15 MATERIAL ASSETS (WASTE)

15.1 Introduction

AWN Consulting has prepared this chapter of the EIAR which assesses and evaluates the likely impact of the generation of waste materials arising during the construction and operational phases of the proposed development.

This chapter was completed by Breanne Ayala, an Environmental Consultant in the waste section of AWN Consulting. She has ongoing roles within the waste department. Breanne has a BSc in Biology (Hons), focusing on biodiversity and ecology, and a MSc in Environmental Science (Hons). Breanne has assisted with environmental impact assessment reports, waste strategies, waste permit application, and microclimate assessments.

A site-specific Construction and Demolition Waste Management Plan (C&D WMP) has been prepared to deal with waste generation during the construction phase of the project and is included as Appendix 15.1. The C&D WMP was prepared in accordance with the 'Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects' document produced by the National Construction and Demolition Waste Council (NCDWC) in conjunction with the Department of the Environment, Heritage and Local Government in July 2006.

A separate Operational Waste Management Plan (OWMP) has also been prepared for the operational phase of the development and is included as Appendix 15.2. These documents will ensure the sustainable management of wastes arising at the development in accordance with legislative requirements and best practice standards.

15.2 Assessment Methodology

The assessment of the impacts of the proposed development arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports. A summary of the documents reviewed, and the relevant legislation is provided in Appendices 15.1 & 15.2.

This Chapter is based on the proposed development, as described in Chapter 3: Description of Proposed Development and considers the following aspects: -

- Legislative context.
- Construction phase (including site preparation and excavation).
- Operational phase.

A desk study was carried out which included the following: -

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland.
- Description of the typical waste materials that will be generated during the construction and operational phases.
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the construction and operational phases of the proposed development have been calculated. The waste types and estimated quantities are based on published data by the EPA in the *National Waste Reports* and *National Waste Statistics*, data recorded from similar previous developments, Irish and US EPA waste generation research as well as other available research sources.

Mitigation measures are proposed to minimise the effect of the proposed development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal. This information is presented in Section 15.6.

A detailed review of the existing ground conditions on a regional, local and site-specific scale are presented in Chapter 7: Land, Soils and Geology. Chapter 7 of the EIAR also discusses the environmental quality of any soils which will have to be excavated to facilitate construction of the proposed development.

15.2.1 Legislation and Guidance

Waste management in Ireland is subject to EU, national and regional waste legislation which defines how waste materials must be managed, transported and treated. The overarching EU legislation is the Waste Framework Directive (2008/98/EC) which is transposed into national legislation in Ireland. The cornerstone of Irish waste legislation is the Waste Management Act 1996 (as amended).

In addition, the Irish government issues policy documents which outline measures aimed to improve waste management practices in Ireland and help the country to achieve EU targets in respect of recycling and disposal of waste. The most recent policy document *A Resource Opportunity – Waste Management Policy in Ireland* was published in 2012 and stresses the environmental and economic benefits of better waste management, particularly in relation to waste prevention.

The strategy for the management of waste from the construction phase is in line with the requirements of the *Best Practice Guidelines for the Preparation of Waste Management Plans for Construction and Demolition Projects* published in 2006. The guidance document *Construction and Demolition Waste Management: A handbook for Contractors and Site Managers* was also consulted in the preparation of this assessment.

There are currently no Irish guidelines on the assessment of operational waste generation and guidance is taken from industry guidelines, plans and reports including the EMR Waste Management Plan 2015 – 2021, BS 5906:2005 Waste Management in Buildings – Code of Practice, the EPA National Waste Database Reports 1998 – 2012 and the EPA National Waste Statistics Web Resource.

15.3 Receiving Environment

In terms of waste management, the receiving environment is largely defined by Meath County Council (MCC) as the local authority responsible for setting and administering waste management activities in the area. This is governed by the requirements set out in the *Eastern-Midlands Region (EMR) Waste Management Plan 2015 – 2021.*

The waste management plan sets the following targets for waste management in the region: -

- A 1% reduction per annum in the quantity of household waste generated per capita over the period of the plan.
- Achieve a recycling rate of 50% of managed municipal waste by 2020.
- Reduce to 0% the direct disposal of unprocessed residual municipal waste to landfill (from 2016 onwards) in favour of higher value pre-treatment processes and indigenous recovery practices.

The Regional Plan sets out the strategic targets for waste management in the region and sets a specific target for C&D waste of *"70% preparing for reuse, recycling and other recovery of construction and demolition waste"* (excluding natural soils and stones and hazardous wastes) to be achieved by 2020.

The National Waste Statistics update published by the EPA in December 2019 identifies that Ireland's current progress against this C&D waste target is at 71% and our progress against 'Preparing for reuse and recycling of 50% by weight of household derived paper, metal, plastic & glass (includes metal and plastic estimates from household WEEE)' is at 45%. Both of these targets are required to be met by 12 December 2020 in accordance with the requirements of the Waste Framework Directive.

The Meath County Development Plan 2013 – 2019 sets policies and objectives for an overall strategy for the proper planning and sustainable development of County Meath for a six-year period.

In terms of physical waste infrastructure, there are a number of waste permitted and licensed facilities located in the Eastern-Midlands Waste Region for management of waste from the construction industry as well as municipal sources. These include soil recovery facilities, inert C&D waste facilities, hazardous waste treatment facilities, municipal waste landfills, material recovery facilities, waste transfer stations and two waste-to-energy facilities.

15.4 Characteristics of the Proposed Development

15.4.1 Proposed Development

A full description of the development can be found in Chapter 3: Description of Proposed Development. The characteristics of the development that are relevant in terms of waste management are summarised below.

The subject site forms part of the Applicant's wider landholding of c. 18.8 Ha extending north and beyond the Drumree Road. These lands are irregularly shaped and largely comprise two distinct sites within the western part of the Dunshaughlin Local Area Plan and are bisected by Drumree Road and Dunshaughlin Link Road and comprise a total area of c. 14.8 Ha (which includes the lands zoned F1 – Open Space).

15.4.1.1 Demolition Stage

There will be no demolition undertaken on part of this Proposed Development.

15.4.1.2 Construction Stage

During the construction phase, waste will be produced from surplus materials such as broken or off-cuts of timber, plasterboard, concrete, tiles, bricks, etc. Waste from packaging (cardboard, plastic, timber) and oversupply of materials may also be generated. The construction contractor will be required to ensure that oversupply of materials is kept to a minimum and opportunities for reuse of suitable materials is maximised.

It has been estimated by the project engineer that 43,253m^2 of soil and stone which will need to be excavated to facilitate the proposed development. It is envisaged that 24,807m^2 of soil and stone will be required to be moved off site, with the rest of the excavated material being reused on site. Material moved offsite will be taken for offsite reuse, recovery and/or disposal. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers or the environment.

Site investigations were undertaken at the site in March 2020. Soil samples were analyzed for a suite of parameters which allows for the assessment of the soils in term, of total pollutant content for classification of materials as hazardous or non-hazardous (waste acceptance criteria).

Based on the samples collected, the soil would be classed as inert in accordance with the requirements for acceptance of waste at landfills (Council Decision 2003/33/EC). This legislation sets limit values for acceptance of waste material to landfills based on properties of the waste including potential pollutant concentrations and leachability.

Based on the sampling conducted, it is anticipated that if any surplus material is generated it will be suitable for acceptance at inert soil recovery facilities/landfills in Ireland. In the unlikely event of hazardous material being encountered, it would need to be transported for treatment/recovery or exported abroad for disposal in suitable facilities. Additional sampling and analysis may be required prior to commencement of the excavations to provide further confirmation of the classification of the material prior to removal offsite. The density of the sampling and the range of analysis required are dependent on the requirements of the receiving facilities.

During the construction phase there may be a surplus of building materials, such as off-cuts of timber, plasterboard, insulation and plastic ducts, broken concrete blocks, bricks, tiles and metal waste. There may also be excess concrete during construction which will need to be disposed of. A significant volume of cardboard and soft plastic waste will be generated from packaging.

Waste will also be generated from construction workers e.g. organic/food waste, dry mixed recyclables (waste paper, newspaper, plastic bottles, packaging, aluminium cans, tins and Tetra Pak cartons), mixed non-recyclables and potentially sewage sludge from temporary welfare facilities provided onsite during the construction phase. Waste printer/toner cartridges, waste electrical and electronic equipment (WEEE) and waste batteries may also be generated infrequently from site offices.

Further detail on the waste materials likely to be generated during the excavation and construction works are presented in the project-specific C&D WMP included as Appendix 15.1. The C&D WMP provides an estimate of the main waste types likely to be generated during the construction phase of the proposed development and these are summarised in Table 15.1.

Waste Type	Tonnes	Reuse/Recovery		Recycle		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D	374.5	10	37.4	80	299.6	15	56.2
Timber	317.7	40	127.1	55	174.8	5	15.9
Plasterboard	113.5	30	34.0	60	68.1	20	22.7
Metals	90.8	5	4.5	90	81.7	75	68.1
Concrete	68.1	30	20.4	65	44.3	15	10.2
Other	170.2	20	34.0	60	102.1	15	25.5
Total	1134.8	10	257.6	80	770.5	50	198.6

Table 15.1: Reuse, Recycle/Recovery 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 construction of the proposed development as the exact materials and quantities may be subject to some degree of change and variation during the construction process. However, the above estimates are considered to be the worst-case scenario.

15.4.1.3 Operational Stage

As noted in Section 15.1, an OWMP has been prepared for the development and is included as Appendix 15.2. The OWMP provides a strategy for segregation (at source), storage and collection of all wastes generated within the building during the operational phase including dry mixed recyclables, organic waste and mixed non-recyclable waste as well as providing a strategy for management of waste glass, batteries, WEEE, printer/toner cartridges, chemicals, textiles, waste cooking oil, abandoned bikes, and furniture.

The total estimated waste generation for the development for the main waste types is presented in Table 15.2, below and is based on the uses and areas as advised by the project architects (OMP Architects) February 2020.

Waste type	Waste (m^3/week)			
	Residential Area 3	Residential Area 4	Residential Area 6	Crèche
Organic Waste	2.35	2.72	2.99	0.03
DMR	22.91	26.60	29.20	1.18
Glass	0.45	0.53	0.58	0.00
MNR	26.70	31.01	34.04	0.52
Total	**29.38**	**34.26**	**37.52**	**1.74**

Table 15.2: Estimated waste generation for the proposed development for the main waste types.

The BS5906:2005 Waste Management in Buildings – Code of Practice was considered in the estimations of the waste arising. The predicted total waste generated from the residential units based on the Code of Practice is c. 95.45m^3 per week for the residential units. Whereas the AWN waste generation model estimates c. 101.16m^3 per week from the residential units. AWN's modelling methodology is based on data from recent published data and data from numerous other similar developments in Ireland and based on AWN' experience it is a more representative estimate of the likely waste arisings from the development.

It has been assumed residential units will generate similar waste volumes over a seven-day period, while the crèche will operate over a five-day period. It is anticipated that the conservative estimation of waste quantities from the residents will be sufficient to cover the small quantities likely to be generated in the community facilities on a weekly basis.

Each resident and commercial tenant will bring their waste to their designated waste storage area (WSA). A detailed description of each WSA location can be found in the OWMP, Appendix 15.2

The bin amounts for each WSA can be seen in Table 15.1 in Appendix 15.2.

The OWMP seeks to ensure the development contributes to the targets outlined in the EMR Waste Management Plan 2015 – 2021, the MCC Waste Management (Storage, Presentation and Segregation of Household and Commercial Waste) By-Laws.

Mitigation measures proposed to manage impacts arising from wastes generated during the operation of the proposed development are summarised below.

15.4.2 Cumulative

15.4.2.1 Construction Stage

Multiple permissions remain in place for both residential and commercial developments within the vicinity of the development**.** In a worst-case scenario, multiple developments in the area could be developed concurrently or overlap in the construction phase. Due to the high number of waste contractors in the Dublin region there would be sufficient contractors available to handle waste generated from a large number of these sites simultaneously, if required. Similar waste materials would be generated by all the developments.

Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative effects associated with waste generation and waste management. As such the effect will be **short-term**.

15.4.2.2 Operational Stage

If improper, or a lack of, waste management, was to occur during the operational phase of the development this would cause a diversion from the priorities of the waste hierarchy. This would lead to small volumes of waste being sent unnecessarily to landfill.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Waste estimations for the operational phase of this development are provided in Table 15.2. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. At present, there is sufficient capacity for the acceptance of the likely operational waste arisings at facilities in the region. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which are typically exported for conversion in recycled products (e.g. paper mills and glass recycling). At present, there is sufficient capacity for the acceptance of the likely operational waste arisings at facilities in Europe.

Waste contractors will be required to service the development on a regular basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices. The potential impact of operational waste generation from the development is considered to **be long-term**, **not significant** and **negative**.

15.4.2.3 Do-Noting Impact

The site is zoned for development and it is likely that in the absence of this subject proposal that a development of a similar nature, that is in accordance with the National policy for compact growth on brownfield sites, would progress. The zoning provides for mixed-use development and it is envisaged that any other type of development proposal on this site would be comparable to this subject application in regards to the construction and operational phase.

15.5 Potential Impact of the Proposed Development

This section details the potential waste effects associated with the proposed development.

15.5.1 Proposed Development

15.5.1.1 Construction Stage

The proposed development will generate a range of non-hazardous and hazardous waste materials during excavation and construction. General housekeeping and packaging will also generate waste materials as well as typical municipal wastes generated by construction employees including food waste.

Waste materials will be required to be temporarily stored on site pending collection by a waste contractor. Dedicated areas for waste skips and bins will be identified across the site. These areas will need to be easily accessible to waste collection vehicles.

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development and on adjacent developments. The knock-on effect of litter issues is the presence of vermin within the development and the surrounding areas.

The use of non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices.

Wastes arising will need to be taken to suitably registered/permitted/licenced waste facilities for processing and segregation, reuse, recycling, recovery and/or disposal as appropriate. There are numerous licensed waste facilities in the Eastern Midlands region which can accept hazardous and non-hazardous waste materials and acceptance of waste from the proposed development would be in line with daily activities at these facilities. At present, there is sufficient capacity for the acceptance of the likely C&D waste arisings at facilities in the region. Where possible, waste will be segregated into reusable, recyclable and recoverable materials. The majority of demolition and construction materials are either recyclable or recoverable.

Recovery and recycling of C&D waste has a positive impact on sustainable resource consumption, for example where waste timber is mulched into a landscaping product or waste asphalt is recycled for use in new pavements. The use of recycled materials, where suitable, reduces the consumption of natural resources.

It has been estimated by the project engineer that 43,253m^2 of soil and stone which will need to be excavated to facilitate the proposed development. It is envisaged that 24,807m^2 of soil and stone will be required to be moved off site, with the rest of the excavated material being reused on site. Material moved offsite will be taken for offsite reuse, recovery and/or disposal. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers or the environment.

The potential effect of construction waste generated from the proposed development is considered to be ***short-term, slight*** *and* ***negative*** if all mitigation and monitoring procedures are followed.

15.5.1.2 Operational Stage

The potential impacts on the environment of improper, or a lack of, waste management during the operational phase would be a diversion from the priorities of the waste hierarchy which would lead to small volumes of waste being sent unnecessarily to landfill.

The nature of the development means the generation of waste materials during the operational phase is unavoidable. Networks of waste collection, treatment, recovery and disposal infrastructure are in place in the region to manage waste efficiently from this type of development. Waste which is not suitable for recycling is typically sent for energy recovery. There are also facilities in the region for segregation of municipal recyclables which is typically exported for conversion in recycled products (e.g. paper mills and glass recycling).

If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the development and on adjacent developments. The knock-on effect of litter issues is the presence of vermin within the development and the surrounding areas.

Waste contractors will be required to service the development on a regular basis to remove waste. The use of non-permitted waste contractors or unauthorised facilities could give rise to inappropriate management of waste and result in negative environmental impacts or pollution. It is essential that all waste materials are dealt with in accordance with regional and national legislation, as outlined previously, and that time and resources are dedicated to ensuring efficient waste management practices.

There is the potential for the proposed link road between Character Area 3 (CA3) and Character Area 4 (CA4) to be omitted from the proposed development design. This change will not have a significant impact on waste management. This alternative layout will not result in a significant change in construction or operational waste management, provided the mitigation measures outlined in Section 15.6, found below, are implemented predicted impacts will be short-term and not significant.

The potential impact of operational waste generation from the development is considered to be ***long-term, not significant*** and ***negative.***

15.5.1.3 Do-Noting Impact

If the proposed development was not to go ahead there would be no excavation or construction or operational waste generated at this site. There will would be a neutral effect on the environment.

15.6 Mitigation Measures (Ameliorative, Remedial or Reductive Measures)

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

15.6.1 Proposed Development

15.6.1.1 Construction Stage

As previously stated, a project specific C&D WMP has been prepared in line with the requirements of the guidance document issued by the DoEHLG and is included as Appendix 15.1. Adherence to the high-level strategy presented in this C&D WMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material excavation and construction phases of the Proposed Development.

It has been estimated by the project engineer that 43,253m^2 of soil and stone from the excavations required for construction of new foundations, the installation of underground services and attenuation tank, will be re-used on site. It is envisaged that 24,807m^2 of soil and stone will be required to be moved off site, with the rest of the excavated material being reused on site. Material moved offsite will be taken for offsite reuse, recovery and/or disposal. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers or the environment.

In addition, the following mitigation measures will be implemented: -

- Building materials will be chosen with an aim to 'design out waste'.
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery – it is anticipated that the following waste types, at a minimum, will be segregated: -
    - Concrete rubble (including ceramics, tiles and bricks).
    - Plasterboard.
    - Metals.
    - Glass.
    - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks/bricks) and any suitable construction materials shall be re-used on-site, where possible.
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).
- A waste manager will be appointed by the main contractor(s) to ensure effective management of waste during the excavation and construction works.
- All construction staff will be provided with training regarding the waste management procedures.

- All waste leaving site will be reused, recycled or recovered where possible to avoid material designated for disposal.
- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Article 27 of the *EC (Waste Directive) Regulations (2011)* as detailed in the C&D WMP (Appendix 15.1). EPA approval will be obtained prior to moving material as a by-product. However, it is not currently anticipated that article 27 will be used.

These mitigation measures will ensure that the waste arising from the construction phase of the development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations, the Litter Pollution Act 1997, the EMR Waste Management Plan (2015 – 2021) and the and the MCC Bye-Laws for the Storage, Presentation and Collection of Household and Commercial Waste and the MCC waste and draft waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will encourage sustainable consumption of resources.

15.6.1.2 Operational Stage

As previously stated, a project specific OWMP has been prepared and is included as Appendix 15.2. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the EMR Waste Management Plan 2015 – 2021 and the MCC waste bye-laws.

In addition, the following mitigation measures will be implemented: -

- On-site segregation of all waste materials into appropriate categories including (but not limited to): -
    - Organic waste.
    - Dry Mixed Recyclables.
    - Mixed Non-Recyclable Waste.
    - Glass.
    - Waste electrical and electronic equipment (WEEE).
    - Batteries (non-hazardous and hazardous).
    - Cooking oil.
    - Light bulbs.
    - Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.).
    - Furniture (and from time to time other bulky waste).
    - Abandoned bicycles.
- All waste materials will be stored in colour coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.
- All waste collected from the development will be reused, recycled or recovered where possible, with the exception of those waste streams where appropriate facilities are currently not available.

- All waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997*, the *EMR Waste Management Plan (2015 - 2021)* and the MCC waste bye-laws. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

15.6.2 Cumulative

The implementation of the mitigation measures outlined in Section 15.6 will ensure that a high rate of reuse, recovery and recycling is achieved at the development during the demolition, excavation and construction phases as well as during the operational phase. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

15.6.2.1 Construction Stage

A carefully planned approach to waste management as set out in Section 15.6.1.1 and adherence to the C&D WMP during the construction phase will ensure that the effect on the environment will be ***short-term, imperceptible*** and ***neutral.***

15.6.2.2 Operational Stage

During the operational phase, a structured approach to waste management as set out in Section 15.6.1.2 will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be ***long-term, imperceptible*** and ***neutral.***

15.7 Residual Impact of the Proposed Development

15.7.1 Proposed Development

The implementation of the mitigation measures outlined in Section 15.6. will ensure that the high rate of reuse, recovery and recycling is achieved at the development during the demolition, excavation and construction phases as well as during the operational phase. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

15.7.1.1 Construction Stage

A carefully planned approach to waste management as set out in Section 15.6 and adherence to the C&DMP during the construction and demolition phase will ensure that the effect on the environment will be **short-term, imperceptible** and **neutral** within the Eastern and Midlands Waste Region.

15.7.1.2 Operational Stage

During the operational phase, a structured approach to waste management as set out in Section 15.6 will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be **long-term, imperceptible** and **neutral.**

15.7.1.3 Worst Case Impact

In a worst-case scenario, if no mitigation measures found in section 15.6 are followed, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution.

15.7.2 Cumulative

15.7.2.1 Construction and Operational Stage

During both the C&D phase and operational phase, waste management will be carefully managed as set out in Section 15.6. Other developments in the area will be required to manage waste in compliance with national and local legislation, policies and plans which will minimise/mitigate any potential cumulative impacts associated with waste generation and waste management. As such it is considered that the cumulative effect relating to waste management will be **long-term, imperceptible** and **neutral.**

15.7.2.2 Worst Case Impact

In a worst-case scenario, poor onsite waste management, non-permitted waste contractors or unauthorised waste facilities could give rise to inappropriate management of waste offsite and result in negative environmental impacts or pollution.

15.8 Monitoring

The management of waste during the construction phase should be monitored to ensure compliance with relevant local authority requirements, and effective implementation of the C&D WMP including maintenance of waste documentation.

The management of waste during the operational phase should be monitored to ensure effective implementation of the OWMP by the building management company and the nominated waste.

15.8.1 Proposed Development

15.8.1.1 Construction Stage

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the construction phase where there is a potential for waste management to become secondary to progress and meeting construction schedule targets. The C&D WMP specifies the need for a waste manager to be appointed who will have responsibility to monitor the actual waste volumes being generated and to ensure that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the waste manager should identify the reasons for targets not being achieved and work to resolve any issues. Recording of waste generation during the project will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future projects.

15.8.1.2 Operational Stage

During the operational phase, waste generation volumes should be monitored against the predicted waste volumes outlined in the OWMP. There may be opportunities to reduce the number of bins and equipment required in the WSAs where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

Waste legislation should also be consulted on a regular basis in case of any changes which may impact on waste management procedures.

15.9 Reinstatement

No reinstatement measures will need to be carried out for this proposed development.

15.10 Difficulties Encountered

There were no difficulties encountered during the production of this chapter of the EIAR.