



Outline Sustainable Waste and Resource Management Strategy

Land North East of Harpenden

Crest Nicholson ('Crest')

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Executive Summary

- i. KaNect Limited ('KaNect') has been commissioned by Crest Nicholson ('Crest') ('Applicant') to prepare an Outline Sustainable Waste and Resource Management Strategy ('OSWRMS') to support the outline planning application for the proposed North East Harpenden ('Proposed Development') located in the administrative boundary of St Albans City and District Council (SADC).
- ii. The Applicant is seeking an
'Outline Application for demolition of existing buildings and structures and construction of a mixed-use development comprising residential dwellings (including affordable housing), children's home, elderly extra care facility, local centre (flexible retail/ health/ community use), sports pitches and associated building, green infrastructure and landscaping works (to include public open space and community growing space); primary school with early years provision, vehicular and active travel infrastructure (including pedestrian and cycle access) and diversion of Bower Heath Lane; drainage works; and related infrastructure. All matters reserved save for access from Lower Luton Road.'
- iii. This OSWRMS will provide details on the waste and recycling material management practices for both the operational phase (i.e., when the site is occupied) and the construction, demolition, and excavation (CD&E) phases within the Proposed Development's application boundary (hereafter referred to as 'the Site'). Therefore, this OSWRMS has been divided into two sections:
 - Operational Waste and Recycling Management Strategy for the Proposed Development (hereafter referred to as the 'Strategy'); and
 - Outline Construction Resource Management Plan for the Site (hereafter referred to as the 'Outline CRMP')

Operational Waste and Recycling Management Strategy

- iv. The 'Strategy' section of this OSWRMS will detail the sustainable methods for managing waste and recycling materials during the operational phase of the Proposed Development. It will outline how various waste streams (e.g., Mixed Dry Recyclables (MDR), Food, Paper & Card and Residual (General/Non-recyclable)) will be stored, managed, and collected from the Proposed Development's site. This approach aims to support the achievement of current and long-term waste minimisation, recycling, and re-use targets set by the national government, Hertfordshire County Council (HCC) and SADC.
- v. Once operational, the Proposed Development is anticipated to generate approximately 239,119 Litres (L) of waste and recycling material per week (excluding hazardous waste) from all land uses of the Proposed Development including residential and commercial uses. Waste and recycling material arisings from the Proposed Development will equate to approximately 1,074 tonnes per year

(considering the following densities: Mixed Dry Recyclables (MDR) – 70 kg/m³, Food waste – 500 kg/m³, Residual waste – 80 kg/m³, Cans, Plastics & Glass – 30 kg/m³ and Paper & Card – 110 kg/m³).

- vi. For all houses in the Proposed Development, kerbside collection will be provided. Residents will place their bins at the boundary of their units before the collection time. From where the council's collection operatives will then wheel the full bins to the refuse collection vehicle (RCV). After emptying the bins, the operatives will return them to the boundary of the individual residential units.
- vii. For the block of flats in the Proposed Development, each block will be provided a bin store on the Ground Floor of that block. These bin stores will be situated within 30 meters (m) distance of each residential unit in that block, allowing an easy access for the residents of that block. These bin stores are designed to accommodate bins for mixed dry recyclables (MDR) considering a fortnightly collection frequency, and bins for food and residual waste considering a weekly collection frequency. Further these residential bin stores will be positioned within 10 m distance of the RCV stopping point, allowing the council's collection operatives to easily access these bin stores.
- viii. On collection day, the council's collection operatives will access the bin stores and wheel the bins required to be collected to the RCV for emptying. After the bins are emptied, the council's collection operatives will return them to their designated bin stores.
- ix. To manage the waste and recycling materials arising from all the commercial units of the Proposed Development, space will be provided in the curtilage of each commercial unit to hold bins.
- x. The space provided within the curtilage of the commercial units of the Proposed Development is allocated based on weekly collection frequency. Prior to the time of collection (or as agreed with the collection contractor), the individual commercial tenants will place the bins outside the individual commercial units, which will be within 10 m distance of the RCV stopping point. From this location, the collection operatives will wheel the bins to the RCV, where these bins will be emptied. Once emptied, the collection operatives will return these empty bins back to the collection point, from where these will be returned by the individual commercial tenants to their designated location (i.e., within the commercial unit).
- xi. It is to be noted that information related to the management of waste and recycling materials from the Proposed Development is subjected to change, therefore, it is envisaged that a new OSWRMS will be prepared or this OSWRMS or the Strategy section of this OSWRMS will be updated at the reserved matters stage.

Outline Construction Resource Management Plan

- xii. The principal aim of this Outline CRMP is to demonstrate how the Proposed Development will manage construction, demolition, and excavation (CD&E) materials and waste sustainably during the construction phase of the Proposed Development. It aims to contribute to government, national, HCC and SADC targets for waste minimisation, recycling, and reuse. This Outline CRMP also provides a

summary of the construction works to contextualise material and waste management, confirms compliance with legal requirements, and helps contractors achieve high standards in material and waste management performance

- xiii. Based on the information available, it is anticipated that the construction activities associated with the Proposed Development will result in the generation of approximately 24,517.6 tonnes of materials and waste. Amongst this, approximately 5,241.6 tonnes will be generated from construction works, 7,876 tonnes from demolition works, whereas 11,400 tonnes will be generated during the excavation activities. It is to be noted that it is the Applicant's aspiration to achieving a landfill diversion rate of minimum 95%.
- xiv. Due to the outline nature of the application, detailed information regarding excavation activities and the volume of surplus materials generated is currently unavailable. Preliminary projections have been included for the purpose of this assessment; however, these are indicative and based on high-level assumptions only. The actual quantities of materials to be excavated and their associated management routes will be confirmed once further site investigation and design development have been undertaken. This section will be revised accordingly to reflect accurate data when available.
- xv. At this stage, the information available regarding the anticipated construction activities is high level and therefore this CRMP is presented in outline. It is envisioned that this outline CRMP will be updated or a detailed CRMP will be developed by the Principal Contractor as detailed information on construction activities (i.e., material quantities, quantities of waste etc.) becomes available.
- xvi. The OSWRMS will result in waste being produced during the operational and CD&E phases of the Proposed Development to be managed in accordance with the Waste (England and Wales) Regulations, 2011 (as amended). Additionally, all waste infrastructure introduced to the Proposed Development will comply with guidelines published in SADC guidance document, British Standard (BS) 5906:2005 Waste Management in Buildings Code of Practice and Part H6 of the Building Regulations (2010).
- xvii. This OSWRMS acknowledges that anyone producing, handling, and carrying waste on the Site, and to and from the Site will do so in accordance with the Duty of Care Code of Practice, 2018 (as amended). In relation to this OSWRMS, Waste is defined as per the Waste Framework Directive (2008/98/EC) as "any substance or object which the holder discards or intends or is required to discard".
- xviii. This OSWRMS has been written by KaNect, using information provided by the Applicant and wider design team.

1. Introduction

- 1.1 KaNect Limited ('KaNect') has been commissioned by Crest Nicholson ('Crest') ('Applicant') to prepare an Outline Sustainable Waste and Resource Management Strategy ('OSWRMS') to support the outline planning application for the proposed North East Harpenden development ('Proposed Development') located in the administrative boundary of St Albans City and District Council (SADC).
- 1.2 This OSWRMS will contain information on the waste and recycling material management practices for both the operational phase and the construction, demolition, and excavation (CD&E) phases related to the Proposed Development's application boundary (hereafter referred to as 'the Site'). The OSWRMS has been divided into two sections:
- Operational Waste and Recycling Management Strategy for the Proposed Development (hereafter referred to as the 'Strategy'); and
 - Outline Construction Resource Management Plan for the Site (hereafter referred to as the 'outline CRMP')

Operational Waste and Recycling Management Strategy Overview

- 1.3 The Strategy will:
- Allow waste arisings from the Proposed Development to be managed in accordance with the Waste (England and Wales) Regulations, 2011 (as amended) (Ref. 1), guidelines published by SADC, British Standard (BS) 5906:2005 (Ref. 2), Waste Management in Buildings Code of Practice and Part H6 of the Building Regulations (2010) (Ref. 3).
 - Present the method used to estimate volumes of waste and recycling material generated during the operation of the Proposed Development through consideration of SADC guidance document 'Waste and Recycling; Storage and Collection Guidance (Ref. 4).
 - Demonstrate the waste and recycling material storage requirements for the residential and commercial units of the Proposed Development based on an agreed upon collection frequency. This Strategy will also identify appropriate waste and recycling management infrastructure (i.e., containers and equipment), handling management methods, and collection arrangements.

Outline CRMP Overview

1.4 This outline CRMP will:

- Allow all construction, demolition and excavation (CD&E) activities taking place on-Site to comply with relevant objectives and targets at all levels of government (i.e., national (England), Hertfordshire County Council (HCC) and SADC).
- Provide estimate waste and material quantities that are expected to arise from the Site's construction, demolition, and excavation activities. Identifying on-Site recommendations and best practise measures to allow the Site to comply with the waste hierarchy.

Site Context

1.5 The Site is located immediately north east of the settlement of Harpenden and comprises of pasture fields with further fields, hedgerows and woodlands to the north, east and west. The Site encompasses approximately 32.92 hectares (ha) of land. An unnamed track bisects the northern and southern areas of the Site. It runs along the middle of the Site from the west to east. The track links up B652 Bower Heath Road and Common Lane. There is an active Equestrian Centre located in the western corner of the site, a number of the fields are used for horse grazing. A telecommunication mast and Electrical Substation is located near the centre of the Site.

1.6 Figure 1 shows the Site Parameter Plan.

Figure 1 Site Boundary



Please note that this Figure is not drawn to scale

2. Proposed Development

- 2.1 The Proposed Development comprises a mixed-use development including up to 500 residential dwellings (Class C3), a children's home (Class C2), an elderly extra care facility (Class C2), and a local centre providing up to 1,200 sq.m GIA of flexible accommodation for uses within Classes E(a)–E(f) and F2(b). The proposal further incorporates sports pitches and supporting facilities, a primary school with early years provision, public open spaces, community growing areas, vehicular access from Lower Luton Road, as well as pedestrian and cycle routes, landscaping, and associated infrastructure.
- 2.2 Please see Table 1 for the anticipated breakdown of the residential units.

Table 1 Residential Unit Breakdown

Accommodation Type	Quantity
Houses	410
Apartments	78

It should be noted that these numbers are indicative and are subject to change.

- 2.3 In addition to the residential units, the Proposed Development will also provide commercial units. At this stage, the exact mix and land use is not confirmed as the Applicant is applying for a mixed use as part of this application, however, for the purpose of estimating the quantum of waste and recycling material, these are assumed to be education (primary school), an extra care facility and local centre (i.e., a combination of retail, and medical space) spaces.
- 2.4 Table 2 provides the indicative commercial breakdown for the Proposed Development.

Table 2 Indicative Commercial Unit Breakdown

Commercial Use	Gross Internal Area (GIA) (m ²)	Working Capacity
Primary School		480 Pupils and 24 Staff Members*
Extra Care Facility		60 Beds
Retail	500	
Medical Centre	500	
The staffing requirements have been calculated based on a ratio of 1 staff member for every 20 pupils.		

3. Legislation/Planning Policy

3.1 A summary list of the legislation relevant to the management of operational and CD&E waste arising from the Proposed Development is provided in this section:

National Waste Legislation

- The Animal By-Products (England) Regulations 2009 (as amended) (Ref. 5) - establish guidelines for the safe handling, disposal, and use of animal by-products (ABPs) not intended for human consumption. These regulations categorise ABPs into three risk levels, with specific disposal methods such as rendering, incineration, and use in biogas or composting plants. They also mandate proper transport and storage to prevent contamination and require businesses to maintain detailed records of ABP quantities, categories, and destinations. These measures are essential for protecting public and animal health, as well as the environment,
- Clean Neighbourhoods and Environment Act 2005 (as amended) (Ref. 6) - is a key piece of legislation aimed at enhancing local environmental quality and addressing anti-social behaviour. It empowers local authorities to manage household and commercial waste more effectively, including the collection, recycling, and disposal processes. The Act also includes measures to combat littering, fly-tipping, and illegal waste disposal, ensuring that waste is handled by registered carriers and disposed of legally. Additionally, it addresses issues related to graffiti, flyposting, and abandoned vehicles, contributing to cleaner and safer neighbourhoods. These provisions help minimise environmental impact and promote responsible waste management practices in both residential and commercial areas,
- Control of Pollution Act (COPA) 1974 (as amended) (Ref. 7) - is a foundational UK environmental law that established comprehensive regulations for managing pollution across various mediums, including air, water, and land. In terms of waste management, COPA introduced stringent controls over the disposal and handling of waste materials. It mandated proper licensing for waste disposal sites, set out responsibilities for waste producers and handlers, and empowered local authorities to enforce these regulations. These measures aimed to ensure safe and environmentally sound waste management practices, significantly reducing the risk of environmental contamination and promoting public health,
- The Controlled Waste (England and Wales) Regulations 2012 (as amended) (Ref. 8) - lay a crucial role in waste management by classifying waste into household, industrial, and commercial categories. This classification determines how waste is managed, collected, and disposed of under the Environmental Protection Act 1990. The regulations also specify which types of waste local authorities can charge for collection and disposal. By clearly defining waste types and management responsibilities, these regulations help ensure that waste is handled in an environmentally sound manner, reducing the risk of pollution and promoting sustainable waste practices,

- The Environment Act 1995 (as amended) (Ref. 9) - is a pivotal UK legislation that established the Environment Agency and the Scottish Environment Protection Agency (SEPA), significantly enhancing environmental governance. In terms of waste management, the Act transferred various regulatory functions to these agencies, including waste management licensing and the regulation of radioactive waste. It also mandated the development of national waste strategies, ensuring a more coordinated and effective approach to waste management across the UK. These measures aimed to improve waste handling, reduce environmental pollution, and promote sustainable practices,
- Environmental Protection Act 1990 (EPA) (Ref. 10) - is a cornerstone of UK environmental legislation, providing a comprehensive framework for waste management. It includes stringent requirements for the handling, storage, and disposal of waste to prevent environmental harm. Key provisions include the classification of controlled wastes, the establishment of a duty of care for those involved in waste management, and penalties for non-compliance. This Act ensures that waste is managed responsibly, reducing pollution and protecting public health,
- The Landfill Tax Regulations 1996 (as amended) (Ref. 11) - were introduced to reduce the amount of waste sent to landfills by imposing a tax on waste disposal. This tax incentivises waste producers to seek alternative waste management methods, such as recycling, composting, and recovery, rather than relying on landfills. By financially discouraging landfill use, these regulations aim to promote more sustainable waste management practices and reduce environmental impacts associated with landfill sites,
- The List of Wastes (England) Regulations (as amended) (Ref. 12) - implement the European Waste Catalogue (EWC) in England. These regulations provide a comprehensive list of waste types, categorized by their source and characteristics. The list helps in identifying and classifying waste, ensuring proper handling, treatment, and disposal. It includes hazardous waste, marked with an asterisk (*), which requires special management due to its potential risks to health and the environment. The regulations have been amended to incorporate updates from various EU directives, ensuring they remain current and effective,
- The Pollution Prevention and Control (Fees) (Miscellaneous Amendments) Regulations 2017 (Ref. 13) - amend various fee structures related to environmental regulation. These regulations, which came into force on April 6, 2017, update the fees charged for activities regulated under the Pollution Prevention and Control Act 1999. This includes amendments to the Offshore Chemicals Regulations 2002 and the Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations 2005. The changes ensure that the fees reflect the costs of regulatory activities, such as permit applications, renewals, and variations, as well as the provision of advice and environmental assessments,
- The Producer Responsibility Obligations (Packaging Waste) Regulations 2007 (as amended) (Ref. 14) - require businesses involved in the production, use, or handling of packaging to take responsibility for the environmental impact of their packaging waste. These regulations set annual recovery and recycling targets for various materials, such as glass, plastic, aluminium, steel, paper/board, and wood. Producers must register with an approved compliance scheme, report the amount of packaging they handle, and ensure a

specified percentage is recovered and recycled. The aim is to minimise packaging waste sent to landfill and promote sustainable waste management practices,

- The Hazardous Waste Regulations 2005 (as amended) (Ref. 15) establish a comprehensive framework for managing hazardous waste to protect human health and the environment. These regulations define what constitutes hazardous waste, set out waste codes, and provide detailed guidelines for its proper handling, storage, transportation, and disposal. By ensuring that hazardous waste is managed safely and effectively, these regulations help prevent environmental contamination and promote responsible waste management practices,
- The Waste (England and Wales) Regulations, 2011 (as amended) - implement the EU Waste Framework Directive 2008/98/EC, establishing a comprehensive framework for waste management. These regulations mandate the application of the waste hierarchy, prioritising waste prevention, reuse, recycling, and recovery before disposal. They also require the development of waste prevention programs and management plans, ensuring that waste is handled in an environmentally responsible manner. By setting clear guidelines and responsibilities, these regulations aim to minimise waste's environmental impact and promote sustainable waste management practices,
- The Waste Batteries and Accumulators Regulations 2009 (as amended) (Ref. 16) - aim to protect the environment by ensuring the proper collection, treatment, and recycling of batteries and accumulators. These regulations categorise batteries into automotive, industrial, and portable types, each with specific obligations for producers. Producers must register with the appropriate environmental regulator, report the tonnage and chemistry of batteries placed on the market, and join a Battery Compliance Scheme if they place more than one tonne of portable batteries annually. The regulations also mandate that producers provide free collection of waste batteries from end users and prevent batteries from being incinerated or dumped in landfills,
- The Waste Electrical and Electronic Equipment (WEEE) Regulations 2015 (Ref. 17) - aim to reduce the environmental impact of electrical and electronic equipment by promoting the collection, treatment, recycling, and recovery of WEEE. These regulations place financial responsibility on producers for managing the waste from products they place on the market. Key amendments include updates to definitions, obligations for producers, and the introduction of evidence notes for tracking WEEE. The regulations also ensure that very small WEEE is properly managed.
- The Environmental Act 2021 (Ref. 18) - legally binding targets for air and water quality, waste reduction, and wildlife conservation. The Act also establishes the Office for Environmental Protection (OEP) to oversee compliance and enforce environmental laws. Key provisions include measures to increase recycling, reduce plastic waste, and prevent the export of plastic waste to developing countries. Additionally, the Act introduces new rules to stop the import of commodities from areas of illegal deforestation and promotes biodiversity offsetting

Waste and Planning Policy

3.2 The national, regional, and local waste and recycling management planning policies in Table 3 contain information applicable to the Proposed Development.

Table 3 Waste and Recycling Management Policies

Waste/Planning Policy Document	Date	Policy	Detail
National			
National Planning Policy Framework (Ref. 19)	2025		- The National Planning Policy Framework (NPPF) was revised on 12 December 2024. The revised NPPF sets out the government planning policies for England and how these are expected to be applied. This NPPF supersedes the previous NPPF published in September 2023, July 2021, February 2019, July 2018 and March 2012. - The revised NPPF maintains the presumption in favour of sustainable development which should be delivered in accordance with three main objective areas: economic, social and environmental (Paragraph 8 of the NPPF). The revised NPPF aims to enable local people and their local authorities to produce their own distinctive local and neighbourhood plans, which should be interpreted and applied to meet the needs and priorities of their communities. - The environmental objective refers to the importance of waste management and resource efficiency. The NPPF should be read in conjunction with the National Planning Policy for Waste (2014), including the Waste Management Plan for England (2021) and Planning Practice Guidance which are discussed in the following sections of this Strategy.
National Planning Policy for Waste (Ref. 20)	2014		The National Planning Policy for Waste provides the planning framework to enable local authorities to put forward, through local waste management plans, strategies that identify sites and areas that are suitable for new or enhanced facilities to meet the waste management needs of their areas.
Waste Management Plan for England (Ref. 21)	2021		- The Waste Management Plan for England is a high-level document, which outlines the steps required to move towards a zero-waste economy, as part of the transition to a sustainable economy. - The Waste Management Plan fulfils the Waste Framework Directive (WFD) (dated 19 November 2008) Article 28 mandatory requirements, and other required content as set out in Schedule 1 to the Waste (England and Wales) Regulations 2011 as amended. The Waste Management Plan provides an analysis of current waste management practices in England and evaluates implementation of the objectives and provisions of the WFD.
A Green Future: Our 25 Year Plan to Improve the Environment (Ref. 22)	2018	Chapter 4: Increasing resource efficiency and	Make sure that resources are used more efficiently and kept in use for longer to minimise waste and reduce its environmental impacts by promoting reuse, remanufacturing, and recycling.

		reducing pollution and waste	Work towards eliminating all avoidable waste by 2050 and all avoidable plastic waste by end of 2025.
Our Waste, Our Resources: A Strategy for England (Ref. 23)	2018	1.1.1 1.1.4 1.3.2 2.3.1 3.1.1	Extended Producer Responsibility - The Extended Producer Responsibility (EPR) is “a policy approach through which a producer’s responsibility for a product is extended to the post-use stage. This incentivises producers to design their products to make it easier for them to be reused, dismantled and/or recycled at end of life”, this also applies to certain materials within the construction and demolition section. Deposit Return Scheme - In a Deposit Return Scheme (DRS), a small deposit will be added to the price of a drink container brought to a store. Once the container has been used, the consumer will dispose of it in a reverse vending machine and the deposit will be returned to the consumer. Consistent Collections - Subject to consultation, legislation enforcing the government to “specify a core set of materials to be collected by all local authorities and waste operators” will be introduced. It is envisioned that specifying a consistent set of dry recyclable materials to be collected from all households and businesses will improve England’s recycling rate, (subject to consultation) it will include mandatory separate food waste collections. At the current time these policy instruments are out for consultation and (subject to proposals) will be rolled out from 2023.
Regional and Local			
Hertfordshire Waste Development Framework Waste Core Strategy & Development Management Policies Development Plan Document 2011-2026 (Ref. 24)	2012		The plan includes several key policies aimed at sustainable waste management and development including: - Waste Prevention and Reduction: Encourages minimising waste generation at the source. - Climate Change: Integrates climate change considerations into waste management practices. - Sustainable Design, Construction, and Demolition: Encourages sustainable practices in construction and demolition to reduce waste.
Wheathampstead Parish Council – Wheathampstead Neighbourhood Plan 2020 -2035 (Ref. 25)	2022	W10	Requires development proposals to provide adequate, well-designed storage for waste and recycling facilities that support effective segregation and collection, without harming the appearance of the development or surrounding area. It also requires the preparation of a Site Waste Management Plan to address the environmental impacts of demolition and construction, ensuring that materials are removed, reused, and disposed of in a responsible and sustainable manner.

- 3.3 Although the St Albans Draft Local Plan 2041 (Regulation 19 Publication) (Ref. 26) has not yet been adopted, however, its policies have been noted for alignment with future planning objectives (such as CE1 – Promoting Sustainable Design, Construction and Building Efficiency) .

4. Operational Waste and Recycling Management Strategy

Introduction

4.1 The principal aim of this Strategy is to demonstrate how sustainable methods for waste and recycling management have been considered for the operational phase of the Proposed Development. Furthermore, with regards to waste and recycling management within the Proposed Development, this Strategy has the following aims:

- To contribute towards achieving current and long-term government targets;
- To comply with all applicable legal requirements for handling operational waste;
- To achieve high standards of waste management performance, through giving due consideration to the waste generated during operation of the Proposed Development; and
- To provide a convenient, clean, and efficient waste management strategy that enhances the operation of the Proposed Development and promotes recycling.

Strategy Overview

- 4.2 Through the lens of the Circular Economy Model, the Strategy aims to promote a circular approach by exploring opportunities for reusing and recycling during the operation of the Proposed Development in accordance with the Waste Hierarchy.
- 4.3 Following on from the prevention and reduction of waste, this Strategy will encourage the separation and sorting of waste and recycling in-line with the Waste Hierarchy. Measures will be implemented to maximise the amount of material arising from the Proposed Development that is recycled/composed and minimise the amount of waste that is sent to landfill.
- 4.4 This Strategy provides a review of the requirements placed upon the Proposed Development under legislation and implemented policy at all levels of government (i.e., national (England), regional (HCC) and local (SADC)). Consideration has also been given to the requirements included in local standards, local planning policy and guidance documents to comply with relevant objectives and targets.
- 4.5 The method used to identify and estimate volumes of waste generated during operation of the Proposed Development is provided in the Section 4. Following this, the approach taken towards waste management within the Proposed Development is discussed. This includes a breakdown of the waste management process, including waste handling, and collection arrangements. All waste reduction measures are compliant with the Waste (England and Wales) Regulations, 2012 (as amended) (Ref. 1) , British Standards 5906:2005 (Ref. 2), and Part H6 of the Building Regulations (2010) (incorporating all amendments) (Ref. 3) Document (hereafter referred to as 'Part H6').

Waste Hierarchy and Circular Economy

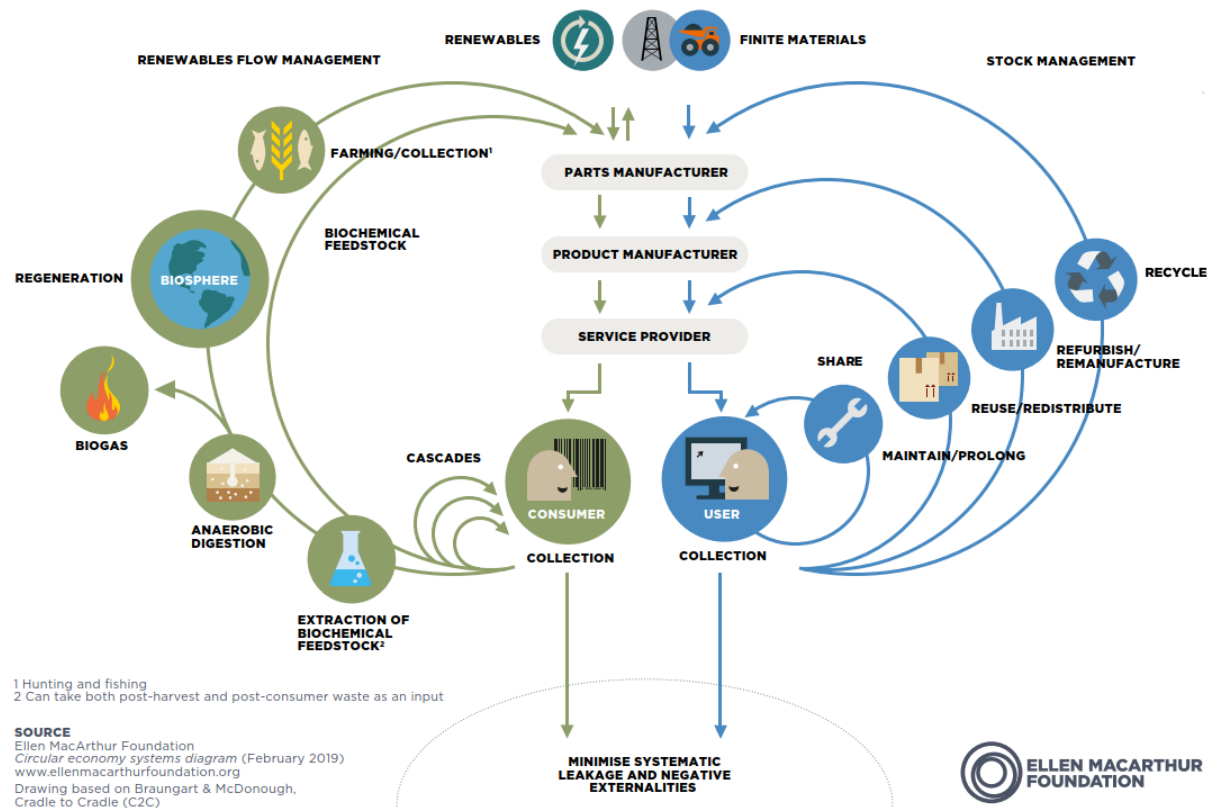
4.7 The Waste Hierarchy encourages the management and reduction of waste material. It is representative of a complex process influenced by the optimal management of any given product/waste material. A basic representation of the Waste Hierarchy is provided in Figure 2.

Figure 2 Waste Hierarchy



- 4.8 The prevention of waste sits at the top of the Waste Hierarchy. Prevention involves trying to reduce the amount of waste generated in the first place, for example by redesigning a product to use less, and fewer materials during manufacture.
- 4.9 The generation of waste in the UK has historically been linked with economic growth, as demonstrated by a marked decline in waste generation timed with the onset of the recession in 2008. The Circular Economy Model (see Figure 3) aims to decouple economic growth from resource consumption, by keeping resources in use for as long as possible and trying to regenerate them at the end of their life.

Figure 3 Circular Economy Model



- 4.10 It is likely that the future of waste prevention will look to adopt leasing/rental business models on a range of items (i.e., white goods, tools, phones, and clothes) which in doing so will promote an economy of repair and refurbishment. Reduction of waste will also occur by reducing the amount of packaging per item through innovation. Several initiatives will be explored to reduce waste arising from the Proposed Development including:
- Shared Community Fridges - will residents to share surplus food instead of discarding it. This not only minimises food waste but also fosters a sense of community and cooperation. Additionally, it provides access to food for those in need, promotes environmental sustainability by reducing landfill waste, and offers educational opportunities about food waste and sustainability,
 - Tool Hire and Share – by creating a tool-sharing system, residents can access a wide range of tools without the need to purchase and store them individually. This not only saves money but also reduces clutter and promotes a sense of community. Tools like drills, ladders, and gardening equipment can be shared, ensuring that everyone has access to what they need for their projects. Additionally, it encourages sustainable living by reducing the demand for new tools and maximising the use of existing ones, and
 - Collaboration with Charities for Food waste, Textile waste etc - by partnering with organisations, residents can donate surplus food and unwanted textiles, ensuring these items are reused or recycled instead of ending up in landfills. This collaboration not only helps reduce environmental impact but also supports charitable causes, providing food and clothing to those who need it most.
- 4.11 Reuse is the next tier of the Waste Hierarchy; it can involve the cleaning or repairing of products so they can be reused and redistributed as the same product. This helps to prevent products being disposed of once they become broken or dirty. Innovative exchange platforms to enable the reuse of materials include Globechain.
- 4.12 The third tier of the Waste Hierarchy and outermost loop of the Circular Economy Model is recycling – the act of turning waste materials into new products. Recycling benefits the environment as it reduces the consumption of raw materials and diverts waste materials from final disposal routes (i.e., landfill and incineration).
- 4.13 The fourth tier of the Waste Hierarchy is other recovery. This means that the waste material that cannot be recycled, it may be possible to recover energy in the form of 'waste to energy'. This process can help to reduce carbon emissions.
- 4.14 Disposal is the final tier of the Waste Hierarchy. This would imply that the waste material collected are of no value ('economic and environment') and as a last resort are sent to the landfill (or incineration without energy recovery) for disposal. Due to the negative effects towards the environment (that may include impacts to air quality, climate change etc.), this is the least sustainable option.

Method

Residential

4.15 According to its guidance document, SADC specifies storage requirements for each dwelling, as outlined in Table 4.

Table 4 Residential Units – Waste and Recycling Material Arisings

Type of Unit	Waste Stream	Methodology	Collection Frequency
Flats	Mixed Dry Recyclables (MDR)	240 Litres per dwelling	Fortnightly
	Food Waste	24 Litres per dwelling	Weekly
	Residual Waste	90 Litres per dwelling	Weekly
Houses	Cans, Plastics and Glass	240 Litres per dwelling	Fortnightly
	Paper and Cardboard	55 Litres per dwelling	Weekly
	Food Waste	23 Litres per dwelling	Weekly
	Residual Waste	180 Litres per dwelling	Weekly

Commercial

4.16 SADC does not provide any guidance on how to estimate the waste and recycling material arising from the commercial units, therefore, guidance provided in BS 5906:2005 and ADEPT 'Making Space for Waste' (Ref. 27) has been used. Commercial units on which there is no guidance provided by BS 5906:2005 and ADEPT, then a bespoke method has been adopted, which has been developed by KaNect based on their experience of working on similar schemes. Table 5 details the adopted method.

Table 5 Commercial units – Waste and Recycling Material Arisings

Land Use	Methodology	Stream Split
Retail	5 L per m ² of GIA	MDR: Food: Residual: Paper and Card 5: 15: 40: 40
Medical Centre*	50 L per General Practitioner (GP). Where 1 GP = 1/76 of GIA.	MDR: Food: Residual: Paper and Card 20: 5: 30: 50
School - Staff	50 L per staff member. Where 1 staff member = No of Students / 20	MDR: Food: Residual: Paper and Card 20: 5: 30: 50
Education	9 L per Pupil.	MDR: Paper & Card: Food: Residual

(Primary School)		44: 33: 11: 11
Extra Care Facility	1 Bed = 100 L (excluding Food waste)	MDR: Residual
	2 Bed = 170 L (Excluding Food waste)	50: 50
	24 L Food waste per Unit	
*At this point, the projected utilisation of the medical centre remains uncertain; accordingly, quantities of hazardous waste have not been specified. Nonetheless, all hazardous waste generated within the medical facility will be contained on site and managed in accordance with applicable regulations.		

Management Strategy

Waste and Recycling Material Arisings

Residential

4.17 Based on the method provided in Table 4, the estimated waste and recycling material arising from the residential units of the Proposed Development is provided in Table 6.

Table 6 Waste and Recycling Arisings - Residential

Accommodation Type	Quantity	MDR (Litres)	Food Waste (Litres)	Residual (Litres)	Cans, Plastics and Glass (Litres)	Paper and Card (Litres)	Total (Litres)
Houses	410	-	9,430	73,800	98,400	22,550	204,180
Flats	78	18,720	1,872	7,020	-	-	27,612
Total	488	18,720	11,302	80,820	98,400	22,660	231,792

*Please note that the number of units are subject to change and will be updated as the design finalises.

- 4.18 The residential units (houses and flats) in the Proposed Development will provide storage space to accommodate approximately 65% (including Food) for recyclables, whereas 35% will be allocated for Residual waste. At this stage, information on the end destination of Residual waste is unknown, however, it is envisioned that alternative approaches will be sought (including energy from waste etc) prior to disposal.
- 4.19 Table 7 provides the indicative percentages showing how waste and recycling materials will be managed from the residential units in the Proposed Development. Please note that these are indicative percentages, as these will be heavily reliant on the procedures and practices followed by SADC.

Table 7 Waste and Recycling Indicative Percentages - Residential

Waste and Recycling Indicative percentages	
Total Estimate (tonnes per annum)	947
Reuse Onsite	0%
Reuse Offsite	0%
Recycle Onsite	0%
Recycle Offsite	≥65%
Landfill Diversion (%)	≥95%
Other management (%)	≥20%

Commercial

4.20 As mentioned above, the exact arrangements for the management and storage of waste and recycling material arising from the commercial units of the Proposed Development is not confirmed. Therefore, at this stage, it is assumed that a weekly collection frequency will be provided.

4.21 Based on the method provided in Table 5 , the estimated weekly waste and recycling material arising from the commercial units of the Proposed Development is provided in Table 8.

Table 8 Waste and Recycling Arisings (Weekly Collection Frequency) – Commercial Units

Land Use	GIA (m ²)	Working Capacity	MDR (Litres / Week)	Paper & Card (L/W)	Food (L/W)	Residual (L/W)	Total (L/W)
Extra Care Facility		60 units	3,420	-	1,440	3,420	8,280
Retail	500		125	1,000	375	1,000	2,500
Medical Centre	500		70	175	18	105	368
School		480 students and 24 staff	2,141	2,026	536	836	5,539
Total			5,756	3,201	2,369	5,361	16,687

The numbers may not add up due to rounding.

4.22 The commercial units in the Proposed Development will provide storage space (excluding hazardous waste) to accommodate approximately 68% (including Food) for recyclables, whereas 32% will be allocated for Residual waste. At this stage, information on the

end destination of Residual waste is unknown, however, it is envisioned that alternative approaches will be sought (including energy from waste etc) prior to disposal.

- 4.23 Table 9 provides the indicative percentages showing how waste and recycling materials will be managed from the commercial units of the Proposed Development. Please note that these are indicative percentages, as these will be heavily reliant on the procedures and practices that will be confirmed once the commercial collection contractor/s are commissioned.

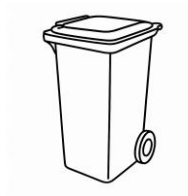
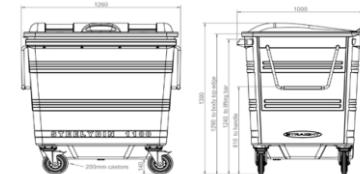
Table 9 Waste and Recycling Indicative Percentages – All Commercial Units

Waste and Recycling Indicative percentages	
Total Estimate (tonnes per annum)	123
Reuse Onsite	0%
Reuse Offsite	0%
Recycle Onsite	0%
Recycle Offsite	≥65%
Landfill Diversion (%)	≥95%
Other management (%)	≥20%

Storage Containers

4.24 Table 10 provides the example dimensions of storage containers ('bins') that are proposed to be used. Please note that bin dimensions may vary between different manufactures, therefore, these dimensions provided should be used as reference only.

Table 10 Standard Bin Dimensions

Bin	Dimensions
	Capacity (L): 23
	Examples Only
	Capacity (L): 180
	Height (mm): 1,060**
	Depth (mm): 630**
	Width (mm): 525**
	Capacity (L): 240
	Height (mm): 1,060**
	Depth (mm): 730**
	Width (mm): 575**
	Capacity (L): 360
	Height (mm): 1,120**
	Depth (mm): 890**
	Width (mm): 625**
	Capacity (L): 1,100
	Height (mm): 1,390**
	Depth (mm): 1,260**
	Width (mm): 1,000**

**Bin dimensions might vary between manufacturers

Waste and Recycling Storage Requirements

Residential

4.25 Based on the residential waste and recycling arisings as provided in Table 6, the subsequent storage requirements for the residential units are provided in Table 11.

Table 11 Waste and Recycling Storage Requirements - Residential

Accommodation Type	Quantity	MDR	Food Waste	Residual	Cans, Plastics and Glass	Paper and Card
Houses	410		410 x 23 L Caddy	410 x 180 L	410 x 240 L	410 x 55 L
Flats*	78	52 x 360 L	8 x 240 L	7 x 1,100 L		

*At this stage, the allocation of flats across individual buildings has not yet been finalised; consequently, storage provisions have been determined based on the aggregate waste generated by all flats. Upon receipt of detailed information regarding the distribution of flats, a comprehensive breakdown of storage requirements, including the specific number of bins required per building, will be provided.

4.26 Houses in of the Proposed Development will be serviced via kerbside collection. This means that prior to the collection time, the residents of these units will present their bins at their unit boundaries, from where the council's collection operatives will collect and empty these into the refuse collection vehicles (RCV). Once emptied, the collection operatives will return these empty bins back to the unit boundaries.

4.27 To manage the waste and recycling material arisings from the block of flats of the Proposed Development, these will be provided with a bin store on the Ground Floor level (GF) of each block. These bin stores will be located within 30 m distance of each residential unit of the block, allowing the residents to access the bin stores to deposit their waste and recycling materials.

4.28 All these bin stores are located within 10 m distance of the RCV stopping point, allowing the council's refuse collection operatives on the day of collection to access these bin stores and wheel the bins to be collected to the RCV for emptying. Once these bins are emptied, the council's refuse collection operatives will return these bins to the designated bin stores.

Commercial

4.29 Based on the waste and recycling materials arising in Table 8, the storage requirements for the commercial units are given in Table 12.

Table 12 Waste and Recycling Storage Requirements – All Commercial Units

Land Use	GIA (m ²)	Working Capacity	MDR	Paper & Card	Food	Residual
Extra Care Facility		60 units	4 x 1,100 L		6 x 240 L	4 x 1,100 L

Retail	500		1 x 1,100 L	1 x 1,100 L	2 x 240 L	1 x 1,100 L
Medical Centre	500		1 x 1,100 L	1 x 1,100 L	1 x 240 L	1 x 1,100 L
School		480 students and 24 staff	2 x 1,100 L	2 x 1,100 L	3 x 240 L	1 x 1,100 L

- 4.30 To manage waste and recycling materials from all commercial units of the Proposed Development, space will be provided within the curtilage (boundary) of each commercial space to hold bins.
- 4.31 Before collection (or as agreed with the collection contractor), the cleaning team of each commercial tenant will place the bins outside their respective commercial unit, within 10 m of the RCV stopping point. From this location, collection operatives will wheel the bins to the RCV for emptying. Once emptied, the operatives will return the bins to the collection point, from where the cleaning team will return them to their designated locations within the commercial units.
- 4.32 As mentioned, information regarding the management of waste and recycling materials from the commercial units of the Proposed Development is subject to change. Therefore, it is anticipated that a new OSWRMS will be prepared, or the current OSWRMS or its Strategy section will be updated once detailed information becomes available.

Bulky Waste

- 4.33 It is envisioned that dedicated bulky waste storage areas will be provided on the footprint of each block. These facilities are intended for use by residents in the blocks of flats within the Proposed Development to temporarily store bulky household items. Upon scheduling a collection with the local council, residents will transfer their bulky waste to this designated store, from where it will be collected by the council collection operatives.
- 4.34 Additionally, residents may choose to take their bulky waste directly to St Albans Recycling Centre, located at 14 Ronsons Way Sandridge (off St Albans Road), AL4 9XR.

Unique Waste

- 4.35 There is likely to be a small component of the overall waste arisings from the Proposed Development that will comprise other waste streams, such as waste electrical and electronic equipment (WEEE), printer and toner cartridges and fluorescent light tubes. Building maintenance will also give rise to materials such as paints and waste lubricating oils that will require separate storage in dedicated sealed containers.
- 4.36 This type of waste is termed “unique” as it will not be produced on a regular basis and therefore, its management will be on special arrangement with a registered waste handler for the specific waste that is produced. Hazardous waste is required to be kept separate

from general and bulky waste. For the residential units within the block of flats, there will be space for this within the bin stores for these types of waste, whereas the commercial tenants will have space within the curtilage of their units to hold bins or make similar arrangements for the storage of this type of waste.

- 4.37 Separate arrangements will be made by the collection operatives for the safe disposal of these waste streams, as covered by the Hazardous Waste (Amendment) Regulations 2016 and WEEE Regulations 2015. All waste management will have to comply with Environmental Protection Act 1990 and The Waste (England and Wales) (Amendment) Regulations 2014.

Waste and Recycling Storage and Collection Provision

- 4.38 In accordance with BS EN 840, as set out in BS 5906:2005, all waste containers (for the residential units in block of flats and commercial units) within the Proposed Development will be stored under cover in specially designed waste storage room, which will be built to the same general standard for commercial premises. The walls and roofs of this store will be formed of non-combustible, robust, secure and impervious material, and have a fire resistance of one hour when tested in accordance with BS 476-21 - Fire tests on building materials and structures: Part 21 whilst the door of the store will be made of steel, and will have a fire resistance of 30 minutes when tested in accordance with BS 476-22 - Fire tests on building materials and structure: Part 22.
- 4.39 Further to these requirements, the Proposed Development will also comply with the guidance set out in SADC, BS 5906:2005 and Part H6 as provided below in Table 13.

Table 13 Design Consideration for Bin Stores

Category	Requirement
Location	Containers within enclosure to prevent nuisance; not block utility points; not obstruct sight lines
Convenience	Operatives not to transport Euro bin >10 m; not transport sacks from basement/above ground; not navigate steps/slopes; not cross main road/cycle path
Screening/Covering	Containers inside or enclosed; internal storage to BS 5906:2005
Signage	Storage areas clearly designated by sign/floor markings; coloured zones for recycling stream
Accessibility	Design to DDA and BS 8300:2009; doors not open onto highway; entrance free from steps; drop kerbs where needed; pulling area unobstructed and sound; access 6 am - 5 pm; there will be 300 mm clear space between and around the containers.
Access Paths/Roads	Path free of steps, obstructions; smooth, hard, non-slip surface; no difficult turns; minimum width where bins are moved should be 500 mm greater than the width of bins, 2 m; gradient $\leq 1:14$; not through dwelling

Vehicle Access	Roads with hard-wearing surface for 26 tonnes; min width 5 m; forward direction for RCV; park within 10 m of bins; turning circle 18.3-22.3 m
Materials/Finishing	Impervious, easy clean floor/walls; trapped gully & water supply; door retainers; rubber buffer on wall
Safety/Anti-social Behaviour	Secure storage; consider 'recycling on the go'; designs to Crime Prevention Design officers; safe use, no crime encouragement
Locks	Access without key/fob where possible; manager ensures access before 6 am; codes for electronic gates to council
Fire Safety	Bins ≥ 6 m from building unless in fire-resistant store; walls/roofs non-combustible, 1 hr fire resistance; doors steel or 30 min fire resistance; caged bins locked with lid/wheel lock; align with fire strategy; no storage in entrances/communal areas; fire doors, detection, sprinkler for internal stores
Ventilation/Lighting	Lighting and good ventilation; permanent ventilators ≥ 0.2 m ² ; fly/vermin proofed; sealed bulkhead IP65; low energy, proximity/timer controlled
Maintenance	Gullies not in trolley track; trap to maintain seal during disuse

5. Outline Construction Resource Management Plan

Introduction

- 5.1 The principle aim of this Outline CRMP is to demonstrate how the Site has considered sustainable methods for managing construction, demolition, and excavation (CD&E) material and waste during the CD&E phases of the Proposed Development. Furthermore, with regards to managing CD&E material and waste associated with the Proposed Development, this outline CRMP has the following aims:
- To contribute towards achieving emerging, current and long-term government, HCC and SADC targets for waste minimisation, recycling and reuse of CD&E material arisings,
 - To provide a summary of the CD&E works to provide context of anticipated waste and material arisings and management,
 - To facilitate the contractor to comply with all applicable legal requirements for handling CD&E material, and
 - To facilitate the contractor to achieve high standards of waste management performance.
- 5.2 The construction activities will result in the generation of 24,517.6 tonnes of waste/materials. The construction works on-Site will generate 5,241.6 tonnes of waste/materials, demolition works will generated approximately 7,876 tonnes, whereas the excavation works to be undertaken on-Site will result in the generation of approximately 11,400 tonnes of material.
- 5.3 It is the Applicant's aspiration to achieve a minimum of 95% diversion from landfill. In addition, at this stage in the application process, detailed site-specific information concerning excavation volumes and material arisings is not yet available. As such, indicative figures have been presented based on preliminary design assumptions to support this assessment. These estimates are subject to change and should not be treated as definitive. Once further site investigations and design refinement have been completed, this section will be updated to incorporate accurate and verified data.
- 5.4 It is envisioned that all opportunities will be explored to prioritise reuse on Site and then recycle.
- 5.5 This outline CRMP provides a review of the requirements placed upon the Proposed Development under legislation and implemented policy at all levels of government (i.e., national (England), regional (HCC) and local (SADC)).
- 5.6 For this outline CRMP, waste is defined as per the Waste Framework Directive (WFD) (2008/98/EC) as "any substance or object which the holder discards or intends or is required to discard".

Requirements of a CRMP

- 5.7 The production of a CRMP (alternatively known as a 'Site Waste management Plan') is regarded as best practise by numerous Local Planning Authorities in England.
- 5.8 Information on the CD&E phases available at this stage of the planning application is indicative and as such this CRMP is outline. However, it is envisioned that this CRMP will be updated by the principal contractor, or form the basis of a detailed CRMP, as further information relating to the CD&E activities (i.e., material quantities, methods, logistics etc.) of the Proposed Development becomes available and is confirmed.

Construction and Surplus Excavation Materials

Method

Construction

- 5.9 The quantities of construction waste have been estimated using a bespoke tool, which generates data based on the Building Research Establishment (BRE) Smart Waste data (Ref. 28) and Benchmarks and Baselines 2009 from the Construction Resources and Waste Platform (CRWP) (Ref. 29).
- 5.10 It is difficult to calculate the precise waste quantities arising from the construction materials. In a best-case scenario, all construction materials would be utilised; however, it is acknowledged that due to over ordering of materials and poor storage of these materials (amongst some of the most common reasons for construction material wastage), this is not often the case. The estimated waste arising from the construction of the Proposed Development is dependent upon several factors, including construction methodologies, and the nature of the materials used.
- 5.11 The Proposed Development will be constructed as a mixed-use development i.e., providing residential units along with supporting education and a local centre. As part of the application, the Applicant is applying for a flexible use, however, for the purpose of estimating the quantum of waste it is assumed that this will comprise of retail and healthcare facility).
- 5.12 Considering the Applicants aspiration towards achieving higher BREEM Credits, the target is provided in Table 14.

Table 14 Average Waste (in Tonnes) per 100 m² of material used

Average Waste in Tonnes per 100 m ²
3.2

5.13 The composition of the construction waste stream is also dependent upon several factors. Studies conducted by WRAP have determined that due to similar factors as those used to determine the quantity of construction waste materials, the composition of construction waste arisings can vary widely, as demonstrated within Table 15.

Table 15 Indicative Construction Waste Stream Composition from different land uses

Land Use	Asphalt and Tar	Binders	Bricks	Canteen/office/adhoc waste	Concrete	Electrical and Electronic Equipment	Floor Coverings (Soft)	Furniture	Gypsum	Hazardous	Insulation	Liquids	Metals	Mixed	Oils	Other	Packaging	Plastics	Tiles and Ceramics	Timber	
Residential (including extra care facility)	0.9 %	0.16 %	5.5 6%	0.8%	13.9 %	0.05%	0.07%	0.01 %	2.78 %	1.11%	27.7 3%	0.35 %	0.1 %	1.2 2%	27.6 5%	0.0 1%	1.8 4%	2.47%	1.7 %	0.68 %	10. 9%
Educa tion	1.73 %	0.09 6%	9.8 7%	1.98 %	5.7%	0.04%	0.22%	0%	3.5%	0.31%	24.8 4%	0.79 %	0%	1.8 8%	34.7 6%	0%	2.4 7%	3.23%	1.21 %	0.99 %	6.3 6%
Comm ercial Retail	6.03 %	0%	2.8 7%	1.76 %	19.0 3%	0.004 %	0.004 %	0%	0.61 %	0.4%	28.2 4%	0.2%	0.26 %	2.0 4%	32.1 2%	0.3 3%	0.7 6%	0.82%	0.92 %	0.1%	3.5 1%

Demolition

- 5.14 Demolition waste quantities have been estimated through a specialised calculation tool that incorporates data regarding the existing buildings, including construction type, footprint, and typical heights. Based on the available information, it is assumed the structures are of masonry construction with a combined area of 2,416 m². As building heights are not specified, an average height of 6 metres has been applied for estimation purposes.

Excavation

- 5.15 Due to the outline status of the planning application, specific details concerning excavation activities, including the removal of topsoil and subsoil, remain unavailable. Preliminary estimates suggest that the site contains approximately 19,000 m² of existing hardstanding, which is expected to be cleared as part of the development. As no intrusive site investigations have been undertaken to confirm the depth of this hardstanding, a notional thickness of 0.3 metres has been applied for estimation purposes.

Anticipated Construction and Excavation Waste Quantities

Construction

- 5.16 Quantities of waste arising during the construction phase (broken down by construction material) have been estimated and are detailed within Table 16. Other waste types such as doors, frames, partitioning, fixtures, and fittings etc. may also be generated, but quantities of this type of waste are not available at this stage.
- 5.17 The total quantity of waste anticipated to be generated from construction of Proposed Development is approximately **5,241.6 tonnes** (based on a GEA of 163,800 m²).
- 5.18 The precise composition and volume of this waste is likely to be dependent on several factors and will be further informed by the Principal Contractor, based on their experience on similar developments. At this stage, the estimates are high indicative level and based on generic benchmark values.

Table 16 Approximate Quantities of Materials arising during construction activities

Waste Categories	Approximate Quantity of Waste Anticipated to Arise during Construction (Tonnes)
Asphalt and Tar	61.63
Binders	7.53
Bricks	314.42
Canteen/office/ad hoc waste	51.17
Concrete	685.31
Electrical and Electronic Equipment	2.41
Floor Coverings (Soft)	4.37
Furniture	0.27
Gypsum	146.66

Waste Categories	Approximate Quantity of Waste Anticipated to Arise during Construction (Tonnes)
Hazardous	51.9
Inert	1,436.13
Insulation	21.13
Liquids	4.72
Metals	69.66
Mixed	1,502.72
Oils	1.12
Other	98.59
Packaging	131.21
Plastics	84.67
Tiles and Ceramics	36.58
Timber	529.42
Total	5,241.6

Demolition

5.19 Based on the information available, it is estimated that the demolition works will result in the generation of approximately 7,876 tonnes of waste.

Excavation

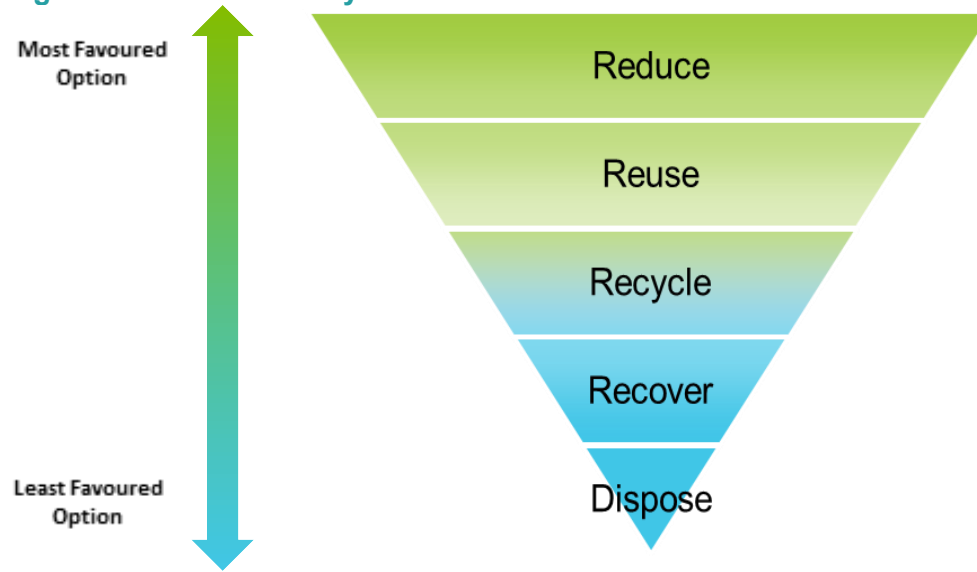
5.20 Based on the information available, it is noted that the excavation waste will result in the generation of approximately 11,400 tonnes of excess material (using a conversion factor of 2 tonnes/m³) material will arise from the bulk excavation.

Site Waste Management Plan

- 5.21 The Site Waste Management element of this Plan details the likely waste management measures and procedures to be implemented on-Site during the CD&E phases. Detailed information will be provided at subsequent stages by the Principal Contractor, once details and methods associated with the CD&E phases are known.
- 5.22 All waste management measures to be implemented on-Site will be in accordance with the waste hierarchy.

Waste Hierarchy

- 5.23 Those generating waste have a legal duty of care to comply with the Waste Hierarchy. The Waste Hierarchy is a concept that encourages the management and reduction of waste material. The aim is to recover the maximum value from projects/developments by reducing financial losses through material loss during the CD&E phases. The Waste Hierarchy is a complex process influenced by the optimal management of any given product/waste material. A basic representation of the Waste Hierarchy is provided in Figure 4 and the hierarchy will be considered as a guide to encourage the prevention of waste, followed by reuse, and then recycling.
- 5.24 When determining the most suitable option for waste disposal, the mode of waste transportation and alternatives to reduce adverse environmental effects, transport times and waste capacity must be considered.

Figure 4 Waste Hierarchy

5.25 All waste management options during the CD&E phases for the Proposed Development will consider the Site's location, natural environment, and available infrastructure. The options presented below will promote waste reduction in line with the Waste Hierarchy.

Waste Management Routes

Prevent

5.26 The aim is to implement management solutions (such as smart procurement etc) that will prevent the materials turning to waste in the first instance. For example, consolidated material delivery from the same supplier would lead to less packaging waste.

Reduce

5.27 The aim is to select materials during the design phase that have the potential to be reused at the end of the project life cycle (i.e., design to longevity).

Reuse

5.28 The aim is to use site-won materials in their current state and form. This can occur either on-site or off-site. For example, for the Proposed Development the Applicant could reuse the excavated soil for re-filling purposes.

Recycle

5.29 The aim is to recycle the materials that cannot be reused on-site for construction purpose (for example by crushing concrete or other inert wastes for road construction material). By recycling material on-site as far as practicable, carbon emissions and other adverse environmental effects, are reduced when compared with taking materials off-site.

Recover

5.30 The aim is to recover value from waste materials which cannot be otherwise reused or recycled. This can include recovery of energy from a suitable Energy-from-Waste (EfW) facility or otherwise using waste to replace other non-waste materials to achieve a beneficial outcome in an environmentally sound manner, such as application or deposition to land.

Disposal

5.31 The least preferred option is where the waste stream would be subject to a final disposal route, such as landfill.

5.32 The placing of waste disposal contracts will, where possible, consider the implications of long-distance travel in terms of health and safety risk, commercial terms, and increased emissions from vehicles. Wherever possible and practical, contracts are to be awarded to contractors that can manage waste locally (i.e., near to the Site).

5.33 All hazardous and non-hazardous wastes must be pre-treated prior to disposal to landfill. The methods of pre-treatment will enable the waste to meet the 'three-point test':

- It must be a physical, thermal, chemical or biological process including sorting,
- It must change the characteristics of the waste, and
- It must do so in order to:
 - Reduce its volume, or

- Reduce its hazardous nature, or
- Facilitate its handling, or
- Enhance its recovery.

5.34 Source segregation is a pre-treatment option and as such can be applied to waste generation on-site.

5.35 A declaration stating the pre-treatment method that applies to the waste will be a part of the Waste Transfer Note (WTN) for non-hazardous waste being disposed of to landfill.

Site Waste Management Measures

5.36 Where it is necessary to transport waste to and from the Site, this will be done in compliance with the Waste (England and Wales) Regulations 2011 (as amended) including: transporting waste via registered carriers, disposal to appropriately licensed sites and maintenance of appropriate waste transfer documentation. All relevant contractors will be required to investigate opportunities to minimise and reduce waste generation through the measures provided in Table 17.

5.37 The disposal of all waste or other materials removed from the Site will be undertaken in accordance with applicable legal requirements. Any waste effluent (including to be discharged into the local sewerage) will be tested and where necessary treated and disposed of at an appropriately licensed facility by a licensed specialist contractor.

5.38 The risk of infestation by pests or vermin on-Site will be minimised by making adequate arrangements for the disposal of food and other material that may attract pests. Where there is a local infestation, SADC environmental health officer (EHO) will be consulted about the action to be taken.

5.39 The Principal Contractor or an appropriate person (i.e., appointed by the Principal Contractor) will be responsible for on-Site waste management practices and will be agreed with SADC in advance of works. A list of management measures which should be employed on the Site are detailed within Table 17.

5.40 Should these methods be employed by the Principal Contractor prior to the commencement of the CD&E phases, it is likely that at least 95% of non-demolition waste by volume (i.e., construction waste and surplus excavated material) will be diverted from landfill, in line with the targets set in the Building Research Establishment (BRE) Environmental Assessment Method (BREEAM) Wst 01 – Construction Waste.

Table 17 Summary of Recommended Best Practices for On-Site Waste Management Measures

Waste Management Measure	Waste Stream	Description
Appropriate Concrete Storage used to Minimise Dust and Reduce Vehicle Movement	Concrete	Any processed concrete material should be stockpiled, and any dust generated shall be controlled with covers or dampened with water.
Audit Trail: Transportation and Disposal	All waste streams	- The Principal Contractor should dispose of all waste or other materials removed from the Site in accordance with regulatory requirements. - Suitable disposal sites should be identified by the Principal Contractor in consultation with relevant Local Authority and the Environment Agency. - The Principal Contractor should provide evidence that all waste has been deposited or transferred to the correct place and by appropriately licensed contractors (i.e. an audit trail). - Waste Transfer Notes (for non-hazardous waste) should be used to document waste production within the confines of the Site and movement to external facilities. These notes will detail the type of waste, waste volume, waste classification, contractor, ultimate disposal route and other necessary information. - Records should be updated documenting that all waste transferred or disposed has been correctly processed with evidence of signed waste transfer notes that will be kept on-Site for inspection whenever requested (as amended).
Surface Drainage, Pumped Ground Water, Ground Waste Seepage and Dewatering of the Site	Liquid Waste	- Adequate control measures to control both pumped groundwater and surface water runoff during the construction operations should be in place. These would include planning of discharges from groundwater pumping operations. - All surface drainage and dewatering of the Site should pass through a settlement tank or lagoon as required, prior to entering the foul water sewer. Discharge arrangements into the foul water sewer should be agreed with Thames Water Utilities Limited (TWUL). - Segregation of work areas and the sequencing of construction operations such that any areas of contamination located up hydraulic gradient of other areas should be addressed first to reduce the risk of re-contamination.
Liquid Disposal	Liquid Waste	The Principal Contractor should check that any water, which may have come into contact with contaminated materials, will be disposed of in accordance with the Water Resources Act 1991 (Ref. 30), and to the satisfaction of the Environment Agency or TWUL.
Wheel Washers and Rainwater Harvesting Systems	Liquid Waste	The use of recycling water systems such as wheel washers and rainwater harvesting systems for use in equipment and vehicle washing should be investigated to maximise reuse and to reduce energy consumption.
Storage	All Waste Streams	All storage areas should be fenced off with appropriate signage.

Waste Management Measure	Waste Stream	Description
		- On-Site segregation receptacles should be marked, clearly signposted and easily accessible (note there is a national coding and label scheme for bins). - All waste containers and storage areas should be secure (e.g., containers have lids) to prevent waste escaping and prevent fly tipping within the area. - The storage of potentially polluting plant and materials should be limited as far as possible. For example, plant could be re-fuelled from visiting fuel trucks rather than from on-Site fuel bowzers. - All spoil should also be stored on impermeable surfaced areas, with bunding, to the satisfaction of the Environment Agency in order to prevent potential contaminated material coming into contact with flora or fauna. - The bunded areas should also prevent contact with water, which would allow contaminants to seep out into surrounding watercourses, or leach to groundwater, and have damaging effects on both humans and wildlife. - Spill kits should be provided at appropriate locations. - Covering of impacted soil stockpiles with plastic sheeting or equivalent to minimise contamination run-off. - Waste should be stored in designated waste storage areas and waste will be stored adequately to avoid pollution of the environment, harm to human health or adverse amenity impacts (e.g., dust generation during dry seasons). - If on-Site segregation is not possible, off-Site sorting of mixed wastes should be undertaken in preference to disposal.
Damping Down of Surfaces	All Waste Streams	Damping down of surfaces during spells of dry weather and brushing/water spraying of heavily used hard surfaces/access points across the Site should take place as required.
Prevention of On-Site Waste Burning	All Waste Streams	Burning of waste or unwanted materials should not be permitted on-Site.
Sealing of Containers	All Hazardous Materials	All hazardous materials including chemicals, cleaning agents, solvents and solvent containing products should be properly sealed in containers (of 110% volume of materials stored) at the end of each day prior to storage in appropriately protected and bunded storage areas.
Use of Personal Protective Equipment	N/A	All CD&E workers should be required to use appropriate Personal Protective Equipment (PPE) whilst performing activities on-Site.
Segregation of Wastes	All Waste Streams	The Principal Contractor should ascertain that on-Site segregation is considered in the first instance following assessment of waste types and quantities to arise at various stages of the project and the local waste reprocessing market.

Waste Management Measure	Waste Stream	Description
		- Waste segregation strategies should be developed and implemented in-line with the overall logistics plan for the Site, waste streams should be sorted on-Site where practical. - Hazardous waste and substances hazardous to health, for example gypsum / plasterboard and liquid waste should be segregated and stored appropriately on-Site. - Excavated material that is either uncontaminated or which can be remediated to a suitable standard and can be used for site engineering and restoration purposes should be managed in accordance with the controls specified by the CL:AIRE Definition of Waste: Development Industry Code of Practice (Ref. 31). This will help to maximise opportunities for re-use of excavated material.
Off – Site sorting	Mixed Recyclables (metals, wood)	Off-Site sorting using co-mingled waste bins is another means of recovering waste materials and should be utilised by the Principal Contractor where appropriate. Off-Site sorting is particularly useful on constrained sites as it enables all materials to be placed in the same bin for transport. This material is then collected and delivered to a processing plant where they will be sorted mechanically for recycling, reprocessing or disposal to landfill.
Take Back Scheme	All Waste Streams	The Principal Contractor should explore take-back scheme arrangements with suppliers in order to allow for all packets and packaging to not be broken up and skipped.
Mobile Concrete Crusher Machine	Concrete	Notification to the local authority should be made if a mobile concrete crusher be used by the Site. Mobile crushing plans are authorised as Part B processes under the Environmental Permitting Regulations 2016.
Staff Training	N/A	All staff on-Site will be appropriately trained on how to minimise waste.
Classification and Management of Potentially Contaminated Materials	All Hazardous Materials	- The Contractor should make provision for a suitable environmental specialist to identify any hazardous waste as defined in the Hazardous Waste (England and Wales) Regulations 2005 and the List of Wastes (England) Regulations 2005. - Should any potentially contaminated materials be identified during the CD&E phases, work in the area should temporarily cease. The affected area should then undergo a subsequent assessment and an appropriate strategy for treatment and management of the material will be agreed with SADC. Site specific chemical tests should be conducted to ascertain the composition of the potential contamination and evaluate the material against the Technical Guide (WM3) (Ref. 32). In this way materials can be classified as inert, non-hazardous or hazardous and disposed of in accordance with relevant legislation or processed for off-Site treatment prior to final disposal. Wherever possible, material should be recycled and re-used (either on-Site or elsewhere).

Waste Minimisation and Material Resource Efficiency during Construction

5.41 This Outline CRMP identifies that procurement processes should be used to drive resource efficiency in the supply chain and set targets for on-Site waste management. In keeping with the bill of quantities and by undertaking waste minimisation and the waste management measures identified in Table 18, the Proposed Development will be able to identify and undertake cost savings. The costs will be monitored throughout the life of the project.

Table 18 Suggested Waste Minimisation Measures

Material Type	Suggested Measures
Reclaimed and recycled construction materials	Where reasonably possible, reclaimed goods and materials, and building components with recycled content should be used. This will be facilitated by the following means: • Contractors to be required to achieve certain target recycled content (by value) in construction, verified using the WRAP toolkit, • Contractors to be required to use the WRAP Recycled-content toolkit to establish the value of recycled content materials used in construction, • Making use of recycled-content materials (e.g., steels from certain sources; recycled polymers), • Wherever possible concrete to incorporate a proportion of Pulverised Fuel Ash (PVA) or Ground Granulated Blast Furnace Slag (GGBS) as a cement replacement, • Where appropriate, high recycled-content building materials and products to be used. In particular this is most likely to include various plastic products such as pipes and floor coverings, and • Contractors to be encouraged to use reclaimed goods and materials especially by means of a Material Information Exchange (e.g., Salvo).
Proscribed construction materials	Certain construction materials to be proscribed based on environmental considerations: • No materials proscribed in the Montreal Protocol to be used in the construction or fit-out of buildings. In particular, refrigerants and insulation materials must have zero Ozone Depletion Potential (ODP), and • No peat or natural weathered limestone to be used in buildings or landscaping.
New construction materials	Where possible, construction materials to be selected in regard to the environmental impact associated with their use. This will favour the following approaches:

- Sourcing materials from as close to the Site as possible, to reduce the emissions of greenhouse gases from vehicles and reduce long distance transportation,
- Majority of the timber and timber products to be sourced from Forest Stewardship Council (FSC) sources and the balance from known temperate sources,
- Insulation materials to be selected that have zero potential to reduce the ozone layer ("zero ODP"),
- Refrigerants to be selected that have zero potential to reduce the ozone layer ("zero ODP"),
- Materials (e.g. paints and floor coverings) used inside the buildings to be selected to ensure they do not emit Volatile Organic Compounds (VOCs),
- Insulation materials to have as low a Global Warming Potential (GWP) as possible, subject to their availability and commercial constraints, and
- Wherever possible, all materials used for the construction and fitting out of buildings to be selected from the A to C rated options given in "The Green Guide to Specification" published by the BRE (2009). The principal exception will be where new methods of construction are proposed that are not covered by this guide.

A monitoring system should be implemented that can accurately record and track the quantities of materials ordered. This will potentially help to reduce the amount of unused materials sent to landfill.

Material passports can be established that can document the information on the materials used for the construction of material.

5.42 The Principal Contractor will be responsible for on-Site waste management practices and will be agreed with SADC in advance of works. A list of additional best practice waste minimisation and material resource efficiency measures which could be employed on the Site are detailed within Table 19.

Table 19 Recommended On-Site Waste Management Measures to adhere to the Waste Hierarchy

Site Waste Management Measure	Waste Hierarchy Principle	Phase	Description
Just in Time Deliveries	Reduce/Prevention	Construction	The Principal Contractor should implement a just-in-time delivery system to try and avoid the over-ordering of materials and stockpiling. This will prevent surplus materials from risk of damage and disposal as waste.
Standardisation	Reduce/Prevention	Construction	Use of standard size components in design to eliminate waste at source where possible to do so. The Principal Contractor should implement standard sizes for most items ordered to avoid cutting on-Site; materials are to be ordered in size to allow for minimum waste production.
Pre-assembly and Pre-fabrication	Reduce/Prevention	Design & Construction	Throughout the design and construction phases of the Proposed Development, emphasis should be on pre-assembly and pre-fabrication of elements wherever practicable to minimise on-Site waste generation and packaging waste.

Site Waste Management Measure	Waste Hierarchy Principle	Phase	Description
Re-use of materials on-Site wherever feasible	Reuse	Construction	For example, the Government has set broad targets for the use of recycled and secondary aggregates, and in keeping with best practise, contractors will be required to maximise the proportion of materials recycled.
Re-use and recycling of materials off-Site	Reuse	All	Where re-use on-Site is not practical (for example through use of an off-Site waste segregation facility and re-sale for direct re-use or re-processing). In addition, material exchange platforms can be established that can assist in the repurposing of materials across construction sites.

Potential Recovery of Construction Waste

5.43 By implementing the management and mitigation measures outlined above, recovery of construction waste is possible. Although the exact recovery rate cannot be specified at this point, published data from BRE and WRAP have been used to set applicable recovery targets.

Construction

5.44 WRAP in their document 'Achieving good practice Waste Minimisation and Management (Ref. 33) provides standard, good and best practice recovery rates per material type using source segregation, as shown in Table 20.

Table 20 WRAP Standard, good and best practice recovery rates using source segregation

Material	Possible Disposal Route	Potential Recovery (standard practice)	Potential Recovery (good practice)	Potential Recovery (best practice)
Asphalt and Tar	Recycled, disposal	0%	0%	0%
Binders	Recycled, disposal	0%	0%	0%
Bricks	Recycled, disposal	75%	95%	100%
Canteen/office/adhoc	Recycled, disposal	12%	50%	75%
Concrete	Recycled, disposal	75%	95%	100%
Electrical and Electronic Equipment	Recycled, disposal	0%	70%	95%
Floor Covering (Soft)	Recycled, disposal	0%	0%	0%
Furniture	Recycled, disposal	15%	25%	50%
Gypsum	Recycled, disposal	30%	90%	95%
Hazardous	Recycled, disposal	50%	50%	50%
Inert	Recycled, disposal	75%	95%	100%
Insulation	Recycled, disposal	12%	50%	75%
Liquids	Recycled, disposal	100%	100%	100%
Metals	Recycled, disposal	95%	100%	100%
Mixed	Recycled, disposal	12%	50%	75%
Liquids - Oils	Recycled, disposal	100%	100%	100%
Mixed - Others	Recycled, disposal	12%	50%	75%
Packaging	Recycled, disposal	60%	85%	95%
Plastics	Recycled, disposal	60%	80%	95%
Tiles and Ceramics	Recycled, disposal	75%	85%	100%
Timber	Recycled, disposal	57%	90%	95%

Materials for which no information is provided, a 0% recovery is applied across all practices.

5.45 Based on the recovery rates provided in Table 20, the potential on-site recovery for the construction materials is outlined in Table 21.

Table 21 Potential Recovery Tonnages

Material	Potential Recovery (standard practice) tonnes	Potential Recovery (good practice) tonnes	Potential Recovery (best practice) tonnes
Asphalt and Tar	-	-	-
Binders	-	-	-
Bricks	235.81	298.70	314.42
Canteen/office/ad hoc waste	6.14	25.58	38.38
Concrete	513.98	651.04	685.31
Electrical and Electronic Equipment	-	1.69	2.29
Floor Coverings (Soft)	-	-	-
Furniture	0.04	0.07	0.13
Gypsum	44.00	132.00	139.33
Hazardous	25.95	25.95	25.95
Inert	1,077.10	1,364.32	1,436.13
Insulation	2.54	10.57	15.85
Liquids	4.72	4.72	4.72
Metals	66.17	69.66	69.66
Mixed	180.33	751.36	1,127.04
Oils	1.12	1.12	1.12
Other	11.83	49.30	73.95
Packaging	78.73	111.53	124.65
Plastics	50.80	67.74	80.44
Tiles and Ceramics	27.43	31.09	36.58
Timber	301.77	476.48	502.95

Material	Potential Recovery (standard practice) tonnes	Potential Recovery (good practice) tonnes	Potential Recovery (best practice) tonnes
Total	2,628.45	4,072.89	4,678.86

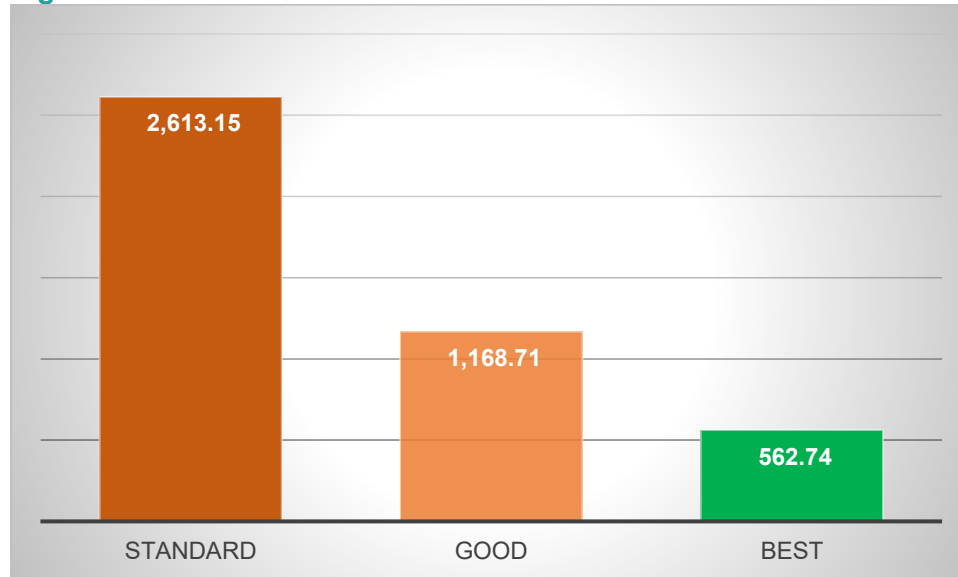
5.46 Considering the potential quantities of materials that can be recovered by implementing source segregation, Table 22 summarises the potential quantities of construction waste that will be sent to landfill in comparison to the quantities that are expected to be sent to landfill if conventional construction methods are implemented. This is also represented in Figure 5.

Table 22 Potential Reduced Quantities of Waste sent to Landfill

Quantity of construction waste (with conventional construction methods)	Quantity of Construction Waste disposed to landfill after mitigation measures implemented		
	Standard	Good	Best
5,241.6	2,613.15	1,168.71	562.74

Numbers may not add up due to rounding.

Figure 5 Potential Quantities of Construction Waste Sent to Landfill



Training and Communication

Introduction

5.47 The Principal Contractor should adhere to training and communication activities to fulfil the responsibilities required to maintain compliance with the detailed CRMP for the Proposed Development.

Training and communication activities

5.48 The Principal Contractor should carry out the following training and communication activities:

- Place information boards on waste management practices in accessible locations (e.g., the canteen).
- Distribute a copy of the detailed CRMP to all key personnel each time it is updated including where relevant:
 - Principal Designer,
 - Development Partners,
 - Site Manager, and
 - Subcontractor(s).
- Undertake inspections and independent audits to ascertain waste management is being undertaken in accordance with legal and project specific requirements and to identify if targets are being met.
- Provide up to date bulletins outlining results of audits and performances against re-use and recycling targets.
- Provide appropriate training and make sure it's up to date.

Training Documentation

5.49 Evidence of all training should be maintained on record, referenced and included within the detailed CRMP, which will be “living documents” reviewed and implemented throughout the construction period.

Waste Management Records, Monitoring and Review

Waste Documentation

5.50 All waste documentation will be retained at the main Site compound and at the Principal Contractor's Head Office following completion of the project. This includes the following:

- Detailed CRMP (two years after end of project),
- Waste transfer documentation (two years of WTNs and three years for hazardous waste consignment notes). No wastes will be transferred from Site unless accompanied by a completed, signed waste transfer note for inert / non-hazardous waste or consignment note for hazardous wastes. Approved transfer documentation will be used to accompany all wastes,
- Copies of any exemptions or permits, and
- Copies of waste carrier and disposal site licenses

5.51 The Principal Contractor will also be responsible for:

- Records of all waste removed from the Site are completed to demonstrate compliance with the requirements set out and kept within the CRMP,
- Training records are kept up to date within the CRMP, and
- Review records are kept up to date within the CRMP.

Waste Transfer Note (Non-Hazardous Waste)

5.52 All movements of waste from Site must be accompanied by a WTN, which will detail specific information. The Principal Contractor or the Principal Contractor's appointed person will check that each WTN contains the following:

- The name of the person receiving the waste and what they are authorised to do with that waste as a Registered Waste Carrier can only transport waste,
- Type of waste produced,
- The 2007 Standard Industrial Classification (SIC) code (2003 SIC code if it is hazardous waste),
- The six-digit European Waste Catalogue (EWC) number,
- Address of the producing site and details of the waste producer,
- Waste carrier's details including Waste Carrier Licence (WCL) number,
- Quantity of waste,
- How it is contained (for example 8-yard skip),
- Address of the receiving site (for example landfill) and the Environmental Permit or Exemption Number associated with the receiving site,
- The date to which the WTN applies,
- If the material is non-hazardous waste and it is destined for disposal directly to landfill, pre-treatment must have been applied and a declaration detailing treatment applied appended to the WTN, and
- A declaration that the waste has been treated in line with the requirements of the waste hierarchy.

- 5.53 Only the Principal Contractor or the Principal Contractor's appointed person will be authorised to sign the WTN. These WTN's will be maintained within the project file for a minimum period of three years.
- 5.54 By signing a WTN, the Principal Contractor or the Principal Contractor's appointed person is confirming that all details are correct and that the material is to be sent by a licensed waste carrier to a suitably licenced receiving site, permitted to receive that type of waste. The signature is binding of this fact and completes the WTN as a legal document, which must be retained for a minimum of two years (three years if it is hazardous).
- 5.55 The Principal Contractor or the Principal Contractor's appointed person signing the WTN shall additionally ensure that the Waste Carrier is using a suitable vehicle with adequate, covered containment for the waste.

Waste Consignment Note (Hazardous Waste)

- 5.56 A Hazardous Waste Consignment Note shall be completed for every movement of hazardous waste and should be retained for a three-year period. Prior to signing, Principal Contractor or the Principal Contractor's appointed person shall ensure that the Hazardous Waste Consignment Note includes:
- Hazardous Waste Premises Code (for sites in England and Wales only),
 - Consignment note code,
 - SIC Code,
 - Name and address of site from which waste is being moved,
 - Date of removal,
 - Type of waste produced, including the quantity and the EWC code,
 - The name of the person who is receiving the waste and what they are authorised to do with that waste, for example a Registered Waste Carrier can only transport waste, and
 - A final disposal site that is authorised to accept the waste.

Reporting, Monitoring and Auditing

- 5.57 This CRMP is outline and once details of the construction activities including but not limited to material quantities are available, it is envisioned that the Principal Contractor will update this outline CRMP or prepare a detailed CRMP. The detailed CRMP will include roles and responsibilities, details of control measures, activities to be undertaken to minimise environmental impact, and monitoring and record-keeping requirements. A commitment will also be included to periodically review the detailed CRMP and undertake regular environmental audits of its implementation during the construction phases of the Proposed Development.
- 5.58 The effectiveness of the detailed CRMP will depend upon the enforcement of its requirements on-Site by the Principal Contractor or the Principal Contractor's appointed person. Responsibility for the formal recording of waste movements lies with the Principal Contractor or the Principal Contractor's appointed person.
- 5.59 It is the responsibility of the Principal Contractor or the Principal Contractor's appointed person to maintain a log for all the materials that come on to Site, and details obtained from the waste disposal company of the exact amount of waste materials removed from Site. Details would also be provided outlining the recovery/disposal actions for the specific waste streams.
- 5.60 Waste receptacles should be monitored by the Principal Contractor or the Principal Contractor's appointed person so that contamination does not occur; the monitoring results should then be recorded and monitored for change with time.
- 5.61 The Principal Contractor or the Principal Contractor's appointed person should continually review the type of surplus materials being produced and, where possible, change the activities on-Site to maximise reuse or recycling. Disposal to landfill should be seen as the last option.
- 5.62 'Spot checks' may be made in relation to the completeness of any WTNs and any Hazardous Waste Consignment notes by the Applicant or their representatives.
- 5.63 If any problems are identified during the lifetime of the project in relation to exceeding the expected waste stream volumes in the detailed CRMP prepared by the Principal Contractor (e.g., failure to meet stated targets or issues relating to cost effective and legal transfer of waste materials), then they should be escalated to the Contracts Manager for further discussion on the best solution.
- 5.64 The Applicant's representative will undertake regular inspections and risk-based inspections (RBI) to provide continuous feedback on the environmental performance of the Site and highlight areas for commendation as well as areas for improvement.

Review of Detailed CRMP – Monitoring Record

- 5.65 The detailed CRMP should be reviewed at least once every six months during the lifetime of this project by the Principal Contractor to ensure that waste targets are being achieved and that realistic solutions are provided for unplanned events or abnormal wastes arising. The CRMP will also be reviewed if there is any significant change in the project. These reviews will involve the completion and submission of a monitoring report to the Applicant (or their representative) in an agreed format.
- 5.66 An example of a method of recording any change or alterations to the detailed CRMP is provided in Appendix B.

Waste Duty of Care

- 5.67 The Waste Duty of Care: Code of Practice (Ref. 34) sets out practical guidance on how to meet the waste duty of care requirements. This Code applies to anyone who imports, produces, carries, keeps, treats, disposes of or, as a dealer or broker have control of certain types of waste.
- 5.68 All waste generated from Site will be managed in line with the Waste Duty of Care requirements. Checks will be in place to confirm that waste is being appropriately managed, and to demonstrate that all reasonable measures have been taken to comply with waste hierarchy. This will include (but not limited to):
- Checking the licence for all waste carriers - to confirm the waste streams they are allowed to carry,
 - Checking the waste carrier vehicles, and
 - Checking the licence or permit for waste management facilities – to confirm the waste streams these facilities are allowed to accept.

- 5.69 In addition to the above, additional checks to confirm that waste is being appropriately managed, and to demonstrate that all reasonable measures will be taken to comply with waste hierarchy will be undertaken. For example, the Principal Contractor or the Principal Contractor's appointed person could inspect the waste collector's management sites before signing of the delivery to confirm that the waste has been disposed in line with the required legislations and any irregularities investigated and reported to the Site Manager (or the Council if required). Action may involve termination of contract and / or notification to the Environment Agency.

Site Inspection

- 5.70 The Principal Contractor or the Principal Contractor's appointed person should undertake a daily inspection of the construction areas including all areas used for waste management and storage. Any issues would then be recorded in the daily log along with any corrective action taken.

Closure Reporting

- 5.71 Within 3 months of the completion of works under a contract, a Waste Management Closure Report should be submitted to the Applicant (or their representative) to demonstrate the effective implementation, management and monitoring of construction waste and surplus excavated material during the construction lifetime of the Proposed Development. This report should at least include:
- The types and quantities of waste generated during different phases of construction,
 - Quantities or percentage of waste being recycled or re-used,
 - Quantities of waste being sent off-Site for treatment or disposal,
 - Information on the end destination,
 - Management routes, and
 - Notes on non-compliances and enforcement actions taken.

Key Roles and Responsibilities

5.72 This Plan is outline and provides high level information that includes roles and responsibilities, detail on control measures and activities to be undertaken to minimise environmental impact and monitoring and record-keeping requirements.

5.73 Table 23 details the proposed key roles and responsibilities for the CRMP.

Table 23 CRMP Key Roles and Responsibilities

Person	Timeframe	Responsibilities
Applicant	Pre-construction	The overriding responsibility for ensuring that a CRMP is prepared and implemented will lie with the Applicant. However, on appointment of a Principal Contractor(s), responsibility is shared.
		Must ascertain that a CRMP is prepared before any construction work or other site activity begins and ensure it is clear and comprehensive.
		Appoint Principal Contractor(s), provide a copy of the outline CRMP to the Principal Contractor(s), require the Principal Contractor(s) to monitor and update the CRMP, and ascertain that waste management tasks are included in contracts.
	During Construction	Recommended: - Pay waste contractors only when evidence of delivery at an authorised site is provided. - Undertake periodic checks and reviews.
	Post-construction	Required: - Keep a copy of CRMP for 2 years. Recommended: - Together with appointed Principal Contractor(s) undertake a review of waste arisings and destinations against estimated waste arisings and proposed management actions, identify strengths and weaknesses of waste management method, and explore opportunities for future improvement.
Principle Contractor(s)	Pre-construction	Appoint a suitably trained and qualified person responsible for waste management during construction.
		Update the CRMP in line with the on-Site activities
		Careful planning of construction materials ordering to avoid overordering and favour materials that have less or returnable/reusable packaging.
	During Construction	- Ascertain that CRMP is kept at either the Site office, or a central location, and ascertain that it is available to all contractors and that its location is known. - Ascertain subcontractors adhere to CRMP. - Provide induction and training to all workers, and brief sub-contractors. - Make and maintain arrangements to ensure co-operation and develop and promote sustainable waste management and monitoring of effectiveness.

	• Ascertain that waste produced during construction is re-used, recycled, or recovered. • Ascertain that appropriate storage and handling of materials to avoid wastage. • Review and update plan to record all waste removed from Site: – Identity of person removing waste and the waste carrier registration number. – Copy of written description of waste. – The site the waste is being taken to and whether it is permitted or exempt. • Ascertain that there are robust procedures in place for the estimating, monitoring, measuring and reporting of waste and also to review and update the CRMP. • Report waste (including waste quantities against estimated waste arisings) on a monthly basis as part of the Contractor's monthly report. • Update the plan (a minimum of every 6 months and recommended every 3 months) to record types and quantities of waste that is: – Re-used (whether on or off-Site). – Recycled (whether on or off-Site). – Sent for recovery (chemical or biological treatment, composting, incineration with energy and remedial treatment of soil) (whether on or off-Site). – Landfilled. – Disposed of by other means (including burning without recovery or where quantities of mixed waste that are landfilled, re-used, recycled or recovered are not known).
Post-construction	Required: Within 3 months the following will be undertaken: • Confirmation that the CRMP has been monitored and updated as required. • Explanation of differences between estimated waste arisings and likely destinations of wastes and actual performance. • An estimate of likely cost savings that have been achieved by implementing the CRMP. • A copy of CRMP will be kept for 2 years at place of work or Site office. Recommended: • Together with the Applicant, undertake review of waste arisings and destinations against estimated waste arisings and proposed management actions, identify strengths and weaknesses of waste management method, and opportunities for future improvement.

Waste Carriers

- 5.74 All waste generated from the Proposed Development shall be dealt with in accordance with legal requirements. The proposed waste carrier for each waste stream will be recorded in the registration table, with the Waste Carriers' license details appended to the detailed CRMP. An example table for demonstrating waste carrier registration is available in Appendix A.
- 5.75 The Principal Contractor will ensure that the following information is collected for all waste contractors:
- Contractor's name,
 - Waste Carrier License (WCL) number,
 - Date(s) of waste removal,
 - Type(s) of waste removed (i.e., non-hazardous waste, hazardous waste, inert (specify),
 - Method of treatment, recovery, or disposal (i.e., reuse, recycling, incineration, landfill etc.),
 - Volume or weight of waste removed, and
 - Costs associated with waste removal, transport, and treatment, including landfill tax charges where applicable.

Fly Tipping

- 5.76 Fly-tipping of waste on or adjacent to ongoing construction projects can be a significant issue.
- 5.77 Appropriate security controls will be in place regarding the management of waste generated from the Site. Should waste be fly tipped on the Site, the Principal Contractor has a Duty of Care to ensure that it is dealt with safely and disposed of correctly, even though they are not the producer of the waste. Any instance of fly-tipping will be reported to SADC.

6. Summary

- 6.1 In keeping with national, regional (HCC) and local (SADC) policy, this OSWRMS demonstrates how the Proposed Development will promote sustainable management methods for waste and recycling material throughout the operational and CD&E phases.
- 6.2 In following the Waste Hierarchy, the Proposed Development will promote resource efficiency to help reduce potential environmental impacts as a result. This OSWRMP has firstly looked to prevent waste, reuse resources where possible and recycle materials, minimising the generation of waste. The outline CRMP Section of this OSWRMP describes site waste management measures which can be adopted to reduce waste and comply with the waste hierarchy, helping eliminate all avoidable waste by 2050, in-line with targets set in: A Green Future: Our 25 Year Plan to Improve the Environment and the SADC Local Plan.
- 6.3 The operational design of the Proposed Development includes sufficient space to enable best practice recycling methods and flexibility in the future, section 4 of this OSWRMS shows how the Proposed Development has segregated and provided space for MDR, Paper & Card and Residual streams alongside side consideration given to Food waste, enabling futureproofing for mandatory food collections in-line with policies within: Our Waste, Our Resources: A Strategy for England.
- 6.4 The outline CRMP section of this OSWRMS recommends best Practice On-Site waste management measures. It is understood that by following the on-Site waste measures, it is envisioned that the Principal Contractor will commit to seeing 95% of non-hazardous construction and excavation waste from the Site being diverted from the landfill.
- 6.5 In addition, there is sufficient infrastructure present including the waste management facilities and landfill to manage the waste and recycling material arising during the operational and CD&E phases of the Proposed Development.

7. References

- Ref. 1 Her Majesty Statutory Office (HMSO), (2011); The Waste (England and Wales) Regulations (as amended).
- Ref. 2 British Standards Institute (BSI), (2005); BS 5906:2005, Waste Management in Buildings – Code of Practice
- Ref. 3 Department for Communities and Local Governments (DCLG), (2013); Building Regulations – Approved Document H: Drainage and Waste Disposal (Incorporating 2010, 2013, and 2015 amendments)
- Ref. 4 St Albans City and District Council (SADC), (2023); Wate and Recycling; Storage and Collection Guidance.
- Ref. 5 HMSO, (2011); The Animal By-Products (Enforcement) Regulations 2011.
- Ref. 6 HMSO, (2015); Clean Neighbourhoods and Environment Act 2015.
- Ref. 7 HMSO, (1989); Control of Pollution Act 1989.
- Ref. 8 HMSO, (2012); The Controlled Waste (England and Wales) Regulations 2012.
- Ref. 9 HMSO, (1995); Environment Act 1995 (as amended in 2022).
- Ref. 10 HMSO, (1990); Environmental Protection Act 1990.
- Ref. 11 HMSO, (1996); The Landfill Tax Regulations 1996.
- Ref. 12 HMSO, (2005); The List of Wastes (England) Regulations 2005.
- Ref. 13 HMSO, (2017); The Pollution Prevention and Control (Fees) (Miscellaneous Amendments) Regulations.
- Ref. 14 HMSO, (2007); The Producer Responsibility Obligations (Packaging Waste) Regulations 2007.
- Ref. 15 HMSO, (2005); The Hazardous Waste Regulations 2005 (as amended).
- Ref. 16 HMSO, (2009); The Waste Batteries and Accumulators Regulations 2009.
- Ref. 17 HMSO, (2013); The Waste Electrical and Electronic Equipment (WEEE) (as amended)
- Ref. 18 HMSO, (2022); The Environmental Act.
- Ref. 19 DCLG, (2024); National Planning Policy Framework
- Ref. 20 DCLG, (2014); National Planning Policy for Waste
- Ref. 21 Department for Environment, Food and Rural Affairs (DEFRA), (2021); Waste Management Plan for England.
- Ref. 22 HMSO, (2018); A Green Future: Our 25 Year Plan to Improve the Environment.
- Ref. 23 HMSO, (2018); Our Waste, Our Resources: A Strategy for England.
- Ref. 24 Hertfordshire County Council (HCC), (2012); Hertfordshire Waste Development Framework Waste Core Strategy & Development Management Policies Development Plan Document 2011-2026.
- Ref. 25 Wheathampstead Parish Council, (2022); Wheathampstead Neighbourhood Plan 2020 - 2035
- Ref. 26 SADC, (2024); Draft Local Plan 2041 – Regulation 19 Publication.
- Ref. 27 ADEPT, (2010); Making Space for Waste : Designing Waste Management in New Developments
- Ref. 28 Building Research Establishment (BRE), (2012); Waste Benchmark Data [online]
http://www.smartwaste.co.uk/filelibrary/benchmarks%20data/Waste_Benchmarks_for_new_build_projects_by_project_type_31_May_2012.pdf.

- Ref. 29 Construction Resources and Waste Platform (CRWP), (2009); Benchmarks and Baselines 2009 [online].
<http://www.wrap.org.uk/sites/files/wrap/Benchmarks%20and%20baselines%202009.pdf>
- Ref. 30 HMSO, (2011); The Water Resources Act.
- Ref. 31 Contaminated Land: Development Industry Code of Practice Version 2 (CL:AIRE) (2011) Definitions of Waste Code of Practice.
- Ref. 32 Guidance on the classification and assessment of waste (1st Edition v.1.2. GB) – Technical Guidance WM3.
- Ref. 33 Waste and Resource Action Programme (WRAP), Achieving good practice Waste Minimisation and Management.
- Ref. 34 DEFRA, (2018); Waste Duty of Care Code of Practice.

Appendix A Waste Carrier Detail Template

Waste type(s)	Waste Carrier Name	Contact Details	Date checked with EA (dd/mm/yyyy)	Registration Number	Expiry Date (dd/mm/yyyy)

Appendix B Example Recording Template

Site Waste Management Tracker									
Project Name		Project Phase							
Project Location		Responsible Person							
Applicant		Name of Person Filling in							
Principal Contractor		Description of the Phase							
		Reason for deviation from the Plan							
Summary of Waste Removal									
	Waste Description	Planned Quantity (m ³) to be removed	Actual Quantity (m ³) removed	Reasons for Deviation					
Inert									
Non-Hazardous									
Hazardous									
Daily Waste Removal									
	Date of removal	Waste Description	Qty. reused on-Site (m ³)	Qty. reused off-Site (m ³)	Qty. Recycled on-site (m ³)	Qty. recycled off-Site (m ³)	Qty. sent to Landfill/other special or exempt site (m ³)	Destination of Waste Materials	Carrier Details, Registration number, licence details

Inert									
Non-Hazardous									
Hazardous									