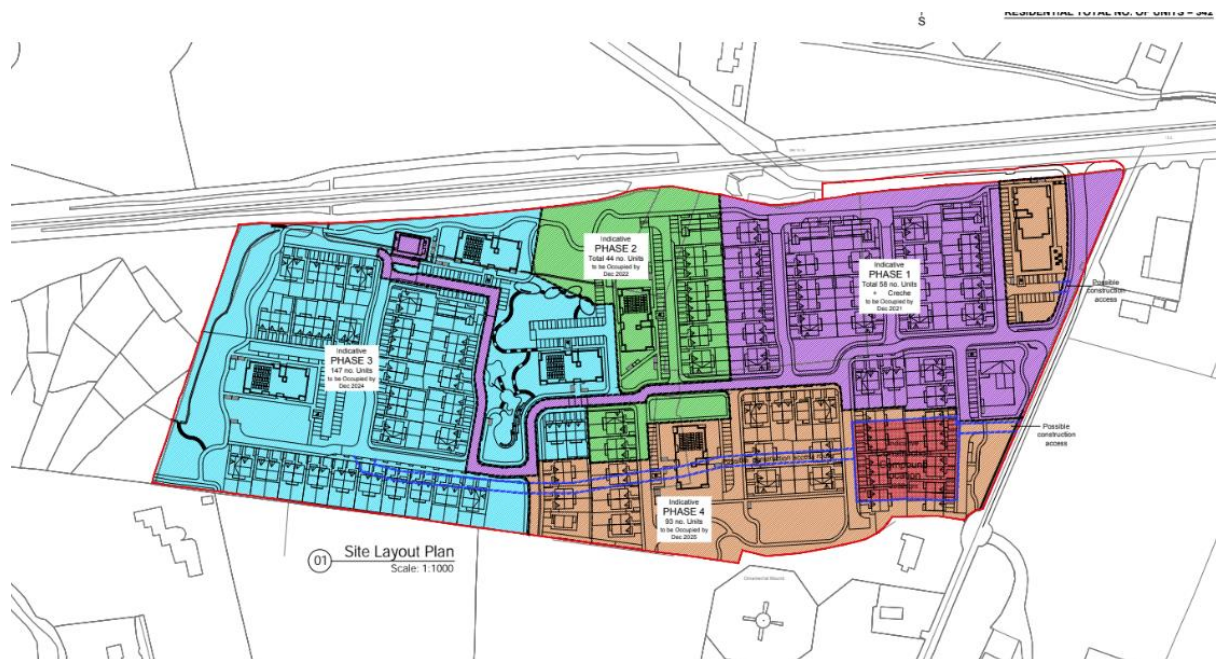


CONSTRUCTION & DEMOLITION WASTE MANAGEMENT PLAN.

Housing development on Lands to the south of old Dublin Road and west of Rosshill Road, Co. Galway.

December 2019.
ABP-305195-19.



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Please note that this document is an outline which is intended to set a clear path and philosophy for Kegata Ltd in drawing up their own final strategy for Construction and Demolition Waste Management Plan.

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1. INTRODUCTION.

Please note that this document is intended to set a clear path and philosophy for Kegata Ltd for Construction and Demolition Waste Management Plan (C&D WMP) Housing development consisting of 342 units – 185 houses & 157 apartments to the south of old Dublin Road and west of Rosshill Road, Co. Galway.

2. BACKGROUND TO CONSTRUCTION WASTE & DEMOLITION MANAGEMENT.

The purpose of the C&D WMP is to provide information necessary to ensure that the management of waste produced by the site is carried out in accordance with all current legal and industrial standards including;

- Waste Management Act 1996-2011 & associated regulations.
- Litter Act 1997.
- Packaging Regulations 2003.

One Priority of the plan shall be to promote recycling, reuse and recovery of waste and diversion from land fill wherever possible.

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 C&D WMP, the following publications have been used as references.

- Best Practice Guidelines on the preparation of waste management plans for construction and demolition projects, Department of the Environment and local Government 2005.

In tandem with the launch of the National Construction and Demolition waste council, the Department of the Environment, Heritage and Local Government published the 'Guidelines for preparation of waste management plans for construction and demolition projects.'

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.

3. NATIONAL, REGIONAL AND LEGISLATION REQUIREMENTS.

At Regional level this development is covered by the Regional waste management plan 2015-21 Connacht Ulster Waste Region for Galway Council.

The primary objective of this plan is to achieve more sustainable waste management practices through increased recycling, use of source separation and use of industry code to regulate collection and treatment of waste.

Current legislation implies that the waste producer is responsible for waste from the time it is generated to point of legal disposal.

Waste contractors must comply with the Waste Management Act 1996 and associated regulations.

A permit to transport waste must be obtained and requires contractor to handle, transport and dispose waste in a manner which ensures no adverse environmental impacts occur as a result of these activities.

Likewise, the facilities receiving waste must hold the appropriate license under Waste Management (Facility Permit & Registration) regulations 2007 or by EPA.

This Permit will include information such as type of waste that can be received along with stored, sorted, recycled and or disposal materials at the site.

4. PROJECT DESCRIPTION.

- 342 No. residential units (185 Houses & 157 No. apartments), Creche, community space, commercial unit and all associated site works.
- Associated Landscaping, private & public open space, car parking, bicycle parking, infrastructural works above and below ground, pedestrian access.

5. DEMOLITION WASTE PRODUCED.

Demolition Waste Management

The demolition phase of the proposed development will involve the removal of two stone ruins and an existing agricultural storage area from within the site.

Prior to the commencement of any demolition, excavation or construction works at the site works at the site a full audit of waste that will be generated on site will be carried out. For the purposes of this CEMP 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. The lists have been prepared following a visit to the proposed development site and inspection of the existing buildings but do not constitute a full waste audit.

Materials Type	Example	EW Code
Soil & Stones	Overburden, soil, subsoil	17 05 04
Concrete	Surfacing, flooring material	17 01 01
Mixture of inert material	Sand, stones, plaster, rock	17 01 07
Metals	Disused Agricultural Fencing	17 04 07

Waste Arising from Demolition Activities

The majority of the waste generated by the demolition phase will consist of concrete rubble from the silage storage area and stones from the existing wall structures of the ruins. 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 demolition phase will be determined by the expected volumes of specific waste categories which will be assessed by the Waste Manager prior to any demolition works. 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. CONSTRUCTION PHASE 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 apartments portion of the development and to a lesser extent 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.

7. CATAGORIES OF CONSTRUCTION WASTE GENERATED.

In order 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) expected to for typical waste materials expected to be generated for this site are tabulated below as follows:

8. ANTICIPATED HAZARDOUS WASTE.

Fuels used during construction will be classed as hazardous and this will be stored for site machinery etc., in suitable tanks with the draw-off points banded.

Where this is the case it is not expected that there will be any fuel wastage.

Waste mixtures contain dangerous substances classified as hazardous waste. This will not be used as fill on the site and only disposed of in licensed hazardous waste facility.

9. ESTIMATED WASTE GENERATED.

Taken from the Irish EPA figures below is the breakdown of Construction and demolition waste type expected to be generated from a typical site such as this, per m².

Waste Materials generated on a typical Irish construction site:

Waste Types	%
Soil & Stones.	83
Concrete, Bricks, tiles, plastics etc.	13
Asphalt, tar/tar products.	1
Metals.	1
Others.	2
Total Waste.	100

The development will include the excavation of approximately 15,000 m³ 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.

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

Construction waste quantities:

Waste Types	Quantity
Waste Soil & Stones	24,900 Tonnes
Concrete, Bricks, tiles, plastics	3,900 Tonnes

Asphalt, tar/tar products	4 Tonnes
Metals	15 Tonnes
Total	30,000 Tonnes

The following table shows the target values for the management of waste at the site:

Predicted Construction waste targets for the proposed Development:

Waste Type	Waste	Reuse/Recover		Recycle		Disposal	
	Tonnes	%	Tonnes	%	Tonnes	%	Tonnes
Soil & Stone	24,900	70	17430			30	7470 (Potential for Land scaping).
Concrete Bricks Plastic	3,900			75	2925	25	975
Asphalt tar, tar Products	4			25	1	75	3
Metals	20	5	1	80	16	15	3
Other	40					100	40
TOTAL	28864		17430		2940		8490

Any contaminated material encountered will be classified and disposed of, to Local Authority Registered / Council landfill sites.

10. PROPOSED WASTE MANAGEMENT OPERATION.

Waste is to be segregated on site to the above table. The site waste storage area will have skips and recycling receptacles for all recyclable wastes.

Collections for these will be as usage required. Non-hazardous recyclable waste will be transferred by suitable means to landfill. Each material for recycling will be segregated into suitable containers which have adequate access for collection vehicles.

Sub-soils/Topsoil's.

Given previous green field land use and on-site observations, it 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/E, 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 material.

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 and waste management (Facility Permit) regulations of 2007.

11. DOCUMENTATION.

All waste will be documented prior to leaving site. Records will be kept at the site and at the relevant waste facility.

Movement of waste will be in accordance with relevant guidelines.

Construction and Demolition municipal waste will be separated and stored wherever possible and monitored / inspected by the site foreperson prior to removal to ensure that site protocol for recycling is being adhered to.

12. ROLES AND TRAINING FOR WASTE MANAGEMENT AND SITE OPERATIVES.

Waste Manager.

A dedicated waste manager will be appointed to ensure commitment, efficiency and site protocols upheld during construction stage.

The role of the waste manager will be to record, oversee and manage everyday handling of waste on the site.

Their training will be in setup and maintaining record keeping systems and how to produce an audit to ensure waste management targets are being met.

They shall also be trained in the best methods for segregation and storage of recyclables. They will also be familiar with the suitability of material reuse and know how to implement the Construction Waste & Demolition Management Plan.

Site Crew.

This shall be the responsibility of the nominated waste manager and a training program will be organized, incorporated into typical onsite inductions to give an awareness of waste segregation on the site.

This will outline the types and treatment that should be given to different materials and hazardous materials.

13. RECORD KEEPING.

Records shall be kept for each material leaving the site for all types of use or disposal.

This shall take the following basic outline form:

- Waste taken for reuse off site.
- Waste taken for recycling.
- Waste taken for disposal.
- Reclaimed waste materials brought to site for reuse.

For any movement of waste, a docket shall be signed and recorded by waste manager, detailing type and weight of material and source or destination.

This will be readily comparable with all delivery records to site, so a waste generation percentage for each material can be determined.

Record keeping will allow ease of comparison of figures with targets established for the recovery, reuse and recycling of construction waste. It will also highlight the source of failure in meeting these targets.

14. ESTIMATED COSTS OF WASTE MANAGEMENT.

Waste Management costs have also been changing significantly over the past decade. However, below we outline the budgeted current cost of landfill and recycling. The total cost of C&D waste management shall be measured and allow for purchase cost of materials, handling cost, storage cost, transport cost, revenue from sale of material and disposal costs etc.

The re-use of materials on site will reduce the transportation and disposal costs for waste being taken to landfill sites.

Where soil/stones cannot be re-used on the site, they may be reused as capping material for landfill sites, or reinstatement of quarries for example. For this purpose, this waste may be taken free of charge thus reducing overall Waste Management Cost.

Re-cycling in Galway region for cardboard and clean plastic could be in the range €130 per tonne for disposal as municipal waste, however a net rebate in the range of €20-€40 could be given if recycled.

Salvageable metals can generally be deposited free of charge at salvage yards thus only incurring cost for transport.

Timber can be recycled as chip board etc. but again the cost of clean segregate waste is cheaper to dispose of compared to mixed waste.

Plasterboard, as is no longer considered inert but can now be recycled also giving a net reduction in disposal costs.

Disposal sites in Galway region and surrounding areas currently charge approximately €130 per Ton. Fees may also be incurred for waste contractor use of compactors, skips etc.

Segregate waste will generally cost less than mixed municipal waste. As noted above, the disposal of waste to landfill can be reduced by consistently re-assessing the re-use, recovery or recycling of waste materials generated.

15. WASTE AUDIT PROCEDURE.

The waste manager shall perform audits at the site during the complete construction phase of the works.

This shall ensure that all records are being maintained for all movements of all materials.

Records shall also be readily available for comparison with the sites targets.

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.

16. CONSULTATION WITH RELEVANT BODIES.

Local authority will be consulted throughout the Construction phase as deemed appropriate by the site Waste Manager to ensure that all available waste reduction, reuse and recycling options are being explored and utilized and that compliant Waste Management is being carried out at the site.

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 Authorised waste collector with a valid waste collection permit must be used for each waste generated.

List of proposed authorised waste collection permit holders to be employed:

- Walsh Waste & Recycling Deerpark Industrial Estate, Deerpark, Oranmore, Co. Galway H91 RH31
- Permit No. NWCPO-08-03584.
- Galway Metal Company LTD. Carrowmoneash, Oranmore, Co Galway. Ferrous Metal. Non-Ferrous Metal and Mixed Metals. IPA licence P1006-02
- Michael McGrath Heavy Haulage LTD. Clonfadda, Killaloe Co. Clare.

Table 1: Details of Waste Generated.

Type of Waste	Tick if applicable to your site.	Estimate of quantities in tonnes.	Name and NWCPO Ref No. of the Waste Collector propose to use. And

			Name and Permit Ref. No. of Authorised Site(s) receiving waste.
Clean Soil Stone	✓	24,900 Tonnes	<i>Permit No. NWCPO-08-03584</i>
Concrete Blocks Tiles	✓	3,900 Tonnes	<i>Permit No. NWCPO-08-03584</i>
Hazardous Waste	✓	4 Tonnes Gypsum (Bitumen)	Michael McGrath Heavy Haulage LTD COR -CE -14-0005-01 O Connell Quarries Ballycar South, Kilmoculla, Ardnacrusha. Co Clare

Authorised Site.

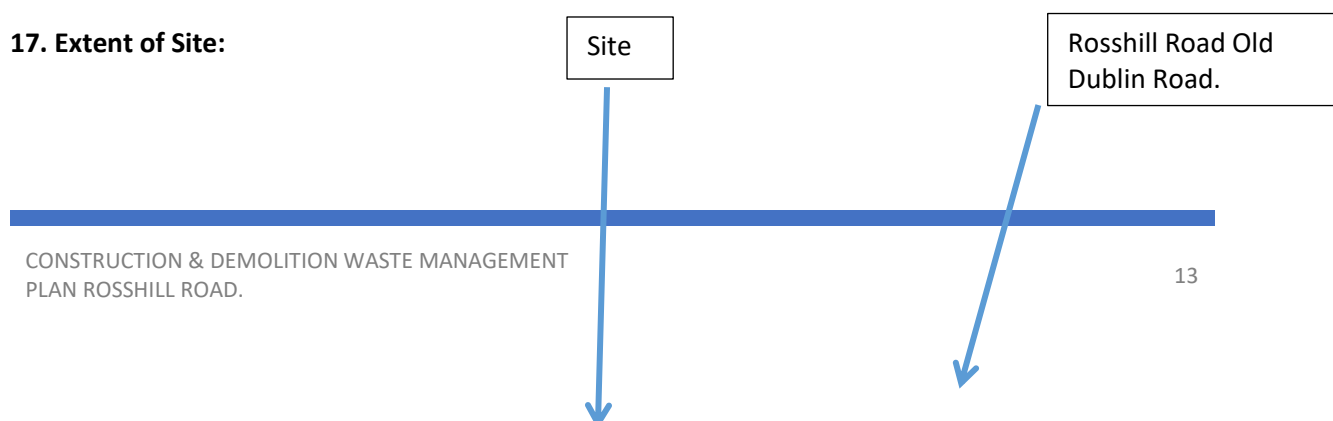
Clean soil and stone is classified as a waste. When transported off site, it must be disposed of at an authorised waste facility. Clean stone and Soil will be used throughout the site for formation of gardens and green areas in phase I and stockpiled for use in phase 2,3 and 4 all surplus materials will be transported to approved facilities.

ii. Hazardous wastes such as Bitumen will be transported to Mike Mc Garth.

Table 1A: Details of Waste Generated continued.

Type of Waste.	Tick if applicable to your site.	Estimate of quantities in tonnes.	Name and NWCPO Ref No. of the Waste Collector. propose to use. And Waste Facility
Wood/green waste	✓	160 Tonne.	<i>Permit No. NWCPO-08-03584</i>
Plaster Board	✓	100 Tonne.	<i>Permit No. NWCPO-08-03584</i>
Glass	✓	<2.5 Tonne.	<i>Permit No. NWCPO-08-03584</i>
Metals, Cables, Aluminium,	✓	2 Tonne.	Galway Metal Company LTD. IPA licence P1006-02
Plastics	✓	70 Tonne	<i>Permit No. NWCPO-08-03584</i>
Insulation Material	✓	<0.5 Tonne	<i>Permit No. NWCPO-08-03584</i>

17. Extent of Site:

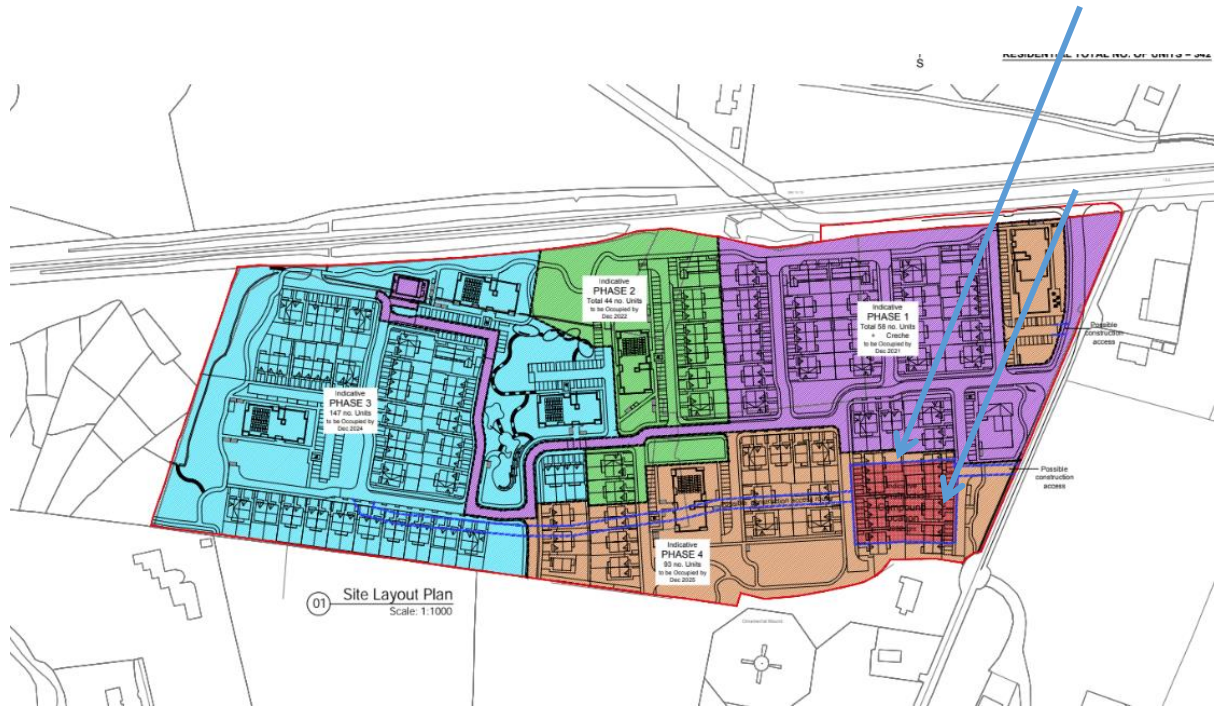




Site Compound and Waste segregation area

Site compound.

Waste
segregation area.



Patrick Kearney

EHS Manager Kegata Ltd.

MSc. EHSM MIEI CMIOOSH.

Signed

Date 01/12/2019