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Glenveagh Homes

Glenveagh Homes Ltd.

Residential Development, Ennis, Co. Clare

Construction Waste Management Plan

PROPOSED RESIDENTIAL DEVELOPMENT, ENNIS, CO. CLARE

CONSTRUCTION WASTE MANAGEMENT PLAN

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1.0 INTRODUCTION

Waste Management is an integral requirement essential in the promotion of sustainable development, enhancing good public health and the protection of environment. The following outlines the waste management strategy for the development.

The proposed development will give rise to a variety of waste streams. Given the scale of the development and the volumes of waste that will be generated during construction, it is imperative to ensure that waste management at the site is tightly controlled and has the least possible impact on the surrounding environment.

The purpose of the Construction Waste Management Plan (CWMP) will ensure that waste storage and movement within the development takes place in a manner which complies with relevant legislation and has a minimal impact on the nearby existing commercial and residential areas and ensures, where prevention is not possible, that maximum reuse, recycling and recovery of waste with diversion from landfill, wherever possible.

The current legal and industrial standards adopted to generate this document include:

- ***Waste Management Act 1996, as amended*** -
- ***Waste Management (Facility Permit and Registration) Regulations, as amended***
- ***Waste Management (Collection Permit) Regulations, as amended***
- ***European Union (Packaging) Regulations, as amended***
- ***European Union (Waste Electrical and Electronic Equipment) Regulations, as amended***
- ***Waste Management (Hazardous Waste) Regulations, as amended***

The plan estimates the type and quantity of waste to be generated from the proposed development during the construction phase and provides a strategy for managing the different waste streams. Guidance will also be given to ensure appropriate method of transportation of waste is used to prevent littering or other serious environmental pollution.

In preparation of the CWMP, the following publications have been used as references:

- BEST PRACTICE GUIDELINES for the preparation of resource & waste management plans for construction & demolition projects.
- Department of the Environment and local Government 2021.

These guidelines cover issues to be addressed at the preplanning stage right through to project completion and these include:

- Predicted Construction and Demolition wastes.
- Waste disposal/recycling of C&D wastes at the site.
- List of sequence of operations to be followed.
- Provision of training for waste managers and site crew.
- Details of proposed record keeping system.
- Details of waste audit procedures and plans.
- Details of consultation with relevant stakeholders.

2.0 WASTE MANAGEMENT CONTEXT

The primary legislative instrument that governs waste management in Ireland is the *Waste Management Act (WMA) 1996*, as amended. The WMA is a key instrument which, among others, implements the EU *Waste Framework Directive (Directive 2008/98/EC)* in Ireland. The WMA provides for a general duty on everyone not to hold, transport, recover or dispose of waste in a manner that causes or is likely to cause environmental pollution. The WMA also sets out the provisions for the collection of waste and for its recovery/disposal.

Any person or contractor engaged in the collection of waste on a commercial basis is required to hold a Waste Collection Permit in accordance with the requirements of the Waste Management (Collection Permit) Regulations 2007, as amended. A Waste Collection Permit is issued to appropriate contractors by the National Waste Collection Permit Office (NWCPO).

Waste materials collected by a suitably permitted waste contractor can only be transported to appropriately permitted or licensed waste facilities. Authorization for receiving waste materials is provided in accordance with the Waste Management (Facility Permit & Registration) Regulations, as amended for waste permits and certificates of registration (COR) granted by the relevant Local Authority. Waste management authorizations granted by the Environmental Protection Agency (EPA) are issued in accordance with the Waste Management (Licensing) Regulations 2004, as amended and the Environmental Protection Agency (Industrial Emissions) (Licensing) Regulations 2013, as amended.

3.0 RELEVANT POLICY

3.1 NATIONAL POLICY

Ireland's waste management policy is based on the EU waste hierarchy (Figure 1) and includes a range of measures across five tiers namely, prevention/minimisation, reuse, recycling, recovery, and disposal.

National waste management policy is set out in the Waste Action Plan for a Circular Economy (2020 – 2025). It is focused on facilitating the transition to a circular economy (Figure 2) through a suite of actions aimed at capturing the maximum value of all resources across various waste streams. It is consistent with EU policy supporting the transition to a circular economy including the European Green Deal and ties in with the waste hierarchy approach. The Circular Economy Bill 2021 is currently at draft stage and will, when enacted, set out a statutory framework to enable the transition.

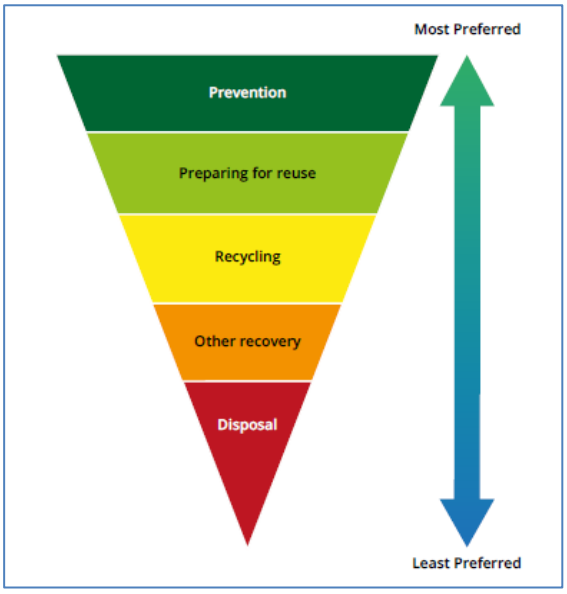

Figure 1: Waste Management Hierarchy (Source: EPA)

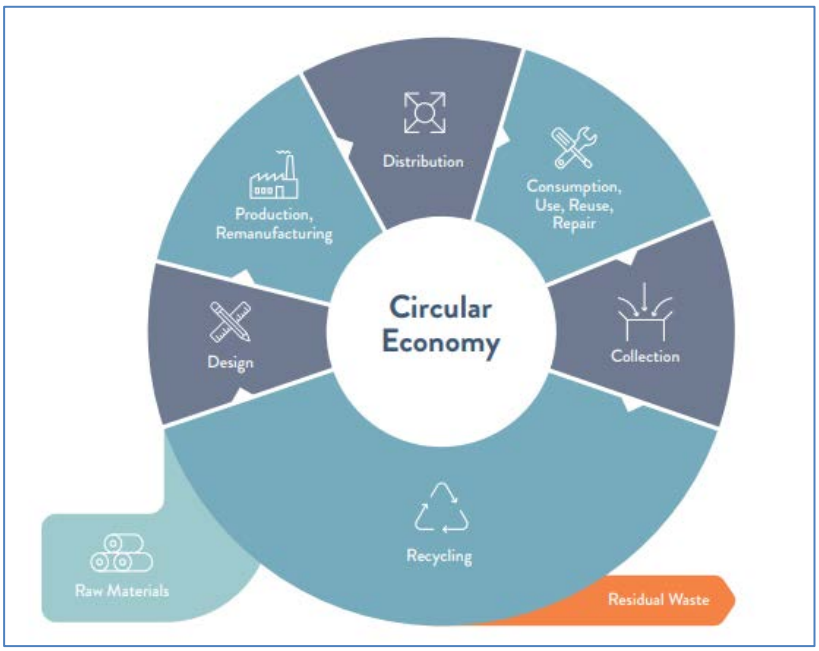

Figure 2:The Circular Economy (Source: EPA)

In respect of C&D waste specifically, the plan outlines that a review of producer responsibility initiatives will examine the appropriate financial mechanisms to ensure compliance by producers with their obligations and that those sectors which are generating significant waste, and which do not have successful voluntary initiatives in place, will be considered for specific regulation as part of the review. The document states that specific producer responsibility requirements for construction and demolition projects over a certain threshold will be considered.

3.2 REGIONAL WASTE MANAGEMENT PLAN

For the purposes of waste planning, Ireland has been divided into three waste regions, namely the Eastern-Midlands Waste Region, the Southern Waste Region and the Connacht-Ulster Waste Region.

The proposed development is in the Southern Waste Region (SWR) which comprises ten local authority areas which are outlined in Table 1.1.

Southern Waste Region	
Carlow County Council Clare County Council Cork City Council Cork County Council Limerick City and County Council	Kerry County Council Kilkenny County Council Tipperary County Council Waterford City and County Council Wexford County Council

Table 1: Local Authority areas in the SWR

Each of the three waste management regions has developed a waste management plan to provide a framework for the prevention and management of wastes in a safe and sustainable manner. The current waste plan for the SWR is the *Waste Management Plan 2015 – 2021.*

The strategic vision of the regional waste plan is to rethink Ireland's approach to managing wastes, by viewing waste streams as valuable material resources that can lead to a healthier environment and sustainable commercial opportunities for the economy.

The regional plan also states that "*there is significant potential for recycling of the C&D waste stream given the nature of its characteristics*".

3.3 TOWN DEVELOPMENT PLAN

The current development plan applicable to the proposed Ennis development is the *Clare County Development Plan 2017-2023,* which sets out the local authority's commitments to provide and deliver infrastructural services which will enhance the quality of the town's environment and facilitate sustainable economic development and housing.

The development plan sets out the following objectives, with regard to waste management in the county:

4.0 WASTE MANAGEMENT OBJECTIVES

The following waste management objectives are identified for the proposed development:

- Maximize the on-site segregation of demolition and construction wastes.
- Consider all reuse opportunities for material surpluses within the site.
- Avoid oversupply of incoming construction materials which have the potential to become waste; and
- Engage licensed waste contractors that can provide maximum off-site reuse, recovery and recycling of waste materials in preference of disposal.

The national target for preparing for reuse, recovery, and recycling of construction waste under the waste framework directive is 70%, (excluding soil and stone). The waste industry in Ireland is achieving 84% as of 2019, surpassing it's 2020 target.

The target set for construction waste management for this project is 80% which is expected to be achievable based on the construction waste types outlined in Section 6 below.

The main contractor will be made aware of this project target and will be required to engage suitably permitted waste contractors that will provide a commitment to achieving, or exceeding, this target.

5.0 PROJECT DESCRIPTION

TOBIN Consulting Engineers were appointed by Glenveagh Homes Ltd. to provide design consultancy services for the proposed residential development at Ennis, Co. Clare. The proposed development is in the administrative area of Clare County Council.

The proposed development is located on an 8.9 ha developable site currently a green field site, approximately 2km southwest of Ennis town centre. The proposed development consists of the following:

1. The construction of 289 no. residential units comprising a mixture of 12 no. 1 bed apartments, 78 no. 2 bed townhouse/duplex units, 165 no. 3 bed dwelling houses, and 34 no. dwelling houses which will have an option of a 3 or 4 bedroom house-type;
2. 2. A 400.7m2 creche/childcare facility;
3. 3. The provision of landscaping, open space and amenity areas, including play/exercise equipment, a linear amenity walkway, informal play areas and local play areas;
4. 4. The provision 2 no. pedestrian connections to the existing public footpath along the N85, 2 no. pedestrian connections into Ballymacaula View Estate, improvements/upgrades to the pedestrian footpaths along Circular Road including an uncontrolled pedestrian crossing and pedestrian footpath provision along part of the Drumbiggle and Cahercalla Roads;
5. 5. All associated infrastructure and services including 1 no. vehicular access point onto Circular Road, car parking and bin storage, lighting, 2 no. ESB substations, drainage and 1 pumping station, boundary treatments at Ballymacaula, Drumbiggle, Circular Road, Ennis, Co. Clare.

An Environmental Impact Assessment Report and a Natura Impact Statement has been prepared in respect of the proposed development.

6.0 WASTE ARISINGS

Construction waste statistics from 2019 published by the EPA identify the main waste types generated in the construction industry in Ireland as set out in Table 2.

Prior to the commencement of any excavation or construction works at the site a full audit of waste that will be generated on site will be carried out. For the purposes of this CWMP a list of expected waste types that may be generated has been drawn up and the European Waste Catalogue Codes pertaining to each waste type is included in the table below which identifies the main waste types generated in the construction industry in Ireland

Waste Type	% of total (by weight)
Metal	2.2%
Segregated Wood, glass & plastic	0.3%
Bituminous mixtures	1.3%
Mixed waste	4.5%
Concrete, bricks, tiles and similar	6.9%
Soil and stones	84.8%

Table 2: EPA C&D Waste Statistics 2019

As above, soil and stones waste typically make up a significant proportion of Construction waste.

During construction works, waste material will be generated mainly from material off-cuts and packaging. Oversupply of materials can also lead to waste generation. The typical waste materials generated again will be concrete rubble, metals, wood and plastics.

Other waste types generated in smaller quantities on construction sites may include materials such as waste oils, resins, paints and adhesives. Some of these materials may be hazardous and will require specific handling procedures. It is expected that quantities of these materials will be small.

6.1 EXCAVATION WASTE

The remaining volume of waste material will be segregated according to type into individual skips pending removal by authorised waste collection contractors. The actual waste categories that will be subject to segregation during the site clearance and cut & fill phases will be determined by the expected volumes of specific waste categories which will be assessed by the Waste Manager.

Where a category of waste forms a smaller quantity, this will be disposed of in a general waste skip along with other categories of waste the volume of which does not warrant individual segregation. This general waste material will be transferred to a Materials Recovery Facility (MRF) by a fully licensed waste contractor where the waste will be further sorted into individual waste streams for recycling, recovery or disposal.

It is anticipated that the majority of materials will be re-used at the site for landscaping and site restoration purposes.

6.2 RECYCLE/RECOVERY MEASURES

The following waste streams are to be segregated for recycling/recovery off site:

- Uncontaminated excavated soil/stone, in excess of the quantities required on site, is to be taken off site for reuse at another location. Contractor shall ensure the haulage contractor and the receiving site has the necessary Waste Collection Permit from the local authority. Records of all truck movements in/out of site shall be maintained.
- Mixed packaging waste is to be deposited in recycling skips. This waste will then be removed off site for recycling by the licensed waste contractor.
- Timber waste is to be deposited in timber skips for collection by the licensed waste contractor.

- Mixed metals are to be placed in the appropriate skip for removal off site by the licensed waste contractor.
- Return broken glass to glazing supplier or local recycling point.

Depending on the work stage and anticipated waste streams and volumes, Contractor Management have discretion to use one skip for all 'Recyclable Waste'. This waste shall be collected by an approved waste contractor for segregation and recycling at their waste facility.

The Contractor shall retain records of all skips collection from site.

7.0 CATEGORIES OF CONSTRUCTION WASTE GENERATED

To provide consistent waste and hazardous waste classifications across the EU, the following were published:

- European Waste Catalogue
- Hazardous waste list.

These form the basis for national and international waste reporting obligations. The EPA has also published a more concise guide of these. The European waste codes (EWC) for typical waste materials expected to be generated for this site are tabulated below as follows:

Waste Type	List of Waste Codes*
Metal	17 04 01 to 17 04 11
Glass	17 02 02, 17 02 04
Paper & Cardboard	20 01 01
Plastic	17 02 03, 17 02 04
Wood	17 02 01, 17 02 04
Waste containing PCBs**	17 09 02
Mixed waste	17 09 03, 17 09 04
Mineral waste (concrete, bricks, gypsum)	17 01 01 to 17 01 07
Asbestos	17 06 01, 17 06 05
Soil and stones	17 05 03 to 17 05 08
Residue from treatment of mixed waste	Varies

Table 3:European Waste Codes – General Construction

8.0 CONSTRUCTION WASTE

This is anticipated to consist of surplus of materials arising from cut-offs of various materials including concrete blocks, bricks, tiles etc. Waste from packaging and oversupply of materials is also expected.

The bulk of waste material generated is from the excavation of subsoil to accommodate the construction associated with the roads, houses of the development and the housing sub-structures and associated civil works for the development. This is expected to be inert material which may be re-used on site subject to suitability in landscape areas to reduce waste volumes.

The development will include the excavation of approximately 15,000 m^3 of soil/subsoil, associated with the general site clearance and excavation relating to the bulk dig and installation of housing sub-structures and general civil engineering works. It is intended to reuse excavated materials if deemed suitable in landscape areas to reduce waste volumes.

The following table predicts the construction waste which will be generated based on information currently available:

Waste Type	Quantity (Tonnes)
Metal	50
Segregated Wood, glass & plastic	500
Bituminous mixtures	30
Mixed waste	500
Concrete, bricks, tiles and similar	2,000
Soil and stones	15,000
Total	18,080

Table 4:Estimated Waste Quantities

Waste Type	Quantity (Tonnes)	Reuse/ Recovery		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Metal	50	5	2.5	90	45	5	2.5
Segregated Wood, glass & plastic	500	15	75	65	325	20	100
Bituminous mixtures	30	0	0	25	7.5	75	22.5
Mixed waste	500	0	0	0	0	100	500
Concrete, bricks, tiles and similar	2,000	95	1,900	0	0	5	100
Soil and stones	15,000	75	11,250	0	0	25	3,750
Total	18,080		13,227.5		377.5		4,475

Table 5:Estimated off-site reuse, recycle and disposal rates for construction waste

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.

9.0 WASTE HANDLING

9.1 ON-SITE WASTE MANAGEMENT

To ensure that waste management is given adequate consideration throughout the construction phase, the main contractor will appoint a Project Environmental Manager who

will have overall responsibility for implementing this CWMP, ensuring that the project remains in compliance with waste legislation and striving to achieve, and exceed, the waste management target as set out in Section 4.

As a primary measure, waste generation will be avoided, where possible, by ensuring that an excess supply of building materials is not delivered to the site and that only the minimum materials required to meet the construction schedule are available on-site. This will reduce the potential for damage and re-ordering materials which will save on project costs. The 'Just-in-time' delivery concept will be applied, where possible, to minimise waste creation.

Maximum segregation of waste materials on-site will be carried out to increase the off-site potential for materials. A waste compound will be established adjacent to the site compound. Additional skips of varying sizes may be provided strategically around the site from time to time to promote source segregation and avoid rubbish build-up and potential for off-site littering.

All skips will be maintained in good condition and clearly labelled so that there is no confusion as to what materials are to be placed in which skip. The main contractor will appoint an employee to keep the area around the skips clean and to ensure skips are not overflowing with waste. Waste materials such as gypsum, WEEE, batteries or hazardous waste may require covered skips or containers to prevent contaminated run-off in the event of getting wet. A dedicated bunded storage area will be provided for storage of liquid wastes such as resins, oils, paints etc.

Clean excavated materials will be reused on-site for backfill and landscaping. Groundworks will be monitored by the Project Environmental Manager, and sampling carried out as necessary on any potentially contaminated material.

9.2 OFF-SITE WASTE MANAGEMENT

The main contractor will appoint a suitably permitted waste contractor(s) to collect waste from the site and transfer to appropriately permitted or licensed waste facilities. Any contaminated material encountered will be classified and disposed of, to Local Authority Registered / Council landfill sites.

Sub-soils/Topsoil's
Given previous green field land use and on-site observations, there is expected to be inert soil and subsoils which will be excavated and reused where possible but if removed from site will be taken to licensed facility.

Permits issued under the Waste Management (collection permits) regulations 2007 allow the contractor to reuse this for landscaping etc. subject to its terms. Small amount of material excavated if encountered which are deemed hazardous will be stored separately and tested for classification in accordance with Council Decision 2003/33/EC, treated if required and disposed of appropriately.

Concrete & concrete blocks and aged stone / rubble
This clean inert material will be reused where possible by on site crushing as filling material or removed to licensed site.

Plastics / Timber / Scrap Metals / Plaster / Glass
These highly reusable and /or recyclable materials, if uncontaminated, will be cleaned, segregated and stored in suitable covered skip for collection by licensed contractor.

Every effort will be made in the management of the site to minimize the oversupply of these materials.

Hazardous Materials

Specialist contractor will be employed to carry out environmental clean-up to remove traces of contaminated materials from the site. These should be licensed under Waste Management (Collection Permit regulations 2007). This will be disposed of in a facility licensed under the Waste Management Act 1996, as amended and waste management (Facility Permit) regulations, as amended.

There are numerous waste transfer stations and treatment facilities in the Munster Region that can accept construction waste for reuse, recycling and recovery. Contaminated soils may need to be transferred out of the region for appropriate treatment and disposal. The proposed destination for the waste material will be provided to Clare County Council prior to commencement of site clearance works.
There will be no waste material removed off-site other than to licensed or permitted waste facilities.

Excavated soil and stone material will be tested to provide a classification for off-site recovery or disposal in accordance with the EPA requirements set out in the *Waste Classification* publication.

Alternatively, the EPA approved *HazWasteOnline* application can be used to classify the excavated material as hazardous or non-hazardous. Waste facilities permitted for acceptance of waste materials for landfilling will also require the classification of waste in accordance with the Waste Acceptance Criteria (WAC) set out in *EC Council Decision 2003/33/EC*[7]. Any contaminated soil and stone will be transferred off-site in tipper lorries which will be covered to prevent dust deposition off-site, and trailers will be sealed to prevent contaminated run-off leaking from the trailer.

The main construction waste materials such as concrete rubble (including ceramics and bricks), metals, plastics, plasterboard, glass, and wood are widely recyclable and will be segregated on site into separate skips insofar as is possible with the space available on-site. These materials will be transferred off-site using dedicated skip lorries to appropriate facilities.

Any WEEE generated will be stored separately (under cover if required) and transferred to suitable facilities for processing and onward recycling of components. Similarly, where possible, cardboard packaging will be segregated to maximise recycling potential off-site.

A construction waste skip will be required for non-recyclable wastes. The appointed Project Environmental Manager will monitor site segregation to ensure recyclable materials are placed in dedicated skips, where provided, and not placed in the construction waste skip. This material will be transferred off-site for processing and further removal of recoverable materials.

Off-site facilities for processing of construction waste typically generate a 'fines' material which can be recovered as an engineering material in landfill facilities.

Hazardous waste will only be removed from site by waste contractors permitted to handle hazardous waste. Waste oils, resins and paints may be suitable for off-site recovery, and this

will be explored with waste contractors.

10.0 RECORD KEEPING

Once a waste contractor(s) has been appointed, the Project Environmental Manager will request copies of their waste collection permits which will be held on file at the site office. The waste collection permits must include an up-to-date list of approved vehicle registrations associated with the permit which can be spot checked by the Project Environmental Manager. The waste contractor will also be requested to identify where waste materials will be taken to, and copies of waste licences/permits for each facility will be requested to hold on file in the site office. The Project Environmental Manager will confirm that the waste collection permits, and facility licences/permits are appropriate for the waste types proposed.

A waste log will be set up by the Project Environmental Manager to record all outgoing waste movements from the site. The waste collection vehicle driver will be required to supply an individual signed waste docket (waster transfer form for hazardous waste) for each waste movement off-site which must specify the waste collection permit number, waste type, list of waste code, waste treatment, source of the waste and waste destination. The docket provided by the driver may also include the weight of waste where the collection vehicle is equipped with a load cell, or the weight of waste is known. Alternatively, the weight of the waste may be determined from a weighbridge at the receiving facility and the weight of waste provided to the Project Environmental Manager as soon as possible after receipt at the off-site facility. Regardless, the waste contractor must be able to provide an accurate measurement of the waste tonnage to the Project Environmental Manager. The waste contractor will also be required to provide feedback on waste collected identifying the percentage of waste recovered and disposed of.

The waste log will be used to identify the main waste types being generated and can be linked to delivery records to identify the percentage of waste from incoming building materials. The Project Environmental Manager will be able to analyse these records to improve efficiency and seek to reduce wastage. The Project Environmental Manager can also use the information to determine the success of the project against the reuse, recycle and recovery target of 80%.

11.0 TRAINING, RESPONSIBILITIES & AUDITING

The main contractor will include the waste management objectives outlined in Section 4 as part of the site induction for all new employees on the site. The importance of source segregation and maintaining a clean site will be highlighted and the locations of skips on the site will be provided.

The appointed Project Environmental Manager will be trained in setting up the waste log and checking waste dockets as described in the previous section. The Project Environmental Manager will also be given responsibility for providing toolbox talks on waste management, organising specific training where required and educating workers throughout the project. The Project Environmental Manager will also liaise with Clare County Council to provide details on the waste facilities to be used and provide waste data as required. It is also beneficial for the Project Environmental Manager to provide feedback on waste statistics to the project team on a regular basis to acknowledge good performance or identify areas for improvement.

The Project Environmental Manager will be familiar with the content of this document and will ensure compliance with the measures set out herein for the duration of the project.

The Project Environmental Manager will also establish an audit checklist to inspect skips and waste containers across the site and identify contamination of skips or other waste related issues which may arise. A review of waste records held for each movement of waste off-site should also be carried out. The waste log should be cross-checked with hard copy dockets and any missing details filled in.

The Project Environmental Manager may also carry out an audit of the receiving waste facilities to confirm that the waste sent from the site is being treated as described on the waste dockets, although it is not currently proposed to carry out this audit unless waste issues arise. At completion of the Construction phase a final report will be prepared outlining the results of the Waste Management process and the total reuse, recycling and recovery figures for the site.

The costs associated with waste management should also be reviewed during the project and highlighted to the Project/Site Manager as to where savings can be made, if any. Typically, maximum on-site segregation of waste reduces the costs associated with Construction waste collection which is required to be processed off-site.

12.0 INTERACTION WITH OTHER BODIES

The Project Environmental Manager will ensure coordination with relevant bodies throughout the project. This will include compliance with the construction traffic management requirements for waste collection vehicles.

Specialist companies, wherever required, will be contacted to determine their suitability and each company record reviewed to ensure relevant current collection permits / licenses are held.

Companies will also be contacted to gather information regarding treatment of hazardous materials if required (although not anticipated for this site), costs of handling and the best methods of transportation for recycling or reuse when hauling off site.

Only an authorized waste collector with a valid waste collection permit must be used for each waste generated. The Project Environmental Manager will provide details to Clare County Council on the destinations of waste materials from the site and will provide waste records to the local authority as required.

A list of proposed authorised waste collection permit holders to be employed can be submitted to Clare County Council for their approval.

- Clean (Irl) Refuse & Recycling Co., Kilrush CO. Clare – (Permit no. NWCPO-09-05595-07)

- Galway Metal Company LTD. Carrowmoneash, Oranmore, Co Galway. Ferrous Metal. Non- Ferrous Metal and Mixed Metals. – (IPA licence P1006-02)

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