16.0 MATERIAL ASSETS – WASTE MANAGEMENT

16.1 INTRODUCTION

This section discusses the proposed waste management measures as part of the proposed development at Banagher, Co. Offaly, in addition to assessing the potential impact of waste management upon the surrounding area. Waste management for both the construction and operational phases is addressed.

16.2 METHODOLOGY

A desktop study was undertaken to assess the potential impact of the proposed development on waste management in the area. The desktop study assessed potential impacts using EPA licensing and waste management information, relevant waste plans and strategic documents, and mapping data from EPA Envision and myplan.ie. The assessment of potential impacts arising from waste management at the proposed development has taken cognisance of the relevant legislation policies and plans as outlined in Section 16.3.

16.3 LEGISLATIVE FRAMEWORK AND PLANNING POLICY

16.3.1 LEGISLATIVE CONTEXT

The main legislation pertaining to waste management in Ireland and of potential relevance to the proposed development includes the following:

EU Legislation:

- Council Directive 1999/31/EC on the Landfilling of Waste;
- Waste Framework Directive 2008/98/EC;
- European List of Waste, Commission Decision 2000/532/EC;
- Council Directive 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC;
- WEEE Directive 2012/19/EU.

Irish Legislation:

- Waste Management Act 1996 as amended;
- Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. 821 of 2007) and (Amendment) Regulations (S.I. 86 of 2008, S.I. 320 of 2014, S.I. 198 of 2015);
- Waste Management (Licensing) Regulations 2000 (S.I. 185 of 2000) , 2004 (S.I. 395 of 2004), (Amendment) Regulations 2010 (S.I. 350 of 2010);

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- Waste Management (Planning) Regulations 1997 (S.I. 137 of 1997);
- Waste Management (Collection Permit) Regulations 2007 (S.I. 820 of 2007) and (Amendment) Regulations 2008 to 2016;
- Waste Management (Hazardous Waste) Regulations 1998 (S.I. 163 of 1998) and Waste Management (Hazardous Waste) (Amendment) Regulations 2000 (S.I. 73 of 2000);
- Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009), European Union (Household Food Waste and Bio-waste) Regulations 2013 (S.I. 71 of 2013) and European Union (Household Food Waste and Bio-waste) Regulations 2015 (190 of 2015);
- European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (WEEE) (S.I. 149 of 2014);
- Litter Pollution Act 1997, Litter Pollution Regulations 1999 (S.I. 359 of 1999) and Litter Pollution (Increased Notice Payment) Order 2007 (S.I. 558 of 2007);
- Waste Management (Landfill Levy) Regulations 2015 (S.I. 189 of 2015);
- Waste Management (Prohibition of Waste Disposal by Burning) Regulations 2009 (S.I. 286 of 2009) and (Amendment) Regulations (S.I. 504 of 2013, S.I. 538 of 2015, S.I. 599 of 2017);
- European Communities (Waste Directive) Regulations 2011 (S.I. 126 of 2011), (Amendment) Regulations 2016 (S.I. 315 of 2016), and European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. 223 of 2015), European Union (Waste Directive) (Recovery Operations) Regulations 2016 (S.I. 372 of 2016);
- Local Government Act and associated regulations.

16.3.2 PLANNING POLICIES, PLANS AND OTHER GUIDANCE

Policies, plans and guidance documents pertaining to waste management and of potential relevance to the proposed development include the following:

- European Waste Catalogue and Hazardous Waste List (2002), Environmental Protection Agency;
- National Waste Prevention Programme Annual Report for 2016, Environmental Protection Agency;
- Eastern Midlands Region Waste Management Plan 2015–2021 and Associated Reports;
- Offaly County Development Plan 2014–2020;
- Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects (2006), Department of Environment, Heritage and Local Government.

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Eastern Midlands Region Waste Management Plan 2015–2021

The Eastern-Midlands Region (EMR) Waste Management Plan 2015-2021 provides a framework for the prevention and management of waste in a sustainable manner in 12 local authority areas. The Eastern-Midlands Region comprises Dublin City Council, Dún Laoghaire-Rathdown, Fingal, South Dublin, Kildare, Louth, Laois, Longford, Meath, Offaly, Westmeath and Wicklow County Councils. The three key objectives of the Eastern-Midlands Region Waste Management Plan are:

1. Prevent waste: a reduction of one per cent per annum in the amount of household waste generated over the period of the plan.
2. More recycling: increase the recycle rate of domestic and commercial waste from 40 to 50 per cent by 2020.
3. Further reduce landfill: eliminate all unprocessed waste going to landfill from 2016.

Offaly County Development Plan 2014-2020

The Offaly County Development Plan 2014 – 2020 outlines six waste management and one recycling policies and six waste management objectives for the county, with the relevant objectives to the proposed development outlined in the table below.

Table 16.1: Waste Management Policies Relevant to the Proposed Development

REFERENCE	POLICY
EnvP-08	It is Council policy to ensure the provision of quality cost effective waste infrastructure and services, which reflect and meet the needs of the community and to ensure that the 'polluter pays principle' is observed in all waste management activities.
EnvP-09	It is Council policy to ensure that all permitted development shall be such that the requirements of Waste Management regulations shall be observed. Due regard shall also be given to the requirements of the current Waste Management Plan for the Region.
EnvP-10	It is Council policy to apply and enforce where appropriate, relevant EU and Irish environmental legislation. Permitted developments shall be required to comply with all such legislation.
EnvP-11	It is Council policy to co-operate with the Environmental Protection Agency in regard to licensing arrangements for Scheduled activities in County Offaly in accordance with the provisions of the Environmental Protection Agency Act 1992.
EnvP-12	It is Council policy to ensure that all waste disposal shall be undertaken in compliance with the requirements of the Environmental Protection Agency and relevant Waste Management Legislation.
EnvP-13	It is Council policy to require Waste Management Plans to be prepared for Construction and Demolition Projects of a particular scale in accordance with Best Practice Guidelines issued by the Department of Environment, Heritage and Local Government in July 2006. It is Council policy to require developers of projects with significant potential for the generation of construction and demolition waste to prepare a Project Construction and

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REFERENCE	POLICY
	Demolition Waste Management Plan where the project exceeds any of the following thresholds: 1. New residential developments of 10 houses or more. 2. New residential developments other than (1) above, including institutional, educational, health and other public facilities, with an aggregate floor area in excess of 1,250m^2 . 3. Demolition/renovation/refurbishment projects generating in excess of 100m^3 in volume of construction and demolition waste. 4. Civil engineering projects in excess of 500m^3 of waste, excluding waste materials used for development works on the site.

Table 16.2: Waste Management Objectives Relevant to the Proposed Development

REFERENCE	OBJECTIVE
EnvO-13	It is an objective of the Council to implement the provisions of the Waste Management Hierarchy and the current Waste Management Plan for the Region. As a result, developments in the county will be expected to take account of the provisions of the Waste Management Plan for the relevant Region and observe those elements of it that relate to waste prevention and minimisation, waste recycling facilities, and the capacity for source segregation
EnvO-14	It is an objective of the Council to use statutory powers to prohibit the illegal deposit and disposal of waste materials, refuse and litter, and to authorise and regulate, waste disposal within the county in an environmentally sustainable manner.
EnvO-15	It is an objective of the Council that the environment shall be protected against harmful effects of inadequate waste management.
EnvO-16	It is an objective of the Council that the environment be protected against the harmful effects of litter.
EnvO-18	It is an objective of the Council to restore and protect the quality of the environment in the county.

Banagher Community Plan 2018 - 2023

The Banagher Community Plan 2018 – 2023 does not contain specific targets or objectives for waste, nor does it reference waste or recycling in any way.

16.4 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

The proposed development would comprise of the proposed upgrade and extension of an existing abattoir facility within the townlands of Meenwaun and Boheradurrow, at Banagher, Co. Offaly. The proposed development would also include the construction of stormwater and effluent drainage systems, water treatment plant, electrical sub-station, truck wash, security hut, waste and by-product area and gas compound, site access roads and all ancillary development including internal road surfacing, the provision of outdoor artificial lighting, an extension to the existing lairage facility and site landscaping.

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Slaughtering activities at the proposed facility would typically operate Monday to Friday. However, slaughtering may be undertaken at weekends for reasons such as casualty animals and demand.

New stormwater and effluent drainage systems would be constructed. Stormwater from clean-yard areas and car parking areas would pass through a silt trap and Class 1 By-Pass Separator before being directed to a modular underground attenuation system. From here, stormwater would be pumped to a manhole prior to discharge to the Feeghroe Stream.

All process drains, domestic drains and dirty yard surface water drains would be directed to the site's new WWTP, which would comprise of an inlet sump, meva screen, drum screen, balancing tank, dissolved air flotation (DAF) unit, sludge tank, anoxic tank, two aeration tanks, clarifier, sand filters and an outlet sump. From here, the treated final effluent would be directed to the proposed integrated constructed wetlands (ICWs), comprising of a five-treatment cell system, prior to discharge to the Feeghroe Stream.

The expected construction timeframe would be approximately 18 months, with hours of operation from 7am to 7pm Monday to Friday, and 8am to 2pm on Saturdays. A temporary site compound would be established and would house the temporary offices, equipment and materials storage and construction staff welfare facilities. The temporary site compound would also be used for the storage of fuels and oils required for the various construction plant, in addition to housing waste receptacles.

The proposed development would generate certain waste types during both the construction and operational phases. During construction works, construction and demolition waste would be generated, including masonry rubble, concrete and excavated soils and stones. Waste would be segregated onsite, and would be reused in infilling processes and landscaping where permitted and where possible, with remaining wastes sent for recycling or disposal as appropriate. The operational phase would generate typical industrial-type wastes, such as packing and mixed municipal waste, in addition to animal by-product wastes associated with slaughtering activities. Operational wastes would be collected via licenced waste hauliers and directed for rendering, recycling, incineration or disposal as appropriate at licenced waste facilities.

16.5 DESCRIPTION OF EXISTING ENVIRONMENT

Private waste contractors, regulated by Offaly County Council, undertake the collection of municipal and commercial waste in County Offaly. Waste contractors operating in the Banagher region include AES and Oxigen. According to the EPA's website, there are four facilities licenced for waste activities, as outlined in the table below.

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Table 16.3: Waste Licensed Facilities in County Offaly

LICENSE NO.	APPLICANT / FACILITY	FACILITY TYPE
W0029-04	Offaly County Council, Derryclure Landfill	Landfill
W0049-02	Bord Na Mona, Cloncreen Bog, Clonbullogue	Landfill
W0104-03	Advanced Environmental Solutions (Ireland) Limited, Cappincur, Tullamore	Waste Transfer Station
W0113-04	KMK Metals Recycling Limited, Cappincur, Tullamore	Waste Transfer Station (Hazardous & Non-Hazardous)

Derryclure Landfill (W0029-04) was the only municipal landfill facility in the county, however the landfill ceased the acceptance of waste directly after October 2012. A waste and recycling service is still provided at this location. County Offaly has identified historic landfill sites at Birr (Clonrbone, Kilcormac, Scurragh), Edenderry (Cloncannon and the site adjacent Cloncannon), Tullamore (Ballydaly and Ballydrohid) and Ferbane.

Three recycling centres are operated by Offaly Co. Co.: Derryclure; Birr and Edenderry. There are 43 bring banks that accept glass and cans, and in some cases, textiles.

The proposed development site can be described as comprising of a large area of grass-field and two separate made ground areas containing an existing abattoir and a redundant farmyard. In its current condition, the following potential waste types may be present as a result of refurbishment of the existing abattoir:

- Excavated soils and stone;
- Concrete;
- Masonry / Rubble;
- Metal;
- Timber;
- Electrical Wiring;
- Redundant Equipment (WEEE);
- Mixed Municipal;
- Plastic / PVC Plumbing;
- Rubber Hoses and Conveyor Belts;
- Copper Pipe;
- Insulating Materials.

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16.6 POTENTIAL IMPACTS OF THE PROPOSED DEVELOPMENT

16.6.1 CONSTRUCTION PHASE

During the construction phase of the development, construction and demolition waste (commonly referred to as 'C&D waste') would be generated at the site, with the main likely waste streams outlined in the table below.

Table 16.4: Predicted Main Construction Waste Streams

WASTE TYPE	EWC CODE	ORIGIN
Concrete	17 01 01	Waste concrete may arise due to surplus concrete from pouring activities and washings from ready-mix trucks. Some waste concrete may also arise during limited demolition works at the existing abattoir.
Bricks	17 01 02	Damaged / defected brick waste may arise during construction activities.
Tiles and Ceramics	17 01 03	Waste tiles / ceramics may arise during the construction activities.
Mixture of Concrete, Bricks, Tiles and Ceramics	17 01 07	As detailed in 17 01 01, 17 01 02 and 17 01 03 above.
Wood	17 02 01	Wood waste may arise during construction works, including building and shuttering works, due to damaged / defected wood, off-cuts and surplus wood.
Glass	17 02 02	Glass waste may arise due to damaged / defected glass and accidental breakages.
Plastic	17 02 03	Plastic waste may arise due to damaged / defected products.
Metals (including alloys)	17 04 01 - 07	Waste metal may arise due to damaged / defected metal, off-cuts and surplus metal.
Soils and Stones	17 05 04	During site clearance works and earth-moving activities, moderate amounts of excavated soils and stones waste would arise.
Insulation Materials	17 06 04	Waste may arise due to damaged / defected insulation panels and off-cuts.
Bituminous mixtures, coal tar and tarred products	17 03	Waste may arise due to surplus material from tarring of internal road network.
Biodegradable waste	20 02 01	Green waste would arise during site clearance works, with the removal of existing vegetation at the site.

The temporary site compound, which would house the site offices and staff welfare facilities such as a canteen, would generate limited amounts of waste, including the following:

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- Paper and cardboard – EWC 15 01 01 and EWC 20 01 01;
- Biodegradable / food waste – EWC 20 01 08;
- Plastics – EWC 15 01 02 and EWC 20 01 39;
- Metals – 20 01 40;
- Mixed municipal waste – EWC 20 03 01;
- Sanitary waste – EWC 20 03 04.

Other waste materials that may arise during construction works in small volumes include:

- Waste Oils and Liquid Fuels – EWC 13 02 and EWC 13 07;
- Waste from Electrical and Electronic Equipment – EWC 16 02;
- Cables – EWC 17 04 11;
- Paints – EWC 20 01 28;
- Wood Preservatives – EWC 03 02;
- Batteries – EWC 16 06;
- Gypsum – EWC 17 08 02.

Wastes from EWC fractions EWC 13 02, EWC 13 07, EWC 16 02, EWC 03 02 and EWC 16 06 may be hazardous.

It is not anticipated that any asbestos waste would be generated during the construction phase of the development, as this material is not known to be present at the existing abattoir and associated structures onsite.

The BRE Waste Benchmark Data, published in June 2012, provides guidance on the construction waste estimates based on the gross internal floor area. Table 16.5 below details the typical construction industry waste generation per 100m^2 floor area.

Table 16.5: BRE Waste Benchmark

PROJECT TYPE	NUMBER OF PROJECTS DATA RELATES TO	AVERAGE TONNES/100M^2	NUMBER OF PROJECTS DATA RELATES TO
Residential	256	16.8	260
Public Buildings	23	22.4	24
Leisure	21	21.6	20
Industrial Buildings	23	**12.6**	24
Healthcare	22	12.0	22

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PROJECT TYPE	NUMBER OF PROJECTS DATA RELATES TO	AVERAGE TONNES/100M^2	NUMBER OF PROJECTS DATA RELATES TO
Education	60	23.3	60
Commercial Other	4	7.0	2
Commercial Offices	14	23.8	11
Commercial Retail	48	27.5	47
Total number of projects	**471**	-	**470**

For a total building area of 8,578m^2 and an average of 12.6 tonnes of waste per 100m^2 of floor area, the construction waste generated translates to approximately 1,081 tonnes. The total building area was calculated using the figures provided in ***Table 2.2****: Proposed Development Infrastructure and Areas*.

Table 16.6 below outlines the typical breakdown of construction and demolition waste type expected to be generated from a typical site such as this, based on the EPA Waste Data, *Construction & Demolition Waste Statistics For Ireland* (March 2018). Table 16.6 also gives an estimate of the construction waste (breakdown) which might be generated based on information currently available.

Table 16.6: Waste Materials Generated and Estimated Construction Water Quantities

WASTE TYPES	PERCENTAGE (EPA FIGURES)	WASTE TONNES ESTIMATE
Metal waste	5.24%	56.64
Glass waste	0.09%	0.97
Paper and cardboard waste	0.01%	0.11
Plastic waste	0.01%	0.11
Wood waste	1.57%	16.97
Waste containing PCBs	0.00%	0.00
Mixed waste	0.08%	0.86
Mineral waste	12.11%	130.91
Asbestos waste	0.19%	2.05
Soil and stones	74.35%	803.72
Residue from treatment of mixed waste	6.35%	68.64
Total	**100**	**1,081**

It should be noted that no asbestos waste would be anticipated to be generated at the site, as this material is not known to be present at the existing abattoir and associated structures onsite. Therefore, the estimated figure of 2.05 tonnes of asbestos waste can be discounted.

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While Table 16.6 estimates that 803.72 tonnes of soils and stones would likely be generated, it should be noted that this figure relates to the proposed facility and associated structures only. The construction of the ICW system would also require excavation works. Based upon the indicative size and required depth of the ICW cells, it is estimated that approximately 58,000 tonnes of excavated material (soils and stones) would be generated. However, it should be noted that this figure is indicative only, and does not take into account the topography of the area. Furthermore, the ICW planning document by Vesi Environmental, which accompanies this application, notes that areas where the soil depth is shallow (gravel / rock near the surface) would require unsuitable materials (if encountered) to be excavated, in order to replace with suitable construction material for the ICW cells to ensure that the minimum requirements of at least 750mm of subsoil with the required permeability is achieved. As discussed in Section 16.7.1, excavated soils would be reused in site levelling and landscaping where possible, and as ICW cell lining where suitable.

Waste arising during the construction phase would be managed in accordance with the waste hierarchy, as per Section 21A of the Waste Management Act 1996, as amended. Given that only suitably licenced waste hauliers, contractors and facilities would be used, it is not anticipated that wastes arising from the construction phase of the proposed development would have a significant impact upon the environment.

16.6.2 OPERATIONAL PHASE

During the operational phase of the development, the likely by-products and wastes that would be generated by site are provided in Tables 16.7 and 16.8.

Table 16.7 details the estimated volumes of by-products generated during the operational phase, and includes the proposed storage and disposal methods. Table 16.8 provides estimated volumes of recyclables and waste materials, based upon waste data submitted to the EPA for similarly-sized abattoir facilities.

In addition to the tables below, limited volumes of the following wastes may be generated during the operational phase, all of which would be collected separately and treated appropriately:

- Waste chemicals arising due to onsite WWTP monitoring, for example COD vials;
- Waste organic solvents and refrigerants – EWC 14 06;
- Batteries – EWC 16 06, EWC 20 01 33*/34;
- Waste electrical and electronic equipment – EWC 20 01 35*/36;
- Oil/water separator contents – EWC 13 05;
- Waste engine, gear and lubricating oils – EWC 13 02.

Waste arising during the operational phase would be managed in accordance with the waste hierarchy, as per Section 21A of the Waste Management Act 1996, as amended. Banagher Chilling Limited would appoint waste contractors to undertake the collection and treatment of

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the anticipated operational waste streams. Given that only suitably licenced waste hauliers, contractors and facilities would be used, it is not anticipated that wastes arising during the operational phase of the proposed development would have a significant impact upon the environment.

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Table 16.7: Estimated By-Product Generation, Collection and Disposal Method

WASTE / BY-PRODUCT	EWC	ESTIMATED ANNUAL TONNAGE	STORAGE METHOD	LIKELY DISPOSAL METHOD
Blood	02 02 99	1,500	Refrigerated Tank	Variable – food industry, rendering, compost
Effluent Sludge	02 02 04	2,000	Sludge Holding Tank	Anaerobic Digestion, Composting or Landspread
Lairage Sludge	02 01 06	800	Lairage Tank	Anaerobic Digestion, Composting or Landspread
CAT 1 Material	02 02 03	1,000	CAT 1 Trailer	Rendering
CAT 3 Material	02 02 02 02 02 03	5,000	CAT 3 Trailer	Rendering
Belly Paunch	02 02 03	1,500	Belly Paunch Trailer	Anaerobic Digestion, Composting or Landspread

Table 16.8: Estimated Waste Generation, Collection and Disposal Method

WASTE	EWC	ESTIMATED ANNUAL TONNAGE	STORAGE METHOD	LIKELY DISPOSAL METHOD
Mixed municipal waste	20 03 01	10 – 50	Designated bin(s), waste storage area	Incineration
Plastics	15 01 02 20 01 39	5 – 50	Designated bin(s), waste storage area	Recycling
Paper and Cardboard	15 01 01 20 01 01	1 – 5	Designated bin(s), waste storage area	Recycling
Metals	15 01 04 20 01 40	0 – 20	Designated bin / skip, waste storage area	Recycling
Wooden Packaging	15 01 03	0 – 5	Designated skip / trailer, waste storage area	Recycling
Food waste	20 01 08	10 – 20	Designated bin(s), waste storage area	Anaerobic Digestion or Composting

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16.6.3 CUMULATIVE IMPACT

Considering the nature of the proposed development and nearby residential and commercial properties, there would be a potential cumulative impact upon waste management during both the construction and operational phases, with nearby properties generating similar types of waste as the proposed development.

However, the potential cumulative impacts would not be considered significant, as the area is suitably serviced by licenced waste contractors, and given that good waste management practices would be implemented on-site during construction works as standard practice.

16.6.4 "DO-NOTHING" IMPACT

Should the proposed development not proceed, wastes would not be generated at the site and therefore waste management would not be required.

16.7 MITIGATION MEASURES

16.7.1 CONSTRUCTION PHASE

The Waste Hierarchy

Throughout the construction phase, the construction works contractor would manage the wastes generated in order of priority in accordance with Section 21A of the Waste Management Act 1996, as amended, as per the waste hierarchy below.

Figure 16.1: Waste Hierarchy

Wastes would be segregated as much as possible in order to avoid cross contamination. Where practical, the generation of wastes at source would be reduced through measures such as the efficient ordering and purchasing of materials to reduce surplus materials, the return of

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uncured concrete to the batching plant where possible and the re-using of shutters for concrete works. Where it is not possible to avoid the generation of wastes, wastes would be sent for recycling or recovery as a priority. The generation of waste for disposal would be minimised as much as is practical.

Construction Waste Management

Waste materials generated by construction activities would 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.

Construction waste management would be managed in accordance with the Construction and Demolition Waste Management Plan (Document Ref. PES_C&D WMP_19_9201) prepared for the proposed development.

Prior to the commencement of development, the construction works contractor would identify a permitted waste contractor(s) who would be employed to collect and dispose of all wastes arising from the project works. In addition, the construction works contractor would identify all waste licensed/permitted facilities that would accept all expected waste exported off-site and would maintain copies of all relevant Waste Permits/Licences as required. Further details are provided in the sections below.

In order to ensure that waste is minimised and segregated correctly, the construction works contractor would ensure that all staff personnel, sub-contractors and any other relevant personnel are appropriately informed by means of clear signage, verbal instruction and induction training. Waste management training, as part of site induction, would discuss the waste hierarchy and detail the segregation of waste materials at source and storage methods, in addition to including a section on hazardous waste management. Site induction training, verbal instruction and signage would aim to train site personnel so that they are in a position to:

- Distinguish reusable materials from materials suitable for recycling;
- Ensure maximum segregation at source;
- Co-operate with the construction site manager on the best location's for stockpiling reusable materials;
- Separate materials for recovery;
- Identify and liaise with operators of waste collection and waste management operators.

Waste Contractors

The collection of wastes from the site would be undertaken by suitably authorised waste hauliers, and would only be recycled / recovered or disposed of at suitably licenced waste facilities.

The construction works contractor would appoint a waste contractor(s) for the construction phase. The waste contractor(s) appointed for the project would have experience in

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construction waste management and would be appropriately licenced, holding the relevant waste collection permit and/or waste licences for the types of waste anticipated to be generated during construction works.

The waste contractor(s) would be appropriately licenced in compliance with the following regulations:

- Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007);
- Waste Management (Collection Permit) Amendment Regulations 2008 (S.I. No. 87 of 2008);
- Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007);
- Waste Management (Facility Permit and Regulations) Amendment Regulations 2008 (S.I. No. 86 of 2008).

The construction works contractor would ensure that copies of all waste contractors' collection permits and licences would be available for inspection, as discussed in the "Record Keeping" section below.

Waste Storage Area

The temporary site compound would be the main designated location for waste receptacles onsite. Suitable waste receptacles would be provided by the appointed waste contractor(s) during the construction phase, with skips / bins allocated to specific waste streams to avoid contamination. The number and size of waste receptacles would be determined following the appointment of the waste contractor(s). Waste receptacles would be appropriately labelled.

Where waste fuels and oils are generated, they would be stored within a bunded container in a designated area of the site compound. Any hazardous materials would be stored separately from non-hazardous waste, and would be stored within bunded containers / upon a bund where appropriate.

The removal of waste from the site would be undertaken on a regular basis, preventing large volumes of waste accumulating onsite.

Waste Minimisation

Waste minimisation and prevention would be the responsibilities of the construction works contractor appointed to the proposed development, who would ensure the following:

- The efficient ordering and purchasing of materials to reduce surplus materials;
- Materials would be ordered in appropriate sequence to minimise materials stored on site;
- The correct storage of materials to minimise the generation of damaged materials, for example keeping materials packaged until they are ready to be used and storing materials which are vulnerable to water damage via precipitation under cover and raised above the ground;

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- The handling of materials with care, to avoid undue damage;
- The return of uncured concrete to the batching plant where possible;
- The re-use of shutters for concrete works;
- Where practical and where permitted, certain waste streams would be used during infill works;
- Where possible, excavated subsoil and topsoil would be reused for the reinstatement and landscaping of the development site.

The construction works contractor would reuse materials onsite where possible. In particular, inert wastes (such as concrete (EWC 17 01 01), bricks (EWC 17 01 02) and soils and stones (EWC 17 05 04)) would be used for infilling activities where suitable. The inert wastes may be passed through a mobile crusher unit, which would render the backfill material into a uniform shape and size which would allow for improved backfilling and compaction to required engineering standards.

The reuse of materials onsite would reduce the requirement for imported material to the site, which would have the following positive environmental impacts to the construction phase:

- Reduction in imported materials to the site;
- Reduction in the requirement for virgin aggregate materials from quarries;
- Reduction in energy required to extract, process and / or transport virgin materials / aggregates;
- Reduced HGV movements associated with the delivery of imported materials to the site;
- Reduced noise levels associated with reduced HGV movements;
- Reduction in the amount of landfill space required to accept C&D waste.

Management of Waste Streams

As mentioned above, wastes generated would be managed by the construction works contractor in order of priority in accordance with Section 21A of the Waste Management Act 1996, as amended.

Excavated Soils and Stones:
Based on current calculations, it is estimated that approximately 804 tonnes of excavation materials would be generated for the proposed facility footprint, with approximately 58,000 tonnes generated for the ICW system. However, as noted in Section 16.6.1, these figures are estimated.

Soils and stones arising from excavations would be reused in the reinstatement (for example as engineering fill) and landscaping processes where possible. This would be investigated by the construction works contractor and would be subject to appropriate testing to ensure the material is suitable for its proposed end use. With regards the excavated materials for the ICW system, approximately 12,500 tonnes of the 58,000 tonnes excavated would be used to

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construct the enclosing cell embankments and access roadways. Excavated materials would also be reused in the lining of the ICW cells, should they be of the required permeability.

Any excess excavated soils would be collected by a licenced waste contractor and either reused for reinstatement / landscaping activities at other sites if suitable or disposed of as appropriate.

In the unlikely event of any evidence of soil contamination being found during work on site, the appropriate remediation measures would be employed. Areas of potentially contaminated soil would be isolated and tested for contamination in accordance with the 2002 Landfill Directive (2003/33/EC). Any work of this nature would be carried out in consultation with, and with the approval of, the EPA and the Environmental Department of Offaly County Council. Pending the results of laboratory testing, this material would be excavated and exported off-site, by an appropriately Permitted Waste Contractor holding an appropriate Waste Collection permit and that this hazardous material, and be sent for appropriate treatment / disposal to an appropriately Permitted / Licenced Waste Facility.

Concrete and Bricks:
Surplus concrete would be returned to the batching plant where possible. An impermeable concrete washout area (separate to vehicle wheel wash) would be installed by the construction works contractor, if required. Excess concrete and washings from ready mix trucks would be deposited in the designated contained area only. The main contractor would arrange for removal from site of concrete at regular intervals. Where concrete, blocks and bricks arise from demolition or construction waste, they would be crushed and used for ground-fill material where deemed suitable. Where these materials cannot be reused onsite, they would be diverted for recycling if possible.

Wood:
Waste wood would be reused for shuttering where suitable. Wood that is uncontaminated (free from preservatives and paints) would be segregated and recycled.

Metal:
Metal is highly recyclable and has a considerable rebate value. Where metal cannot be reused onsite, the majority would be recycled.

Glass:
As glass can contaminate other segregated waste streams, it would be collected separately where possible. The majority of glass would be recycled.

Other Recyclables:
These include plastic, cardboard and office waste such as paper. Where possible, the different recyclables would be segregated onsite and sent for recycling. With regards packaging waste, the construction works contractor would investigate the possibility of returning the packaging to the supplier.

Food Waste:
Food waste on site would arise from any catering and food consumption by construction staff. Suitable food waste bins would be provided by the contractor in the construction compound and the contractor would ensure that these are regularly removed and emptied. Food waste would be sent for composting or anaerobic digestion.

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Mixed Municipal Waste and Other Non-Recyclable Waste:
Wastes not suitable for reuse or recycling would be stored in separate waste receptacles. Prior to removal from site, the EHS Officer or delegate would inspect the receptacles to ensure they contain no recyclable material or materials which can be reused.

Green Waste:
Green waste may be sent for composting if not possible to reuse onsite during landscaping / re-instatement activities.

Sanitary Waste:
Sanitary waste from the port-a-loo toilets / holding tanks located within the temporary site compound would be collected by a licenced waste contractor on a regular basis.

Hazardous Materials:
Hazardous waste would be managed in accordance with the Waste Management (Hazardous Waste) Regulations 1998 and 2000. Small quantities of hazardous waste may be generated onsite. Examples of potentially hazardous wastes include fuels and oils, batteries, paints, adhesives and sealants. Hazardous waste would be stored separately from non-hazardous waste, would be appropriately labelled and would be stored upon bunds where appropriate. Where hazardous materials are being specified, alternatives with a lower environmental impact should be sought wherever possible. The construction works contractor would ensure that the appointed waste contractor is licenced to transport / accept hazardous waste prior to the waste leaving the site. Depending on the type of hazardous material, the waste may be recovered, recycled or disposed of appropriately.

Waste Electrical and Electronic Equipment (WEEE):
This waste, if generated, would be stored separately from other waste streams and would be covered pending collection. WEEE can contain hazardous components such as batteries and mercury containing fluorescent tubes. All hazardous wastes would be stored in appropriate secure bunded containers prior to removal from site. Some hazardous wastes may not be stored with other wastes. This would be determined by the contractor and appropriate precautions taken.

Record Keeping

For each waste movement and for each type of waste, the construction works contractor would obtain a signed waste docket from the waste contractor, detailing the weight, type of material, destination of material and whether the material is going for recycling, recovery or disposal. The construction works contractor would retain copies of the waste contractors' relevant waste collection permits and waste licences on file throughout the construction phase.

16.7.2 OPERATIONAL PHASE

The Waste Hierarchy

The proposed facility would manage all wastes generated during the operational phase in order of priority in accordance with Section 21A of the Waste Management Act 1996, as

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amended, as per the waste hierarchy in Figure 16.1 above. Wastes would be segregated as much as possible in order to avoid cross contamination. Where practical, the generation of wastes at source would be reduced through measures such as the efficient ordering and purchasing of materials to reduce surplus materials. Where it is not possible to avoid the generation of wastes, wastes would be sent for recycling or recovery as a priority. The generation of waste for disposal would be minimised as much as is practical, with any remaining waste directed to incineration.

Waste Management

As part of the commissioning phase of the proposed development, Banagher Chilling Limited would appoint waste contractors to collect and treat / dispose of all the anticipated waste streams arising during the operational phase. Banagher Chilling Limited would ensure that the appointed waste haulier contractors are suitably licenced to transport the waste streams, and that all waste would be going to facilities which are licenced to accept the waste.

Waste management training, which would discuss the waste hierarchy and the appropriate segregation of waste materials, would be included within the site induction for employees, sub-contractors and relevant visitors. As part of the site's proposed Environmental Management System, site objectives and targets would be set for waste minimisation.

Waste Contractors

The collection of wastes from the site would be undertaken by suitably authorised waste hauliers, and would only be recycled / recovered or disposed of at suitably licenced waste facilities. Banagher Chilling Limited would appoint waste contractors with the relevant experience in waste management. The waste contractors would be appropriately licenced, holding the relevant waste collection permit and/or waste licences for the types of waste anticipated to be generated during the operational phase.

The waste contractor(s) would be appropriately licenced in compliance with the following regulations:

- Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007);
- Waste Management (Collection Permit) Amendment Regulations 2008 (S.I. No. 87 of 2008);
- Waste Management (Facility Permit and Registration) Regulations 2007 (S.I. No. 821 of 2007);
- Waste Management (Facility Permit and Regulations) Amendment Regulations 2008 (S.I. No. 86 of 2008).

With regards the collection of organic fertilisers (such as lairage sludge and belly paunch) from the facility, Banagher Chilling Limited would ensure that only hauliers registered on the Department of Agriculture, Food and the Marine (DAFM) Animal By-Products (ABP) Transport Register would be employed.

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Banagher Chilling Limited would ensure that copies of all waste contractors' collection permits and licences would be maintained on file, as discussed in the "Record Keeping" section below.

Waste Storage Area

The waste storage area would be located to the rear of the proposed facility, adjacent the north-eastern site boundary. This area would include the associated waste receptacles provided by the appointed waste contractor(s), in addition to designated trailers for Category 1, Category 3 and belly paunch materials. Lairage sludge would be stored within the lairage tank, located underneath the lairage facility, while effluent sludge would be stored within the sludge holding tank at the WWTP compound. Blood would be stored within a refrigerated tank, which would be located adjacent the proposed facility building. All waste receptacles, trailers and tanks would be appropriately labelled.

Any hazardous wastes would be stored separately from non-hazardous waste. Liquid wastes would be stored within bunded containers / upon a bund where appropriate.

The removal of waste from the site would be undertaken on a regular basis, to prevent large volumes of waste accumulating onsite and to prevent the potential for odour nuisance. For example, Category 1 and Category 3 material would be removed off-site on a daily basis, while municipal waste may be collected once per week.

Management of Waste and Animal By-Product Streams

Wastes generated during the operational phase would be managed by Banagher Chilling Limited in order of priority in accordance with Section 21A of the Waste Management Act 1996, as amended.

Wood:
Waste wood, for example wooden pallets, would be directed for recycling.

Metal:
Metal is highly recyclable and has a considerable rebate value. Metal would be directed for recycling.

Other Recyclables:
These include plastic, cardboard and office waste such as paper. The different recyclables would be segregated onsite and sent for recycling. With regards packaging waste, Banagher Chilling Limited would investigate the possibility of returning the packaging to the supplier.

Food Waste:
Food waste on site would arise from the proposed canteen, from any catering and food consumption by operational staff. Suitable food waste bins would be provided within the canteen and any other kitchen area, which would be removed and emptied on a regular basis. Food waste would be sent for composting or anaerobic digestion.

Mixed Municipal Waste and Other Non-Recyclable Waste:
Wastes not suitable for recycling would be stored in designated waste bins. These wastes would be directed for incineration where possible.

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Sanitary Waste:
Sanitary waste from staff facilities would be directed for treatment at the proposed onsite Waste Water Treatment Plant.

Hazardous Materials:
Any hazardous waste generated onsite would be managed in accordance with the Waste Management (Hazardous Waste) Regulations 1998 and 2000. Examples of potentially hazardous wastes include fuels and oils, batteries, paints, adhesives, sealants and laboratory wastes from onsite water monitoring. Hazardous waste would be stored separately from non-hazardous waste, would be appropriately labelled and would be stored upon bunds where appropriate. Depending on the type of hazardous material, the waste may be recovered, recycled or disposed of appropriately.

Waste Electrical and Electronic Equipment (WEEE):
This waste, if generated, would be stored separately from other waste streams and would be covered pending collection. WEEE can contain hazardous components such as batteries and mercury containing fluorescent tubes. All hazardous wastes would be stored in appropriate secure bunded containers prior to removal from site.

Blood:
Blood from slaughtering activities would be directed to a designated blood tank, which would be refrigerated and emptied on a regular basis. There are a few recovery / disposal methods for blood, including the use of blood in the food industry, composting or rendering. During the commissioning phase, the facility would determine the preferred disposal method.

Effluent Sludge, Lairage Sludge & Belly Paunch:
Effluent sludge would be stored within the sludge holding tank within the WWTP, while lairage sludge would be stored within the lairage tank. Belly paunch would be stored within a designated trailer. Sludges and belly paunch would be directed for anaerobic digestion, composting or landspreading as appropriate. Should sludges / belly paunch be landspread, the contractor would be required to prepare a Nutrient Management Plan in accordance with the Nitrates Regulations.

Category 1 & Category 3 Material:
These materials must be stored in designated trailers, removed offsite on a daily basis, and must be directed for rendering.

Record Keeping

For each waste movement and for each type of waste, Banagher Chilling Limited would obtain a signed waste docket from the waste contractor, detailing the weight, type of material, destination of material and whether the material is going for recycling, recovery or disposal. The site would also maintain copies of the waste contractors' relevant waste collection permits and waste licences on file.

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16.8 RESIDUAL IMPACTS

It is envisaged that the impact of construction phase wastes would be temporary, slight and negative. There are several facilities with the necessary EPA licences and waste facility permits for soils recovery in the region. There is considered to be adequate capacity to receive the wastes likely to be generated by the construction of the proposed development, even in the 'worst-case' scenario, which is where excavated material cannot be reused in the proposed.

Following the implementation of mitigation measures outlined in Sections 16.7, and given that all wastes arising as part of the construction phase would be managed in accordance with the waste hierarchy as outlined in Section 21A of the Waste Management Act 1996, as amended, it is considered that the proposed development would have a short-term and negligible environmental impact.

The operational phase of the proposed development would give rise to a variety of municipal and packaging type wastes. However, waste management would be undertaken by suitably licenced waste contractors. Therefore, it is considered that the operational phase of the proposed development would have a long-term and negligible environmental impact

16.9 MONITORING

16.9.1 CONSTRUCTION PHASE

The construction works contractor would maintain records and documentation of all waste transported off-site, with waste volumes tracked to measure overall environmental performance. The construction works contractor would ensure that copies of all waste contractors' collection permits and licences would be available for inspection.

16.9.2 OPERATIONAL PHASE

The applicant, Banagher Chilling Limited, would maintain records and documentation of all waste transported off-site, with waste volumes tracked to measure overall environmental performance. The applicant would ensure that copies of all waste contractors' collection permits and licences would be available for inspection.

16.10 REINSTATEMENT

In the event of the proposed development being discontinued, the construction works contractor would undertake measures to ensure that wastes at the site would not impact upon the environment, including the following:

- All wastes present throughout the site would be transported to the site compound and segregated appropriately;
- Where possible, surplus building materials would be returned to the supplier, sold or sent for recycling;

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- Waste contractors would be contacted to remove the remaining wastes at the site, for recovery/recycling or disposal at licenced waste facilities;
- Stockpiled soil would be used to reinstate areas where possible.

16.11 DIFFICULTIES ENCOUNTERED IN COMPILING INFORMATION

No difficulties were encountered during the assessment of potential impacts of the proposed development on waste management.

16.12 REFERENCES

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