycling**-There will be some timber waste generated on this project and such material will be segregated so that it can be removed and recycled by licenced operators.
5. **Energy Recovery**-Waste generated will be segregated for licenced operators to utilise this method in keeping with the characteristics of the material in question.
6. **Disposal**-By following the hierarchy noted above we will ensure that any disposal will be minimised and managed in a controlled way.

3.2 Site Waste Sources

Typical construction waste which will be generated by the development is as follows: -

- General site clearance waste including tree stumps, shrubs etc,
- There is no known contaminated soil present on the site, but if discovered the excavated material will be required to be disposed of in a licensed landfill site,
- Surface water runoff, and
- Packaging and waste construction materials generated during the construction activities.

Table 1 shows typical waste materials expected to be generated on a construction site with the European four-digit waste codes (EWC). For full list please refer to the latest EPA Waste Classification document *List of Waste & Determining if Waste is Hazardous or Non-hazardous*.

Table 1: Typical waste materials expected

Waste Material EWC	Waste Material EWC
Non-Hazardous	
Concrete, bricks, tiles, ceramics	17 01
Wood, glass and plastic	17 02
Bituminous mixtures, coal tar and tarred products	17 03
Metals (including their alloys)	17 04
Soil, stones and dredged spoil	17 05
Gypsum-based construction material	17 08
Hazardous	
Electrical and Electronic Components	16 02
Batteries	16 06
Wood Preservatives	03 02
Waste hydraulic oils	13 01
Engine, gear and lubricating oils	13 02
Liquid Fuels	13 07
Soil and stones containing dangerous substances	17 05 03
Other insulation materials containing of or containing dangerous substances	17 06 03
Construction and demolition waste containing mercury -not expected not expected banned in EU	17 09 01
Construction and demolition waste containing PCBs -not expected banned in EU	17 09 02
Other construction and demolition wastes containing dangerous substances	17 09 03
Solvents (xylene, white spirit, acetone and ethyl acetate)	20 01 13
Wastes from MFSU of adhesives and sealants (including waterproofing products)	08 04
Isocyanates (polyurethane paints, coatings, foams, glues and flooring)	08 05 01

3.3 Demolition Waste

The site investigation conducted during the Phase 1 development bordering the east of the subject site showed that that soils tested are inert and non-hazardous. Most of the site is green field area with occasional hedges, shrubs and trees.

Expected demolition waste: -

- MADE GROUND from exisiting hard standing areas or recently demolished hard standing areas on site.

After in-situ reuse and recycling options have been fully considered the demolition waste will be disposed of off-site by licensed waste contractors.

3.4 Construction Waste

During the infrastructure and foundation construction, surplus subsoil is expected to be generated during cut / fill activities as follows: -

- TOPSOIL.
- MADE GROUND from exisiting hard standing areas or recently demolished hard standing areas on site.
- COHESIVE DEPOSITS firm grey brown sandy slightly gravelly silty CLAY with low cobble content.
- BLACK COHESIVE DEPOSIT black slightly sandy slightly gravelly silty CLAY.
- GRANULAR DEPOSITS grey brown clayey sandy subangular to subrounded fine to coarse GRAVEL with occasional cobbles and rare boulders.
- WEATHERED BEDROCK limestone.

Table 2 shows the estimated cut and fill soils volumes for reuse or removal.

Table 2: Estimated soils volumes for reuse or removal

	Estimated Soils Cut Volume m^3	Estimated Soils Fill Volume m^3	Notes
Topsoil Removal	30,720	See below	Proposed gardens and open spaces areas were estimated to be 2.48 ha. At 300mm, the volume of topsoil for potential reuse is 7,425m^3. (See below in gardens etc)
Made Ground (historic fill of unknown compaction)	TBD on site	NA	Volume for removal will be determined by a site investigation after stripping when a final decision on type of foundation will be made.
Foundation	2,585	0	Assumption on structural/minimum excavation to receive.
Under slab/top of footing	0	15,230	Fill below floor slab/Selected back fill depending on Structural Engineer
Gardens	Excavated in topsoil removal	7,425	General fill/topsoil
Roads/curtilage parking	4,735	4,900	Below formation level to receive engineering fill
Drainage & Watermain Network	2,970	0	Assumption that the only cut volume not to be replaced by original material is the width of the pipe diameter
Bio Retention Tree pits	816	na	Based on information supplied by the landscape architect – approximately 16 m^3 is required for each tree – Approximately 51 tree pits have been identified (Subject to assessment in contact with utility design) to be incorporated into the SuDS measures. In addition, underdrainage needs to be assessed to link the bio retention tree pits as the ground has been identified in the Soils investigation as unsuitable for soak away

During the construction of the housing units, waste is expected to be produced from surplus materials such as broken or off-cuts of timber, concrete blocks, bricks, tiles plasterboard, glass, steel reinforcement, packaging etc.

EPA released Construction & Demolition (C&D) Waste Statistics for Ireland in October 2019 showing percentages of C&D waste material streams in reference to total C&D wastes generated.

When compared to the previous release in March 2018, the 2019 release categorises waste streams to fewer categories.

Figure 3: Estimated Construction Waste Arisings on Site, EPA Data Release (2019)

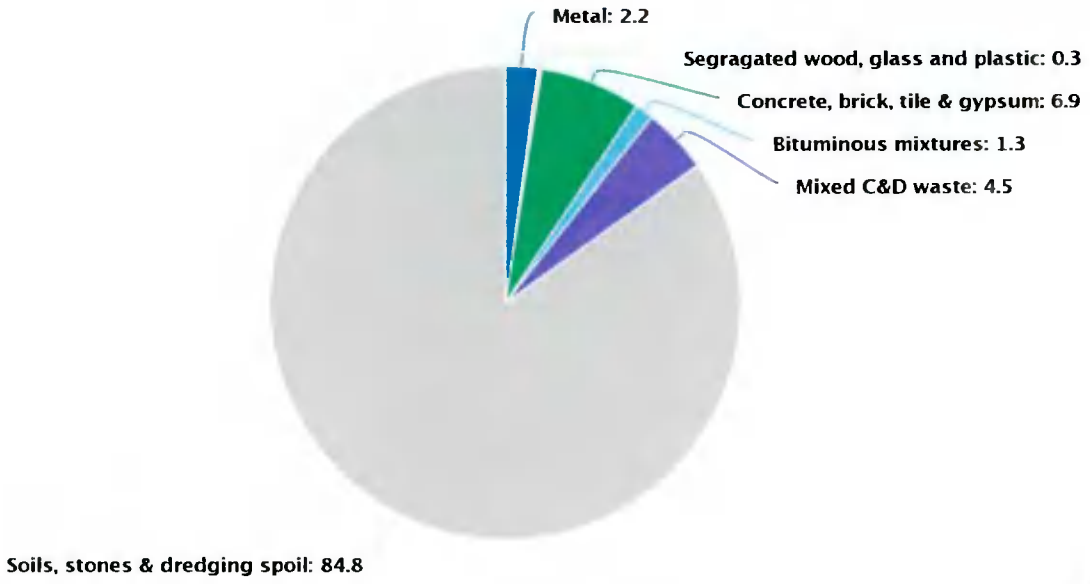


Table 3: Comparison of Estimated Construction Waste Arisings on Site, EPA Data Release 2018 & 2019

C & D Waste Material		Quantity (%) reported by EPA in March 2018	Quantity (%) reported by EPA in October 2019
Soil and stones		74.35%	80.6%
Mineral waste		12.11%	*Not reported*
Residue from treatment of mixed wastes		6.35%	*Not reported*
Metal waste		5.24%	3.8%
Wood waste	1.95%	1.57%	*0.4%*
Glass waste		0.09%	
Plastic waste		0.01%	
Hazardous Materials		0.19%	*Not reported*
Mixed waste		0.08%	7.8%
Paper and cardboard waste		0.01%	*Not reported*
Concrete, Bricks tiles and similar		*Not reported*	*6.6%*
Bituminous mixtures		*Not reported*	*0.9%*

To calculate the construction waste arising on site the volume of 11,106m^3 for soil and stone was used excluding the historic fill and topsoil. Based on the EPA information above in Table 3, Table 4 below shows estimate of construction waste which might be generated during construction of the proposed development on site. Estimated average soils density to convert the volume of soil and stone waste to tonnes was taken as 1800kg/m^3.

Table 4: Estimated Construction Waste Quantities

C & D Waste Material	Quantity based on EPA data reported on March 2018 (Tonnes)	Quantity based on EPA data reported on October 2019 (Tonnes)
Soil and stones	14,863	16,113
Mineral waste	2,421	Not reported
Residue from treatment of mixed wastes	1,269	Not reported
Metal waste	1,048	760
Wood waste	314	80
Glass waste	18	
Plastic waste	2	
Hazardous Materials	38	Not reported
Mixed waste	16	1,559
Paper and cardboard waste	2	Not reported
Concrete, Bricks tiles and similar	Not reported	1,319
Bituminous mixtures	Not reported	180

3.5 On-Site Waste Management

All arisings and surplus materials will be disposed of off-site to permitted/licensed facilities.

All waste concrete and masonry will be stored and if appropriate will be crushed on site and used for site haul roads in later stages of the project.

Skips will be provided for the separation and disposal of metal and wood from the site. It is envisaged that the majority of the metal and wood for disposal will come from house construction and pallets used for the transport of construction materials.

Other non-hazardous waste generated by the site (packaging and running of site offices) will be collected in separate roll-on skips.

Any hazardous material encountered will be disposed of to a suitably licenced facility.

The Purchasing Manager will ensure that materials are ordered so that the quantity delivered, the timing of the delivery and the storage is not conducive to the creation of unnecessary waste.

3.6 Off-Site Waste Management Licensing/Permitting

All waste materials (where necessary, after in-situ reuse and recycling options have been fully considered) will be disposed of off-site, under the appropriate Duty of Care and subject to approvals/consents from the relevant statutory bodies. It is the responsibility of the Main Contractor to ensure that any company to whom waste is transferred is legally permitted to do so and that the facility they bring the waste to is licensed to

handle that type of waste as outlined in the Waste Management Acts 1996-2005. The Waste Collection Permit Register, in accordance with the Waste Management (Collection Permit) Regulations 2001 will be consulted to ensure that waste carriers hold the appropriate permit.

The relevant waste collection permits and waste licences will be provided by the Main Contractor.

An inspection of the site will be made by the Main Contractor for hazardous substances, gas cylinders and the like. If such substances are encountered during construction, then works must be halted. The project supervisor for construction stage (**PSCS**) and the responsible Statutory Authority will be informed immediately.

The Main Contractor will prepare a detailed inventory of construction based hazardous waste generated, such as tars, adhesives, sealants and other dangerous substances, and these will be kept segregated from other non-hazardous waste to prevent possible contamination. Arrangements will be made for such substances for disposal in a safe manner to an authorised disposal site or by means acceptable to the relevant Authority.

The Main Contractor will ensure that the excavation works are carried out in accordance with best/ standard practice and excavation materials are well segregated to minimise any potential cross-contamination.

The Main Contractor will carry out appropriate environmental chemistry testing in order to determine the waste classification of the soils that are to be excavated and that will include Waste Acceptance Criteria testing. The test regime will be agreed with the receiving landfill operator and the testing will be carried out by an accredited laboratory.

Should excavation materials be assessed to be hazardous, the Main Contractor will carry out pretreatment of the waste soils to a methodology that is agreed with the receiving landfill operator and in accordance with Environmental Protection Agency guidance.

The Main Contractor is encouraged to reuse and recycle any waste materials as far as is reasonably practicable.

In respect of any liquid disposal including underground water, The Main Contractor will carry out appropriate environmental chemistry testing in order to determine whether the liquid is contaminated or not. The test regime will be agreed with the receiving disposal facility and the testing will be carried out by an accredited laboratory.

The Main Contractor will manage and carry out the works in accordance with best environmental practice and in accordance with the requirements of Local Authority, EPA and all requirements as specified in this document.

3.7 Appointment of C&D Waste Manager

The Main Contractor will appoint a C&D Waste Manager. The C&D Waste Manager will have overall responsibility for the implementation of the project C&D Waste Management Plan during the construction phase.

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

3.8 C&D Waste Record Keeping

It is the duty of the C&D Waste Manager to ensure that necessary licenses have been obtained as needed. Each consignment of C&D waste taken from the site will be subject to documentation which will conform with the table below along with Transportation Dockets to ensure full traceability of the material to its final destination.

Table 5: Details of Materials Taken from Site

Detail	Particulars
Project of Origin	Tandy's Lane Phase 2, Adamstown, Co. Dublin
Material being Transported	*To be completed by C&D Waste Manager*
Quantity of Material	*To be completed by C&D Waste Manager*
Date of Material Movement	*To be completed by C&D Waste Manager*
Name of Carrier	*To be completed by C&D Waste Manager*
Destination of Material	*To be completed by C&D Waste Manager*
Proposed Use	*To be completed by C&D Waste Manager*

4. Proposals for Minimisation / Reuse / Recycling

4.1 Topsoil

In the case of topsoil, careful planning and on-site storage can ensure that this resource is reused on-site as much as possible. Any surplus of topsoil not reused on site can be sold. However, topsoil is quite sensitive and can be rendered useless if not stored and cared for properly.

- It is important that topsoil is kept completely separate from all other sub soil and construction waste as any cross-contamination of the topsoil can render it useless for reuse, and
- It is important to ensure that topsoil is sealed and protected from all kinds of vehicle damage and kept away from site-track, delivery vehicle turning areas and site plant and vehicle storage areas.

If topsoil is stored in piles of greater than two metres in height the soil matrix (internal structure) can be damaged beyond repair, which can result in a material declassification. Topsoil should also be kept as dry as possible and used as soon as possible to reduce the risk of any deterioration through lengthy storage and excess moving around the site.

Records of topsoil storage, movements and transfer from site will be kept by the C&D Waste Manager.

4.2 Earthworks – Cut and Fill Policy

Earthworks for road, drainage and structure foundation forms a major part of the quantity of waste that will be generated by the construction phase of this project. In order to optimise the impact of the generation of surplus material due to excavation the following principles has been considered during the detail design and construction phase: -

- The quantity of excavated materials to be removed from or imported into the site has been reduced by establishing levels of the proposed buildings which optimise the volume of cut and fill where possible,
- Sub-soils unsuitable for engineering purposes generated by excavations on site will be reviewed for reuse as landscaping or non-engineering fills on adjoining or other construction sites within the region, and
- Careful separation of builder's rubble packaging and contaminated waste from re-usable material will result in the minimisation of the disposal of material to landfill.

4.3 Minimisation

The Purchasing Manager will need to ensure that materials are ordered so that the quantity delivered, the timing of the delivery and the storage is not conducive to the creation of unnecessary waste.

All staff and sub contractors shall be advised on how to dispose of their waste correctly on-site.

Where possible, the 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 will reduce the requirement for virgin aggregate materials from quarries and the amount of C&D waste for landfill disposal.

4.4 Reuse

Concrete blocks, engineering bricks and clay bricks that are surplus can be broken up and used for hardstanding areas.

Topsoil 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.

Fill on site can be broken down into the following categories:

- Beneath Landscaped Areas: Site as specified by Landscape Architect. Topsoil to TII Clause 618. Top soiling and turfing shall be carried out using material complying with the requirements of Class 5 on Table 6/1 of TII specification. Imported topsoil, Class 5B material, shall only be imported when required and in accordance with Appendix 6/8 of TII Specification. When required in Appendix 6/8, topsoil shall not be excavated from stockpiles:
    - Which have been exposed to a cumulative rainfall exceeding 100mm, or other figure stated in Appendix 6/8, over the preceeding 28 days; or
    - When heavy rain is falling.
- Beneath Buildings: Clause 808 material compacted, or site won material, complying with the requirements or Class 1, 2 and 6 of Table 6/1 of TII specification. (piled and suspended slab or trench fill under footings).
- Beneath Driveways/ Parking areas: Permeable paving fill/ Clause 808
- Beneath Roads: Capping and Sub-base materials: -
    - Capping material shall be comprised of either crushed rock, natural gravel, crushed gravel (all excluding argillaceous) or crushed concrete. The material shall be in accordance with SR 21 and Class 6F1 or 6F2 as defined in the TII Specification for Road Works Tables 6/1 and 6/2.
    - Sub-Base material shall comprise of granular material, in accordance with Clause 808 of the TII Specification for Road Works and SR 21. The material shall lie within the grade limits set out in Table 8/6 of the Specification for Roadworks, TII. Certs from the supplier for all imported stone should be provided to the Engineer for review ahead of the works.

4.5 Recycling

It is envisaged that most of the recyclable waste on site will come from house construction in a form of wood and metal. Any excess wood or metal generated on site will be kept segregated and removed off site to a licenced recycling facility. The C&D Waste Manager will keep certification of this on file on site.

Excess wood and metal will be segregated in separate areas or skips and sent for recycling. The site management will make sure that the waste is segregated.

Plastic arising from general waste or packaging will be segregated and stored in a separate skip. Again, the site management team will ensure that there is no contamination of the segregated skips on site.

4.6 Disposal

Any waste that cannot be reused or recycled will be disposed of by a Permitted Waste Contractor holding an appropriate Waste Collection permit.

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 method for the removal of the hazardous material will be agreed.

The waste materials will be collected by a Permitted Waste Contractor holding an appropriate Waste Collection Permit and will be disposed of to a suitably Licenced Facility.

5. Waste Removal Access Routes

The access route indicated below will be designated as the route for all deliveries to the site and removal of waste from the site. This route will be signposted by the Developer prior to commencement of works on the site.

Figure 4: Construction Traffic Routes

6. Construction Phase Wastewater

Controls will be put in place to prevent C&D waste leachate washing into the local storm water system.

Following completion of any required initial dewatering of excavations for the drainage pipes, water supply, utilities and foundations, it is expected that flows of water into the excavation will be relatively small. These flows will be managed by sump pumping as required.

During any discharge of surface water from the excavations, the quality of the water will be regularly monitored visually for hydrocarbon sheen and suspended solids. Periodic laboratory testing of discharge water samples will be carried out in accordance with the requirements of the discharge licence obtained from the Local Authority.

A series of Downstream Defenders are proposed within Phase 2 and will be used to introduce additional measures to control and clean surface water run off during the works.

UK and Ireland Office Locations