NORTHSTOWE
PHASE 2 PLANNING APPLICATION

Waste Strategy

August 2014

Homes & Communities Agency

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Northstowe Phase 2

Waste Strategy

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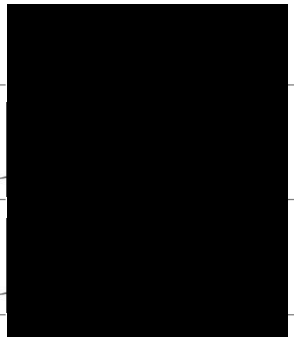
Homes and Communities Agency

Northstowe Phase 2

Waste Strategy

Author	Natalia Fernandez Ferro	
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Glossary of terms

BMW	Biodegradable Municipal Waste
BPEO	Best Practicable Environmental Option
BRE	Building Research Establishment
BREEAM	Building Research Establishment Environmental Assessment Methodology
CD&E	Construction, Demolition and Excavation
CDM	Construction, Design and Management
CI	Commercial and Industrial
CMS	Construction Management Strategy
DEFRA	Department for Environment, Food and Rural Affairs
DFD	Development Framework Document
DoW	Designing out Waste
DPD	Development Plan Document
EA	Environment Agency
EPR	Environmental Permitting Regulations
EU	European Union
HCA	Homes and Communities Agency
HRC	Household Recycling Centre
HWCN	Hazardous Waste Consignment Note
KPI	Key Performance Indicator
LDF	Local Development Framework
MBT	Mechanical Biological Treatment plant
MH	Household Municipal
MRF	Materials Recycling Facility
NAAP	Northstowe Area Action Plan
PPS	Planning Policy Statement
RECAP	Cambridge and Peterborough Partnership
SCDC	South Cambridgeshire District Council

SPD	Supplementary Planning Document
SSWAT	Site Specific Waste Analysis Tool
SWMP	Site Waste Management Plan
WAC	Waste Acceptance Criteria
WEEE	Waste Electrical and Electronic
WFD	Waste Framework Directive
WRAP	Waste and Resources Action Plan
WSE	Waste Strategy for England

1 Introduction

1.1.1.1 Hyder Consulting (UK) Ltd has been commissioned by the Homes and Communities Agency (HCA) to prepare a Waste Strategy in support of the planning application for the proposed development at Northstowe, Cambridgeshire.

1.1.1.2 This Strategy considers the potential impacts that may arise from waste generated during the construction, excavation, demolition and operational phases with the overall aim of developing a strategy for legislative compliance and good practice in the segregation, storage, collection, treatment and/or disposal of waste arisings.

1.1.1.3 This Strategy also outlines the opportunities for implementing waste mitigation measures for the potential impacts arising during each phase of the development in order to ensure that such measures are consistent with both national, regional and local waste policies and targets.

1.1.1.4 The proposed Northstowe Phase 2 development offers a unique opportunity to embed waste management infrastructure into the fabric of the urban environment. It provides a showcase for innovation not just in terms of the solutions explored, but in the nature of the development itself and the approach adopted. The challenges of the demographic landscape, such as housing density, type and layout set the stage for an innovative and exemplar approach to this work.

1.1.1.5 The ultimate aim of the strategy is to select the most appropriate waste collection system for the proposed development which saves space, provides value for money, minimises greenhouse gas emissions and maximises the recycling and recovery of material.

1.1.1.6 The proposed development comprises: up to 3,500 dwellings, two primary schools, the secondary school, the town centre including employment uses, formal and informal recreational space and landscaped areas, the eastern sports hub, the remainder of the western sports hub (to complete the provision delivered at Phase 1), the busway, a primary road to link to the southern access, construction haul route, engineering and infrastructure works. It also comprises the construction of a highway link (Southern Access Road (West)) between the proposed new town of Northstowe and the B1050, improvements to the B1050, and associated landscaping and drainage.

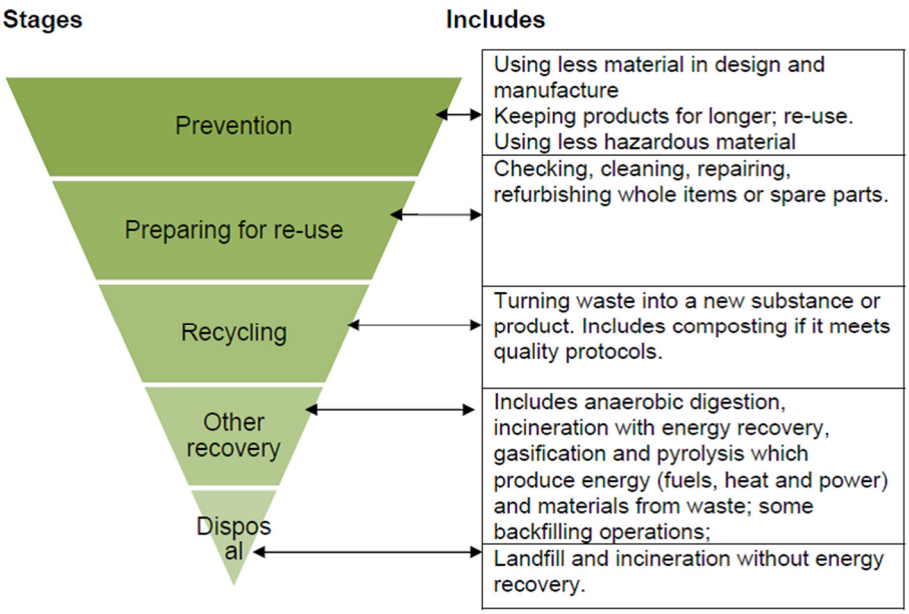
1.1.1.7 The proposed development would result in the generation of solid waste from construction, demolition and excavation (referred to in this strategy as CD&E waste), and the operation of the site due to the residential, commercial, leisure and education uses of the site (referred to in this strategy as operational waste).

1.1.1.8 Waste is defined in Article 3 of the European Framework Directive on waste (2008/98/EC) as “any substance or object which the holder discards or intends or is required to discard”, where the term:

- ‘waste holder’ is defined as the waste producer or the natural or legal person who is in possession of the waste; and
- ‘waste producer’ is defined as anyone whose activities produce waste (original waste producer) or anyone who carries out pre-processing, mixing or other operations resulting in a change in the nature or composition of this waste.

1.1.1.9 Waste can cause harm to the environment through its treatment and final disposal, and therefore, effective waste management should follow the principles of the waste hierarchy shown on Figure 1 below.

Figure 1: Waste hierarchy



1.1.1.10 This strategy considers the impact on the environment as a result of the generation of this waste and details measures to mitigate these impacts and implement best practice in the segregation, storage, collection, treatment and/or disposal of waste arisings.

1.1.1.11 The strategy also outlines the opportunities for implementing waste minimisation measures for the potential impacts arising during each phase of the proposed development in order to ensure that such measures are consistent with national, regional and local waste policies and targets.

- Demolition waste – The existing site is largely undeveloped land, however it is anticipated that there would be a small amount of demolition of existing buildings and structures present on-site.
- Construction and excavation waste – As the existing site is largely undeveloped land, it is anticipated that material waste likely to arise from the construction and excavation phases would consist of hard and inert materials, soils and stones, plastics, packaging (wooden and plastic), insulation material, miscellaneous metals, canteen and office waste.
- Operational waste – As the proposed development is predominantly residential, most waste generated during operation would be municipal household (MH) waste, in addition to quantities of waste from the commercial and public facilities.

2 Regulatory framework

2.1.1.1 The framework for the assessment is derived from a combination of national, regional and local waste and policies and measures of which the key elements are:

- Meet and exceed the Landfill Directive diversion targets for biodegradable municipal waste;
- Increase diversion from landfill of non-municipal waste; and
- Decouple waste growth (in all sectors) from economic growth and put more emphasis on waste prevention and re-use.

2.2 National waste policy

Table 1: National waste policy

Policy or legislation	Requirements	Proposed development response
EU Landfill Directive (Directive 1999/31/EC on the landfill of waste)	Establishes a framework for the management of waste across the European Community. It also defines certain terms, such as 'waste', 'recovery' and 'disposal', to ensure that a uniform approach is taken across the EU. Furthermore, it is an instrument for driving waste up the hierarchy through waste minimisation and increased levels of recycling and recovery. Sets out a number of procedures and criteria for construction, excavation and operational waste acceptance at landfills, including targets for the progressive reduction of biodegradable municipal waste (BMW) sent for disposal in landfill. The principles set up for the acceptance of hazardous and non-hazardous waste at relevant landfills includes ensuring that the waste will not endanger human health and the environment and satisfies the Waste Acceptance Criteria (WAC). They also set strict requirements for the acceptance of certain stable, non-reactive hazardous waste into non-hazardous waste landfills. The WAC for inert, non-hazardous and hazardous waste are a list of wastes which may be accepted at a landfill for inert waste without testing, limits on leachability of certain parameters and limits on the organic content of the waste. There are no numerical WAC limits on landfills for non-hazardous waste and in many cases, wastes will need to be sampled and tested to check they are within the limits.	This Waste Strategy has been carried out against the context of the Schedule 10 of the Environmental Permitting (England and Wales) Regulations (EPR) 2010 (through which the Landfill Directive is implemented) and assumes that at a minimum, the targets in this Schedule will be met. Recommendations have been provided detailing the end destination of construction, excavation waste.

Policy or legislation	Requirements	Proposed development response
The Waste Framework Directive (Directive 2008/98/EC on waste)	The Waste Framework Directive (WFD); (Directive 2008/98/EC on waste) came into force in December 2008 to replace the WFD (Directive 2006/12/EC) and contains the definition of waste. This definition is used to establish whether a material is a waste or not and: Sets recycling targets for non-hazardous construction and demolition waste (70% by weight by 2020: Article 10); Includes a provision which enables the European Commission to adopt EU-wide end-of-waste criteria for specified wastes. A waste specified in this way would cease to be waste when it has undergone a recovery operation and complies with the criteria set by the Commission; and Includes the obligation for Member States to set up waste prevention plans within five years from the adoption of the WFD.	The WFD is implemented through the Environmental Protection Act 1990 (as amended), the Duty of Care and Carriers and Brokers regimes and regulations and the EPR 2010.
Environmental Permitting (England and Wales) Regulations 2010	The EPR introduced a permitting and compliance regime, which implement many of the requirements of the European Environmental Directives and of national policy. The Schedules to the Regulations identify precise requirements, article by article, for each Directive which must be delivered through the environmental permitting regime. The most relevant for this project are: Part A installations and Part A mobile plant (Industrial Emissions Directive Chapter II - Integrated Pollution Prevention and Control) - Schedule 7; Domestic Part B installations and Part B mobile plant - Schedule 8; The Waste Framework Directive - Schedule 9: Waste Operations; and The Landfill Directive - Schedule 10: Landfill.	This Waste Strategy covers construction, excavation and operational waste and has been carried out against the context of the EPR 2010. Recommendations have been provided detailing the end destination of construction, excavation and operational waste.
The Hazardous Waste (England and Wales) Regulations 2005, Statutory Instrument 2005 No. 894, and 2009	The Hazardous Waste (England and Wales) Regulations 2005 (HWR 2005) were amended on 6 April 2009. This principally widened the scope of the exemption from hazardous waste producer registration with the Environment Agency. Under the Hazardous Waste Regulations 2005, “it is an offence to produce hazardous waste at premises, or remove that waste from premises, unless those premises are either registered with the Environment Agency or are exempt.”	The preliminary SWMP (Appendix B) includes a classification of the estimated waste that would be produced on-site as inert, non-hazardous or hazardous.

Policy or legislation	Requirements	Proposed development response
amendment SI 507	Where subcontractors produce hazardous waste, it will be removed under the Hazardous Waste Premises Registration for that site. The Hazardous Waste (England and Wales) Regulations 2005 require a Hazardous Waste Consignment Note (HWCN) to be produced for each consignment of hazardous waste removed from site. This may take the form of either: A "Standard Procedure" (single movement) HWCN, where waste is moved from one premises to a Consignee in a single journey; or A "Multiple Collection" HWCN, (as defined in Waste (England and Wales) Regulations 2011 Schedule 2)	It also includes details (e.g. license number) of each waste carrier and each waste management facility the proposed development could use. This would enable the proposed development to ensure compliance with the regulations.
Waste (England and Wales) Regulations 2011 SI 988 And Waste (England and Wales) (Amendment) Regulations 2012 SI 1889 (transposes the Waste Framework Directive)	The Waste (England and Wales) Regulations 2011 came into force on 29 March 2011. These Regulations update some aspects of waste controls. The need for waste permits and authorisations for certain activities therefore does not change. In summary, the regulations implement the WFD and: Require businesses to confirm that they have applied the waste management hierarchy when transferring waste and to include a declaration on their waste transfer note or consignment note; Require a new permit waste hierarchy permit condition and where appropriate a condition relating to mixing of hazardous waste; Introduce a two-tier system for waste carrier and broker registration, which includes those who carry their own waste, and introduces a new concept of a waste dealer and radioactive waste materials. These regulations replace: The Environmental Protection (Duty of Care) Regulations 1991, as amended; The Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations, as amended; and Amend Hazardous Waste (England and Wales) Regulations 2005 (Schedule 2) Following DEFRA's consultation (closed 20 January 2014) on proposed amendments to the Regulations, DEFRA proceeded with the proposed amendments to the 2011 Regulations and, from April 2014, allow alternative documentation to be used to record the written description of waste.	A preliminary SWMP covering CD&E waste has been produced. This has been carried out in accordance with the Waste (England and Wales) Regulations 2011 SI 988.

Policy or legislation	Requirements	Proposed development response
The Clean Neighborhoods and Environment Act 2005	It is the responsibility of everyone working in the construction industry to ensure that all waste is disposed of properly. All employees need to be made aware that if they are tasked with waste disposal this must be carried out in accordance with the law, or they risk being fined.	A preliminary SWMP (Appendix B) covering CD&E waste has been produced. This has been carried out against the context of the Clean Neighbourhoods and Environment Act 2005.
Waste Strategy for England 2007 (WSE 2007)	The WSE 2007 strategy builds on Waste Strategy 2000 and the progress since then but aims for greater ambition by addressing the key challenges for the future through additional steps. The Government's key objectives are to: Decouple waste growth (in all sectors) from economic growth and put more emphasis on waste prevention and re-use; Meet and exceed the Landfill Directive diversion targets for BMW in 2010, 2013 and 2020; Increase diversion from landfill of non-municipal waste and secure better integration of treatment for municipal and non-municipal waste; Secure the investment in infrastructure needed to divert waste from landfill and for the management of hazardous waste; and Get the most environmental benefit from that investment, through increased recycling of resources and recovery of energy from residual waste using a mix of technologies.	The assessment has been carried out against the context of the Waste Strategy for England 2007 The assessment has also applied the waste hierarchy with a focus on resource efficiency.
Review of Waste Policy in England 2011	This Review recognises the need to take an integrated approach to waste prevention, re-use and recycling. The Review contains actions and commitments, which set a clear direction towards a zero-waste economy. The Review presents the key principles in waste management policy: the waste hierarchy, what will be done to increase the diversion of waste away from landfill and producer and consumer responsibility. The Review recognises that at the very least the revised waste framework directive target to recycle 50% of waste from households by 2020 must be met.	The assessment has been carried out against the context of the Review, applying the waste hierarchy with a focus on resource efficiency.
National Planning Policy	The National Planning Policy Framework sets out the Government's planning policies for England and how these are expected to be applied.	The assessment has been carried out against all current

Policy or legislation	Requirements	Proposed development response
Framework (DCLG, March 2012)	This Framework does not contain specific waste policies, since national waste planning policy will be published as part of the National Waste Management Plan for England. However, local authorities preparing waste plans and taking decisions on waste applications should have regard to policies in this Framework so far as relevant. A DEFRA consultation seeking views on the draft of updated national waste planning policy for England closed on 23 September 2013. At the time of writing this feedback was still being analysed. The intention is that this updated waste policy should replace PPS10.	relevant waste management information and policies, and therefore addresses the requirements of the National Waste Management Plan.
Waste Management Plan for England (DEFRA, Dec 2013)	The Plan is a requirement of Article 28 of the Waste Framework Directive and is a compilation of existing waste management information and policies. In particular, it reflects the conclusions of the Government Review of Waste Policy in 2011.	The assessment has been carried out against all current relevant waste management information and policies, and therefore addresses the requirements of the Waste Management Plan.
Planning Policy Statement 10: Planning for Sustainable Waste Management (CLG Revised March 2011)	The publication of Planning Policy Statement 10; Planning for Sustainable Waste Management (PPS10) established decision making principles to which regional planning bodies and all planning authorities should adhere when preparing planning strategies. Paragraph 34 suggests that proposed new development should be supported by SWMPs to identify the volume and type of material to be demolished and or excavated, opportunities for the reuse and recovery of materials and to demonstrate how off-site disposal of waste will be minimised and managed. A DEFRA consultation seeking views on the draft of updated national waste planning policy for England closed on 23 September 2013. At the time of writing this feedback was still being analysed. The intention is that this updated waste policy should replace PPS10 and sit alongside the Waste Management Plan for England.	A Waste Strategy and a preliminary SWMP have been prepared to identify the volume and type of material to be excavated, opportunities for the reuse and recovery of materials and to demonstrate that no construction and excavation waste is sent to landfill, except for those types of waste where landfill is the least environmentally damaging option.
Strategy for Sustainable Construction	This Strategy is aimed at providing clarity around the existing policy framework and signalling the future	The assessment has been carried out to

Policy or legislation	Requirements	Proposed development response
(HM Government 2008)	direction of Government policy. It aims to realise the shared vision of sustainable construction by: Providing clarity to business on the Government's position by bringing together diverse regulations and initiatives relating to sustainability; Setting and committing to higher standards to help achieve sustainability in specific areas; and Making specific commitments by industry and Government to take the sustainable construction agenda forward. To deliver the Strategy, Government and industry have devised a set of overarching targets related to the 'ends' and 'means' of sustainable construction. The 'ends' relate directly to sustainability issues, such as climate change and biodiversity; the 'means' describe processes to help achieve the 'ends'. Overarching target: by 2012 to reduce CD&E waste to landfill by 50% compared to 2008.	reduce CD&E waste to landfill

2.3 Waste policy and guidance for the East of England and Cambridgeshire

2.3.1 Cambridgeshire and Peterborough Minerals and Waste Development Plan: Core Strategy (adopted 19 July 2011)

2.3.1.1 The Core Strategy sets out the strategic vision and objectives and includes a suite of development control policies to guide waste development in the county.

2.3.1.2 With regard to the proposed development, the Strategy states that there are opportunities through design for waste facilities to achieve greater assimilation with surrounding uses; minimising the visual impact of development, and maximising sustainability through use of sustainable materials, drainage and energy efficiency.

2.3.1.3 The following extracts are considered to be of relevance to the proposed development:

Policy CS24 Design of Sustainable Minerals and Waste Management Facilities

2.3.1.4 'All proposals for … waste management development will be required to achieve a high standard in their design and mitigation of environmental impacts including climate change. Waste management proposals must be consistent

with the guidance provided in The Location and Design of Waste Management Facilities (Supplementary Planning Document)'.

Policy CS28 Waste Minimisation, Reuse and Resource Recovery

2.3.1.5 'The Waste Planning Authorities will encourage waste minimisation, reuse and resource recovery by requiring:

- A waste management audit and strategy to put in place practicable measures to maximise waste minimisation, reuse, recovery and recycling of waste on all developments over the value of £300,000;
- Submission of a completed RECAP Waste Management Design Guide Toolkit Assessment;
- New development to contribute to the provision of bring sites (e.g. for bottles, paper and can recycling etc.). Contributions will be consistent with the RECAP Waste Management Design Guide; and
- Temporary waste recycling facilities in strategic development areas including Northstowe. These should maximise the reuse, recycling and recovery of inert waste streams form construction and demolition operations, and be in place throughout the construction phases of these major development areas'.

2.3.1.6 The RECAP Waste Management Design Guide Toolkit Assessment for the proposed development is contained in Appendix A.

2.3.2 Cambridgeshire and Peterborough Minerals and Waste Site Specific Proposals Development Plan Document (Adoption Version, 2011)

2.3.2.1 The Minerals and Waste Site Specific Proposals Development Plan Document (DPD) identifies allocated sites and the geographical extent of supporting policy boundaries for various uses, including waste management.

2.3.2.2 The Site Specific Proposals DPD confirms that the Area of Search for the Household Recycling Centre (Site W1U) is within the employment area in the new town. As a result of the review of the Northstowe master plan undertaken jointly with the local authorities, the employment area in Northstowe Phase 1 is now in a slightly different location. Nevertheless, the text in the DPD is correct and the Site Characteristics and Implementation Issues for the HRC are still relevant.

2.3.3 RECAP Partnership: Waste Management Design Guide Supplementary Planning Document (Adopted February 2012)

2.3.3.1 The RECAP Waste Management Design Guide ('RECAP Guide') provides advice on the design and provision of waste management infrastructure as part of residential and commercial developments including the following:

- Internal and external storage capacity – the amount of space required within homes and for the storage of bins to serve residential and commercial developments
- Location of waste storage – issues to be considered in relation to the location of the bins
- Waste storage infrastructure – a minimum specification for the storage of waste in residential and commercial developments
- Highway design – ensuring that waste collection vehicles can serve new developments effectively
- Additional waste management measures – complementary measures which can be introduced to support the effective management of waste
- Development contributions – how developers will contribute to the provision of waste infrastructure including the provision of waste storage containers, Household Recycling Centres (HRCs) and bring sites

2.3.3.2 The RECAP Guide also includes a Toolkit Assessment to be used by developers to demonstrate how they have addressed the waste management infrastructure requirements set out above as part of their proposals.

2.3.4 Joint Municipal Waste Management Strategy for Cambridgeshire and Peterborough 2008-2022

2.3.4.1 The Joint Municipal Waste Management Strategy sets out the key aims and objectives of the Cambridgeshire and Peterborough Waste Partnership. The strategy covers the period 2008-2022 and provides an update of the first partnership strategy issued in 2002.

2.3.4.2 The following objectives set out in the strategy will have particular impact for the management of waste at the proposed development:

- 'Objective 4: We will aim to drive the management of waste up the waste hierarchy of reduction, reuse, recycling and composting and energy recovery. Where waste is produced it should be viewed as a resource to be put to good use – disposal (i.e. landfill) should be the last option for dealing with it

- Objective 12: We will work together to reduce the amount of waste produced per person within the Joint Strategy Area by actively promoting waste prevention, reduction and reuse activities
- Objective 13: We will work together to reduce the amount of waste sent to landfill by maximising recycling and composting to achieve the national waste strategy targets as a minimum and work towards achieving the aspirational targets of recycling and composting the following percentages of MH waste:
  - 50 to 55% of MH waste by 2015; and
  - 55 to 60% of MH waste by 2020.
- Objective 14: We will seek to work locally to promote develop and stimulate sustainable recycling and composting initiative consistent with green procurement codes
- Objective 15: We will aim to ensure that residual waste is treated as a resource recovering both energy and value where possible at every stage
- Objective 17: We will facilitate, promote and encourage the reduction, reuse and recycling of non-municipal waste through partnership arrangements to reduce the amount of this waste sent to landfill (e.g. commercial, construction and demolition waste)'

2.3.5 Cambridgeshire Design Guide for Streets and Public Realm (2007)

2.3.5.1 The Design Guide complements national design guidance, such as the Government's Manual for Streets to promote the highest possible standards in all new developments, large and small.

2.3.5.2 The purpose of the Design Guide for Streets and Public Realm is to set out the key principles and aspirations that should underpin the detailed discussions about and requirements for the design of streets and public spaces that take place on a site-by-site basis. The aim is to integrate street design with the RECAP Guide so that there are adequate street widths and access arrangements to accommodate refuse and recycling vehicles so that suitably located waste and recycling collection points can be reached and serviced.

2.4 Local waste policy

2.4.1 Development Control Policies Development Plan Document (2007)

2.4.1.1 The Development Control Policies document guides decisions on planning applications within South Cambridgeshire.

2.4.1.2 The following extract is considered to be of relevance to the proposed development:

Policy DP/6 Construction methods

2.4.1.3 'Where practicable, development which by its nature or extent is likely to have some adverse impact upon the local environmental and amenity during construction and or is likely to generate construction waste should:

- Recycle construction waste
- Prepare a 'Resource, Reuse and Recycling Scheme' to cover all waste arising during the construction
- Be bound by a 'Considerate Contractors Scheme' or similar arrangement, including the restriction of noisy operations to normal working hours
- Where appropriate accommodate construction spoil within the development, taking account of the landscape character and avoiding creation of features alien to the topography
- Maximise the reuse and recycling of any suitable raw materials currently available on sites during construction, such as redundant buildings or infrastructure'

2.4.2 District Design Guide: High Quality and Sustainable Development in South Cambridgeshire Supplementary Planning Document (2010)

2.4.2.1 The District Design Guide Supplementary Planning Document (SPD) forms part of the South Cambridgeshire Local Development Framework (LDF). The purpose of the District Design Guide is to ensure delivery of sensitively and appropriately designed sustainable developments. The document sets out important design principles based on recognised good practice and explains key requirements of South Cambridgeshire District Council (SCDC) that will be taken into account when considering planning proposals.

2.4.2.2 The following extracts from the District Design Guide are considered to be of relevance to the proposed development:

Chapter 8 – Environmental Sustainability

Recycle construction waste

2.4.2.3 Principles: Applicants are expected to ensure that their proposals incorporate the principles of the waste management hierarchy. The least preferred option is disposal to landfill and the most preferred option is, through careful design, to negate or reduce the demand for materials that more conventionally, or less thoughtfully, would otherwise have been required.

Waste Hierarchy

2.4.2.4 Essential requirements: Applicants should prepare a Resource Reuse and Recycling Scheme to cover all waste arising during the proposed construction and or demolition. Where possible, this should include the appropriate accommodation of construction spoil within the development and maximising

the reuse and recycling of any suitable raw materials currently available on-site during the construction, such as redundant buildings or infrastructure.

2.4.2.5 Delivery options: Applicants should demonstrate how they are planning to use recycled material, reduce waste and ensure that as much of this is reused or recycled as possible. Acting upon these objectives will probably require that the proposed development incorporates facilities for waste sorting and recycling alongside procedures to minimise waste and maximise recycling during construction and demolition.

Chapter 10 – Environmental health issues: waste and refuse collection and recycling – operational

2.4.2.6 Adequate, safe and secure provision should be provided for the storage of the waste and recycling materials 'collection receptacles (Council or Private Contractor), for all residential and non-residential buildings uses, without creating a nuisance or being unsightly for the occupants or the general streetscape.

2.4.2.7 To prevent the storage of such materials becoming a nuisance or unsightly in the future, the design of storage facilities should be sufficiently large to accommodate future expansion of recyclable material collected and therefore an increase in the number of recycling containers required to be stores.

2.4.2.8 Access for refuse vehicles is best provided by means of permeable grid layout, but where dead ends are unavoidable, turning heads must be provided, Development layouts and the provision of operational waste and recycling on-site must accord with Building Regulation H6 and the requirements of the Recycling in Cambridgeshire and Peterborough Partnership (RECAP) Waste Management Design Guide 2008 (RECAP Guide) and the Cambridgeshire Design Guide for Streets and Public Realm. The RECAP Guide was originally published by the RECAP Partnership in 2008 and adopted as SCDC policy in 2008. It was revised in 2011 by the County Council together with Peterborough City Council.

2.4.3 Northstowe Area Action Plan (2007)

2.4.3.1 The Northstowe Area Action Plan (NAAP) establishes an overall vision for the new town including its relationship with surrounding villages and its setting. It also sets out the policies and proposals to guide all the phases of development.

2.4.3.2 The NAAP states that Northstowe will consist of up to 10,000 new homes. Northstowe will have a town centre to serve the town and nearby villages. In addition, it will be a site for new employment, allowing for continuing growth in the high technology research and development sector. The Development Framework Document (DFD) complements and supports the policies of the NAAP.

2.4.3.3 The following extracts from the NAAP are considered to be of relevance to the proposed development in relation to waste management:

- Policy NS/24 Construction Strategy - Development at Northstowe will be required to recycle construction waste within the site during

construction and in the long term. Exceptions would include waste having potentially hazardous properties and any other materials where off-site treatment would be more appropriate. A 'Resource Re-use and Recycling Scheme' will be needed to address treatment of all waste arising during the development.

- **Policy NS/26 Construction Strategy –** The District Council would encourage the recycling of existing building materials by the granting of planning permission for a plant to process such materials into hardcore and aggregates which would be located towards the eastern edge of the Oakington Airfield.

2.4.3.4 Cambridgeshire County Council fulfils its waste legislative obligations under the Environmental Protection Act 1990 and other related legislation. They work in partnership with the district councils, who are the Waste Collection Authorities, through the Cambridgeshire and Peterborough Waste Partnership (RECAP).

2.4.4 RECAP Waste Management Design Guide

2.4.4.1 This Waste Management Design Guide (Dec 2007) addresses the issue of waste management in new developments and redevelopments of a residential, commercial or mixed (residential and commercial) nature.

2.4.4.2 The purpose of the guide is to:

- Provide details of the waste segregation, storage and collection requirements that designers and developers need to satisfy
- Be used as a strategic tool by Planning Authorities when assessing development applications
- Address the unique waste management problems presented by high density developments
- State the requirements for developer contributions to waste management infrastructure
- Outline the financial impact of waste management upon developers
- Highlight examples of good practice demonstrating what can be achieved
- Contribute to sustainability and reduce environmental impact

2.4.4.3 The guide sets out three aspirations:

- By design, waste management can be made accessible and convenient, facilitating effective segregation, storage and collection of waste, shaping habits and prioritising the issue of waste in the minds of the population
- Good design will lead to a reduction in the environmental impact of waste management and aid the development of waste recovery and recycling options
- By design, the Cambridgeshire and Peterborough areas can lead in waste management innovation and best practice becoming exemplar in the region and nationally

2.4.4.4 The RECAP guide contains a compliance Toolkit that will allow a developer, in consultation with the Local Authority, to make an effective evaluation of the waste management requirements upon them and demonstrate compliance as necessary.

2.4.4.5 The applicant is duly aware of the RECAP Waste Management Design Guide which has been used in the preparation of this Strategy. A copy of the Design Standards Checklist is provided as Appendix A.

2.4.5 Local Plan 2011-2031

2.4.5.1 The Local Plan is a set of policies and land allocations that will guide the future of the district up to 2031. Once adopted, all planning applications will be assessed against the policies in the Local Plan.

2.4.5.2 On 28 March 2014, the Local Plan and its supporting documents were submitted for independent examination to the Secretary of State for Communities and Local Government via the Planning Inspectorate.

2.4.5.3 The following extracts form Policy CC/6 are considered to be of relevance to the proposed development:

- Development which by its nature or extent is likely to have some adverse impact on the local environment and amenity during construction and/or generate construction waste must:
  - Carefully manage materials already on-site (including soils), or brought to the site, to reduce the amount of waste produced and maximise the reuse or recycling of materials either on-site or locally. Any construction spoil reused within the development should take account of the landscape character and avoid the creation of features alien to the topography
  - Ensure that constructors are considerate to neighbouring occupiers by restricting the hours of noisy operations and by locating storage compounds and using plant or machinery to avoid noise, smells, dust, visual or other adverse impacts
- Where practicable, construction traffic will be required to be routed to avoid roads passing through villages. Any temporary haul roads must:
  - Be agreed with the Local Planning Authority
  - Be located, designed and landscaped in such a way as to avoid any adverse impacts on existing residents and businesses
  - Have an agreed methodology for where they cross public rights of way
  - Include provision for the cleaning of vehicle tyres to avoid the deposition of mud / debris on the public highway and the generation of dust
- Applicants must submit supporting documents with any planning application to demonstrate how their development will comply with this policy; this should include a Construction Environmental Management

Plan (CEMP) or similar document and may include registration with the Considerate Constructors Scheme.

3 Methodology

3.1 Introduction

3.1.1.1 The waste strategy addresses potential impacts resulting from waste management and the use of resources associated with the works in the CD&E and operational phases of the proposed development. CD&E wastes are being dealt with separately to operational wastes.

3.1.1.2 The now repealed Site Waste Management Plan Regulations 2008 were previously the only legislative requirement governing the assessment of CD&E waste matters. However, the implementation of a SWMP remains industry best practice, and is a requirement of PPS10: Planning for Sustainable Waste Management[1]. The framework for the assessment of operational waste is derived from a combination of national, regional and local waste and policies combined with expert judgement.

3.1.1.3 The Waste Management Plan for England, 2013 confirms the UK's commitment to meets its target under the Waste Framework Directive of recovering at least 70% by weight, of construction and demolition waste (This relates to construction and demolition waste, excluding hazardous waste and naturally occurring material falling within code 17 05 04 (soils and stones not containing dangerous substances) in Schedule 1 to the List of Wastes (England) Regulations 2005 (SI 2005/895)).

3.2 Study area

3.2.1.1 In addition to the proposed development itself, the study area comprises SCDC for operational waste, and Cambridgeshire, Norfolk and Suffolk for CD&E waste (since data from SCDC is not available). The study area also comprises any waste facilities that would receive waste arising from CD&E and operational phases of the proposed development. Whilst the study area does not include the operation of these facilities, it is necessary to ensure that the facilities have the capacity and capability to support the proposed development deliver on its waste objectives and targets.

3.3 Consultation

3.3.1.1 Consultation with SCDC has been undertaken as part of the assessment to:

- Define the targets in the SCDC waste policies
- Discuss waste management aspirations for the proposed development and set targets
- Determine a formal position with regards to any future waste facilities in the region and implications on waste management at the proposed development
- Determine details of SCDC waste and recycling collection systems (materials collected, receptacles provided, frequency of collection etc.)

3.3.1.2 Further consultation will be required as the proposed development progresses.

[1] Planning Policy Statement 10: Planning for Sustainable Waste Management, Communities and Local Government, revised March 2011

3.4 Establishing baseline conditions

3.4.1 Construction, demolition and excavation (CD&E) waste

3.4.1.1 For the purpose of this waste strategy, waste refers to residential, commercial, leisure, education and infrastructure waste arisings from the CD&E phases. The baseline conditions include the current waste management infrastructure in Cambridgeshire, Norfolk and Suffolk and current performance in terms of the proportion of construction waste recycled to produce graded and ungraded aggregates and soil, used for engineering and capping and used on exempt sites.

3.4.1.2 Baseline conditions have been established through desk-top research, including the interrogation of key data bases such Building Research Establishment (BRE) benchmarks[2] and Environment Agency data tables[3].

3.4.2 Operational waste

3.4.2.1 For the purpose of this waste strategy, operational waste refers to residential, commercial, leisure and education waste arisings. The baseline conditions are the existing waste management system in SCDC, the quantities of waste and recyclables collected, and the performance in terms of the proportion recycled or composted.

3.4.2.2 Baseline conditions have been established through consultation with SCDC Environmental Services and desk-top research, including the interrogation WasteDataFlow[4] (the web based system for municipal waste data reporting by UK local authorities to government).

3.5 Forecasting waste arisings

3.5.1 Construction, demolition and excavation (CD&E) waste

3.5.1.1 For the purpose of this waste strategy, the CD&E waste produced during the construction phase would be affected by the types and methods of construction. At the time of the outline planning application submission, the types and methods of construction had not been decided and so it was not possible to accurately estimate the volume of waste arising from the construction. Benchmarking data from BRE, WRAP Netwaste wastage rates and the Northstowe Masterplan Cost Assessment Option A Phase 2 (Produced by Jones Lang LaSalle for Homes and Communities Agency, 11 June 2014) have been used to forecast the amount of construction and excavation waste arising from the buildings and the infrastructure works.

3.5.1.2 For the infrastructure elements of the proposed development, dimensions and specifications of some elements have been estimated to calculate the volumes of the key materials to be used.

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[2] Building Research Establishment Waste Benchmark Data, SmartWaste Plan, Issued 26th June 2012

[3] Environments Agency Conversion Table, https://www.hesa.ac.uk/dox/datacoll/c09042/Copy_of_EA_RATS_Conv_into_tonnages_Table.pdf

[4] http://www.wastedataflow.org/, 7th July 2014

These volumes have then been used to calculate key waste material volumes using wastage rates taken from the WRAP Netwaste Tool[5].

3.5.1.3 A pre-demolition or refurbishment audit of the three existing buildings, water tower and facilities associated with the barracks would be carried out post consent and therefore, at this stage, it has not been possible to accurately estimate the volume of waste arising from the demolition and or refurbishment. However, benchmarking data from BRE, WRAP Netwaste wastage rates and the existing buildings floor areas have been used to forecast the amount of demolition waste arising from these existing buildings and structures.

3.5.2 Operational waste

3.5.2.1 Forecast waste arisings have been established through consultation with SCDC, and desk-top research, including the interrogation WasteDataFlow[6] and the British Standard 5906:2005 (Produced by Jones Lang LaSalle for Homes and Communities Agency, 10 April 2014).

[5] Waste and Resources Action Programme, http://nwtool.wrap.org.uk/ToolHome.aspx

[6] http://www.wastedataflow.org/, 7th July 2014

4 Baseline conditions

4.1 Construction, demolition and excavation (CD&E) waste

4.1.1.1 Cambridgeshire, Norfolk and Suffolk has an estimated total CD&E waste arisings of 4,780,477 tonnes (CD&E Waste: Survey of Arisings and Use of Alternatives to Primary Aggregates in England, 2005). Of this total:

- 57% was recycled to produce graded and ungraded aggregates and soil (excluding topsoil) by the region's 56 recycling crushers;
- 34% entered licensed landfill sites (of this 12% was used for engineering and capping and 66% was waste); and
- 9% was used on exempt sites.

4.1.1.2 The proposed site is largely undeveloped land. There is a very limited amount of demolition occurring on-site. It is anticipated that only a small amount of demolition materials would need to be considered for incorporation into the construction phase of the project.

4.1.1.3 The regulations require that all construction-related waste removed from the proposed development is undertaken by a company that is authorised to do so. Table 2 below includes details for a selection of companies in the vicinity of the proposed development. It includes their waste carrier registration number and permit under the EPR 2007, or registered under those Regulations as a waste operation exempt from the need of such a permit.

Table 2: Waste management facilities

Services	Name	Location	Registration number
Waste Carriers	Cottenham Skips	CB24 8UG	CB/XN5475JC
	Cambridgeshire Recycling Ltd	CB4 6DQ	CB/AE5054ES
	Mick George Ltd	PE27 4YQ	CB/BN5911QW
Waste Management Facilities	John Henry's Tip	CB24 3DS	75042
	Malary Ltd - Cottenham Treatment Works	CB24 8PS	70205
	Cambridgeshire Recycling Ltd	CB4 6DQ	70109

4.2 Operational waste

4.2.1.1 Currently an alternating weekly collection system for the properties in SCDC jurisdiction is provided. In 2012-2013 this represented 62,520 households. For households, residual waste is collected on one week and co-mingled dry recyclables and mixed organics are collected the following week.

Table 3: Waste collections for households (kerbside collection)

Waste stream	Waste type	Collection arrangements
Co-mingled dry recyclables	Newspapers and magazines, telephone directories, catalogues, envelopes, junk mail and shredded paper.	Paper only caddy collected fortnightly.
	Plastic bottles and tops, plastic packaging, plastic bags, plastic film and food wrapping, glass jars and bottles, food and drink cans, aerosols, tin foil and foil trays, cartons, cardboard, greeting cards and wrapping paper	Blue bins with mixed recyclabes collected fortnightly.
Mixed organics	Garden waste and cooked and uncooked food waste (meat, fish and dairy).	Green bins collected fortnightly.
Residual waste	Non-recyclable and non-compostable material	Black bins collected fortnightly.
Batteries	Batteries including AA and AAA cells, button batteries, size C and D and any laptop and mobile battery.	Kerbside collection weekly, placing the bag outside the blue bins.

4.2.1.2 A chargeable bulky waste collections service is provided to all residents for items such as furniture and white goods. SCDC is also running a trial textile and shoe collection service since January 2013. The trial covers 5,000 households and, if successful, may be rolled out across the district.

4.2.1.3 Dry recyclables from blue bins are currently delivered to a Materials Recycling Facility (MRF) at AmeyCespa near Waterbeach. Separately collected paper is transported from AmeyCespa to a mill in Kent where it is made into newsprint.

4.2.1.4 The waste from the green bins is taken to AmeyCespa and goes through an intensive 'in-vessel' composting process. The resulting soil conditioner is sold for local agriculture, and is also available to householders to collect free of charge from the site.

4.2.1.5 Residual waste from black bins is also taken to AmeyCespa and passed through the Mechanical Biological Treatment plant (MBT). However, at the time of writing this strategy, the MBT was out of action. It is expected to be up and running again at the end of 2014.

4.2.1.6 There are over 85 bring sites around SCDC, such as supermarket car parks, pub car parks and other community focal points where there are glass, paper, can and textile banks.

4.2.1.7 SCDC provides ten household waste recycling centres to receive waste exclusively from householders in Cambridgeshire for recycling and disposal. An additional waste recycling centre

has been included as part of Phase 1 proposals to be delivered by the joint promoters (as defined within the Northstowe Phase 1 Waste Management Strategy submitted in February 2012.

4.2.2 Waste Statistics

4.2.2.1 WasteDataFlow is the web based system for municipal waste data reporting by UK local authorities to government. This resource has been interrogated to determine the current SCDC baseline in terms of Municipal Household (MH) waste, residual waste and recycling rates.

Table 4: SCDC waste arisings data and recycling rates

Metric	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Total MH waste (t)	59,444	58,649	57,575	58,353	57,501	59,582
Residual waste per household (kg)	468.06	451.77	438.59	412.39	384.78	416.61
Total residual MH waste (t)	27,833	27,190	26,815	25,473	23,999	26,046
Total recycling %	53.18%	53.64%	53.43%	56.35%	58.26%	55.97%

4.2.2.2 From the Table 4 above, it can be seen that SCDC achieved a recycling rate of 55.97% in 2012/13. This performance is compared against regional and national performance in Table 5 below. From this it is clear that SCDC recycling rates are well above the England average.

Table 5: Recycling rates

Area	2010/11	2011/12	2012/13
SCDC	56.35%	58.26%	55.97%
East England	45.74%	46.75%	45.92%
England	40.50%	42.01%	41.97%

5 Forecast waste arisings

5.1 Construction, demolition and excavation (CD&E) waste

5.1.1.1 The potential waste types that could arise during the CD&E phases are summarised in Table 6 below.

Table 6: Potential waste sources during site construction

Construction phase	Potential wastes produced	Classification of waste
Excavation	Made ground, soil and sub-soils	Inert; and or Non-hazardous; and or Potentially hazardous if it contains sufficiently high levels of heavy metals.
Construction and demolition	Construction materials, such as concrete, bricks, plastics, metals, plasterboard, timber, paint, etc.	Inert; and or, Non-hazardous; and or, Hazardous.
	Made ground, soil and sub-soils	Non-hazardous, and Hazardous if it contains sufficiently high levels of heavy metals.

5.1.2 Construction waste

5.1.2.1 Using waste benchmarking data from BRE, WRAP NetWaste wastage rates[7] and the Northstowe Masterplan Cost Assessment Option A Phase 2[8] the amount of construction waste for the buildings has been forecast. The forecasts are shown in Table 7 below.

Table 7: Forecast construction waste arisings

Construction Type	Average waste (m^3/100m^2)	Development size (m^2)	Forecast waste arising (m^3)	Average waste (tonnes/ 100m^2)[9]	Forecast waste arising (tonnes)*
Residential	15.28	466,572	67,751	7.82	36,467
Convenience retail	15.32	10,000	1,532	9.05	905
Service retail	15.32	25,000	3,829	9.05	2,262
Food and drink	15.32	3,500	1,532	25.86	905
Office	20.14	16,200	3,262	11.67	1,891

[7] Waste and Resources Action Programme NetWaste Tool Guide to Reference Data Version 1.0, May 2008

[8] Northstowe Master Cost assessment Option A Phase 2, 11th June 2014

[9] Average waste benchmark calculated using individual materials' wastage rates

Construction Type	Average waste ($m^3/100m^2$)	Development size (m^2)	Forecast waste arising (m^3)	Average waste (tonnes/ $100m^2$)[9]	Forecast waste arising (tonnes)*
Light industrial	20.06	5,000	1,003	14.41	720
Leisure	13.76	10,000	1,376	4.24	424
Health Community	13.76	6,000	904	7.02	421
Youth facility	13.76	2,000	275	4.24	85
Place of worship	13.76	1,000	138	4.24	42
Primary school 1	13.3	5,000	665	5.58	280
Officers mess to primary school	13.3	2,211	294	5.58	123
Secondary school	13.3	10,000	1,330	5.58	558
Public house	15.32	539	83	9.05	49
Infrastructure			3,574		3,200
Total			87,547		48,332

Table 8: Forecast construction waste arisings by phase from buildings and infrastructure

Phase	Forecast waste arising (m^3)	Forecast waste arising (tonnes)
A	1,387	609
B	12,859	7,109
C	19,718	11,068
D	19,770	11,839
E	24,898	113,775
F	8,914	4,932
Total	87,547	48,332

5.1.2.3 The composition of construction waste arisings from buildings is likely to be similar to that shown in Table 9 below.

Table 9: Key construction materials waste streams on typical new build (BRE 2008)

Waste material	Wastage percentage
Packaging (including wood pallets, plastic, cardboard, tins)	25 – 35
Plasterboard	5 – 36
Rubble (including broken bricks, blocks, tiles)	35 – 40
Timber (excluding pallets)	15 – 25
Cement and plaster	10 – 17
Insulation	6 – 15
Metal	3 – 9
Dry concrete products – blocks, slabs, etc.	2 – 12
Plastic products (excluding packaging)	1 -11
Ceramic material	1 - 8

5.1.2.4 The volume of waste arising from construction would depend on how the site is managed and the implementation of the SWMP.

5.1.3 Demolition waste

5.1.3.1 It is anticipated that any non-hazardous waste generated during demolition may be reused on-site for landscaping or other purposes, therefore only minimal volumes of non-hazardous material may require disposal off-site. Hazardous materials, such as asbestos would be disposed off-site in an appropriate manner.

5.1.3.2 Using waste benchmarking data from BRE, WRAP NetWaste wastage rates and the Northstowe buildings internal floor areas the amount of demolition waste has been forecast. The forecasts are shown in

5.1.3.3 Table 10 below. It has been assumed that the majority of the demolition would be carried out during Phase E.

Table 10: Forecast demolition waste arisings

Description	Average waste ($m^3/100m^2$)	Structure size (m^2)	Forecast waste arising (m^3)	Average waste (tonnes/ $100m^2$)[10]	Forecast waste arising (tonnes)
Building 2 – allowance for soft strip back to cold shell	21	6,633	1,382	15	1,023
Building 7 – allowance for soft strip back to cold shell	21	539	112	15	83
Building 14 – allowance for hard demolition	21	1,086	226	15	167
Water tower			6		3
Break out concrete slabs to existing buildings including crushing – assumed 450mm thick			14,704		18,233
Break out and any surrounding hardstandings/roads to service buildings including crushing – assumed 450mm thick			25,187		31,232
Total			41,618		50,741

5.1.4 Excavation waste

5.1.4.1 The alignment, location, level and grading of both the Main Phase 2 development area and the Southern Access Road (West) have been designed to minimise excavation volumes. They have also been designed to enable flexibility in the landscaping, so that they can accommodate the changes in spoil volumes that may arise when site conditions differ from those assumed during the design. Both these approaches should enable all excavation waste (except where contaminated) to be reused on-site where conditions allow. It is expected that only minimal volumes of material may require disposal off-site.

5.1.4.2 The composition of waste arisings from excavation activities is likely to be similar to that shown in Table 11 below.

Table 11: Forecast excavated materials

Material type	Forecast waste arising (m^3)	Average waste (tonnes/ m^3) (WRAP benchmarks)	Forecast waste arising (tonnes)*
Soils and stones (groundworks)	1,094,000	1.25	1,367,500
Soils and stones (infrastructure)	33,018	1.25	41,273
Total	1,124,183	1.25	1,408,773

5.1.4.3 The total volume of excavation waste requiring disposal off-site would depend on how the site is managed and the good implementation of the SWMP.

[10] Average waste benchmark calculated using individual materials' wastage rates

5.2 Operational waste

5.2.1 Municipal household (MH) waste – houses and flats

5.2.1.1 The residential component of the proposed development would comprise of approximately 3,500 residential units. Likely volumes of MH waste arising from the proposed development would be estimated to identify available options for recycling, reuse, treatment or disposal.

5.2.1.2 The types of MH waste that would arise during operation are summarised in Table 12 below.

Table 12: Types of waste generated during site operation

Waste stream	Constituents	Recyclable, reusable or non-recyclable
Mixed organics	Food waste cooked and uncooked, pruning waste, pet straw and sawdust, grass cuttings, plants and leaves).	Recyclable
Dry recyclables	Food tins and drinks cans, plastic bottles and containers, newspapers, directories and magazines, paper and card and aerosol cans	Recyclable
Glass	All colours of glass jars and bottles	Recyclable
Bulky	Furniture, white goods	Recyclable or non-recyclable
Textiles	Clothes and small pieces of material	Recyclable
Residual	Any of the above that has not been separated for recycling: non-recyclable food packaging, plastic film, disposable nappies	Recyclable or non-recyclable

5.2.1.3 Based on recent WasteDataFlow returns from SCDC it is estimated that approximately 3,336 tonnes of MH waste (including domestic and non-domestic waste) would be generated per annum during operation of the proposed development. This figure represents the total household operations and does not take into account of any proposed recycling or composting. If current recycling rates (55.97% 2012/13) for SCDC are applied to this figure then an annual residual waste level of 1,458 tonnes of waste is projected. Current waste production levels and subsequent residual waste levels are used to present a worst case scenario of no improvement in both of these areas.

5.2.1.4 Likely composition of MH waste is set out in Table 13 below.

Table 13: Key operational materials waste streams

Waste material	Wastage rate (percentage)	Forecast waste arisings (tonnes)
Commingled materials	33.79%	492.66
Mixed garden and food waste	50.89%	741.99
Paper	14.50%	211.49
Post-consumer, non-automotive batteries	0.03%	0.48
Textiles and footwear	0.12%	1.75

Waste material	Wastage rate (percentage)	Forecast waste arisings (tonnes)
Paper and card	0.03%	0.43
Plastic	0.08%	1.23
Textiles	0.55%	8.05
WEEE	0.003%	0.05

5.2.2 Commercial and industrial (CI) waste

5.2.2.1 Likely volumes of commercial and industrial (CI) waste have been calculated based on the most appropriate available data. Where applicable, the British Standard 5906:2005 Waste Management in Buildings – Code of Practice, the Environment Agency's Waste Benchmarking Tool and Environment Agency conversion factors have been used as guidance to identify the potential waste arisings from the CI development.

5.2.2.2 At this stage, it is estimated that the proposed development could potentially generate around 20,690 tonnes of CI waste per annum (around 397 tonnes per week). The quantities of CI waste arisings from buildings is likely to be similar to that shown in Table 14 below.

Table 14: Estimated annual waste arisings from CI uses

Building	Equation for waste arisings	Proposed development size (m^2)	Annual waste arisings (tonnes)
Convenience retail	10 litre per m^2 per week	10,000	1,408
Comparison/service retail	100 litre per m^2 per week	25,000	3,520
Food and drink	0.03 tonnes per m^2 per year	2,500	75
Offices	50 litres per employee per week	16,200	518
Light industrial	5 litre per m^2 per week	5,000	352
Leisure	100 litre per m^2 per week	10,000	14,079
Health, community and fitness centre	5 litre per m^2 per week	6,000	422
Youth facility	5 litre per m^2 per week	2,000	141
Place of worship	5 litre per m^2 per week	1,000	70
Primary school 1	45 kg per pupil		27
Primary school 2	45 kg per pupil		27
Secondary school	45 kg per pupil		35
Public house	0.03 tonnes per m^2 per year	539	16
TOTAL			20,690

5.2.2.4 The calculation and composition of CI waste generation is only indicative and should be further refined at a later design stage when the specific elements have been confirmed. This will enable the expected number and type of waste containers, the storage requirements and their collection frequencies to be defined.

5.2.2.5 The estimated office space is 16,200 m^2, although the layout and occupancy rates are only indicative at this stage. The office space could have an estimate occupancy of 737 people based on 22 m^2 per person.

5.2.2.6 Following the socio-economic chapter assumptions, it has been assumed that there will be 600 pupils at the primary schools and 1,600 at the secondary school.

6 Minimisation and management strategy

6.1 Construction, demolition and excavation (CD&E) waste

6.1.1.1 This section outlines the proposed strategy to minimise and successfully manage the waste arisings from the CD&E phases of the proposed development. It provides guidance on issues relating to best practice for the management of waste which would allow the total waste production to be minimised without impacting the cost of the proposed development.

6.1.2 Targets and objectives

6.1.2.1 The WFD on waste sets a five-step hierarchy of waste management options, with waste prevention as the preferred option, and then reuse, recycling, recovery (including energy recovery) and safe disposal, in descending order. It sets a 70% target for non-hazardous construction and demolition waste, to be reached by the UK by 2020. Targets are cascaded through national strategies, in this case the Waste Strategy for England (DEFRA 2007).

6.1.2.2 SCDC is responsible for planning for waste, and therefore has prepared a Minerals and Waste Local Development Framework (in partnership with Peterborough City Council). The Core Strategy was adopted in July 2011, and aims to enable delivery of new modern waste management facilities, and to manage waste in a better way than landfill. As well as meeting the needs of new development, and minimising the need for the movement of waste, the plan seeks a proactive approach to sustainable construction, maximising reuse, recovery and recycling of construction materials.

Table 15: Cambridgeshire and Peterborough minerals and waste targets

Targets		2016	2021	2026
CD&E waste	Recycling and or composting	65%	70%	70%

6.1.3 Considerate construction scheme

6.1.3.1 It is recommended that the Principal Contractor registers with the Considerate Constructors Scheme (http://www.ccscheme.org.uk). This is a national initiative, set up by the construction industry. Developments that register with the Scheme sign up and are monitored against a Code of Considerate Practice, designed to encourage best practice beyond statutory requirements.

6.1.3.2 The Scheme is concerned about any area of construction activity that may have a direct or indirect impact on the image of the industry as a whole. The main areas of concern fall into three main categories: the environment, the workforce and the general public. Waste management is a key area of focus and on-site considerations may include:

- How waste is avoided, reduced, reused and or recycled
- Whether there is a SWMP and how is this monitored
- What type of feedback is received (if any) as to how much waste on-site is diverted from landfill

6.1.4 Site Waste Management Plan (SWMP)

6.1.4.1 The now repealed Site Waste Management Plan Regulations 2008 were previously the only legislative requirement governing the assessment of CD&E waste matters. However, the implementation of a SWMP remains industry best practice and is a requirement of PPS10: Planning for Sustainable Waste Management.

6.1.4.2 A Preliminary SWMP for the proposed development is submitted with the planning application (Appendix B). This forecasts the type and quantity of waste that would be produced on the proposed development and sets out how waste might be managed so that it is reused, recycled, or disposed of appropriately. The SWMP is a live document and should be updated during the duration of the project by the Applicant and the Principal Contractor to record the movements of waste, how it was managed and to encourage better waste management practices.

6.1.5 Adoption of best practice

6.1.5.1 Designers play an important role in reducing the impact of waste, particularly waste arising during construction. Detailed design and engineering solutions to reducing construction waste has led to the development of the WRAP five key principles that design teams can use during the design process to reduce the amount of waste arising on projects:

- Design for Reuse and Recovery ;
- Design for Off-site Construction;
- Design for Material Optimisation ;
- Design for Waste Efficient Procurement ; and
- Design for Deconstruction.

6.1.5.2 Designers can adopt these principles to support the use of materials in a more efficient manner and to consider how reuse, recycling and recovery of materials can be incorporated into the design and ultimately reducing waste to landfill. Waste reduction shall be addressed as part of the project sustainability agenda throughout the design process by the application of the five Designing out Waste (DoW) principles and the Design Team Guide for Buildings.

6.1.5.3 The principle of waste minimisation in design involves DoW and failure to think about waste at the design stage means that the contractor is often unable to reduce some of the wasteful elements which have been ‘locked in’ by the designer.

6.1.5.4 The key aspects of waste minimisation during design include:

- Building form – design building size and space to eliminate unnecessary elements, and to reduce off-cuts resulting from the construction process, and ensure compatibility between market supply and specification
- Design flexibility – ensure flexibility in design for future building expansion, adaptation and dismantling
- Designing for site conditions –the design shall accommodate strategies to manage particular constraints on-site which may impact on waste (such as a small footprint – consider off-site construction)
- Design complexity – reduce the complexity of the design to standardise the construction process and reduce the quantity of materials required

- Specifications – avoid over specification and minimise variation in components and joints; evaluate the reuse and recycling opportunities for the specified materials before specification

6.1.5.5 To deliver effective waste minimisation after the design phase, the following topics shall be considered as a waste minimisation strategy to support decisions taken to reduce waste and ensure actions shall be embedded into the proposed development SWMP:

- Involve an off-site Waste Broker to maximise the amount of waste reused or recycled rather than sent to landfill. The Waste Broker would act as an intermediary between the Principal Contractor or the Developer and other waste industry parties. They are required to be registered with the EA.
- Establish the requirement for the SWMP to be in place for each phase of the proposed development.
- Provide standard PowerPoint slides for the site induction so that all staff and the supply chain are aware of the SWMP.
- Prepare for and deliver a series of SWMP workshops and/or toolbox talks to train all Project/Site Managers and other relevant staff working on the site.
- Colour coded skips required on-site to segregate waste streams using the National Colour Coding Scheme.
- All packages of work need to make arrangements with the Waste Champion to utilise the existing waste management services on-site as defined by the SWMP. The Waste Champion would be the person who would take responsibility for the SWMP, identifying waste arisings and disposal routes through forecasting and prioritising waste production.
- All external contractors must sign up to the SWMP before the project starts. This also applies to contractors who provide their own waste services.

6.1.5.6 The key elements of waste management for consideration should be to:

- Allocate a person responsible for the producing and implementing the SWMP. This person may also be responsible for ensuring compliance with Duty of Care regulations
- Ensure training is formularised for personnel at each level of the waste supply chain to improve waste awareness
- Identify target recovery rates for each waste type along with formal measurement
- Identify the waste streams (for example, wood, brick/concrete, soils, plastics and so on) likely to be produced during construction and/or demolition, to establish the potential for reuse (on or off-site) and recycling
- Identify the most significant opportunities to increase reuse and recycling rates (termed Waste Recovery Quick Wins) and the realistic recovery rates
- Identify suitable waste management contractors and record appropriate licenses, permits, waste transfer notes and hazardous waste consignment notes
- Consider appropriate site practices such as how waste materials should be segregated and the measures that should be used for raising site operatives' awareness of waste reduction, reuse and recycling
- Set out the method for measuring and auditing construction and demolition waste

6.1.5.7 As part of the SWMP referred to above the Principal Contractor should have to monitor waste arisings and management practices. Auditing and measurement should enable more effective management of waste through the setting of performance targets for recycling and segregation and monitoring subcontractors.

6.1.5.8 The phasing of the proposed development allows the opportunity for the construction and excavation wastes to be reused or recycled on-site in subsequent stages of the development. The SWMP would ensure such opportunities are maximised as the preferred option for dealing with waste arising from the site.

6.1.6 Roles and responsibilities

6.1.6.1 Responsibility for the management of waste during the CD&E phases of the proposed development would be allocated to specified individuals to ensure that the project team 'buy in' to the waste reduction and minimisation. More importantly, it would encourage the developer and the eventual contractors and subcontractors to become more efficient in the use of resources, embed waste minimisation into the design and gain additional credits for BREEAM and Code for Sustainable Homes.

6.1.6.2 Also, the Construction Design and Management (CDM) 2007 Regulations identify the legal duties, responsibilities and obligations of all the team members and are designed to improve health and safety and effectively plan for and manage risk on-site. Table 16 below outlines some of the roles and responsibilities which different team members have to adopt as part of the SWMP implementation process.

Table 16: Roles and responsibilities during CD&E phases

Team member	Key role	Main responsibility	Other role
Client and Developer	Promote waste minimisation; Insist on good practice from all other team members; Ensure that all hazardous wastes have been identified prior to construction; and Review strategy over time.	Promote waste minimisation; Insistence of best practice; and Exploration of innovative technologies as appropriate.	Identification of waste reduction opportunities.
Designer	Consider design options; Promote use of reclaimed elements; and Reduce bespoken elements.	Duty of care; and Reducing waste production by design.	Identification of waste reduction opportunities.
Main Contractor – Site Manager	Develop site specific waste strategy, implement and communicate to all parties Monitor implementation; Work with design team; Drive segregation of waste arisings; Facilitate on-site storage compounds and treatment of segregated materials; Designation of working area for waste activities; Reduce waste being brought onto site as packaging, etc.; Ensure appropriate waste storage and containers on-site; Keep proper records of all wastes produced, reused and sent off-site;	Health and safety; Development of the waste strategy; Management of on-site processes and programmes; and Record keeping and duty of care.	Hazardous waste identification and management; and Assist in design process to reduce waste.

Team member	Key role	Main responsibility	Other role
	Ensure appropriate off-site transport in line with local regulatory requirements; and Identify and confirm all destinations for waste leaving the site.		
Subcontractor	Develop method statements for activities on-site; and Liaise with Main Contractor and agree way forward.	Duty of care; Production of method statements; and Ensure all activities under their direct control are managed appropriately.	Assist in ensuring on-site practices are safe and will not impact the environment; and Ensure that wastes are properly segregated.
Site workers	Question unsatisfactory practices on-site; and Follow instructions as provided.	Duty of care; and Ensure all activities under their direct control are managed appropriately.	Assist in ensuring on-site practices are safe and will not impact the environment; and Ensure that wastes are properly segregated.

6.1.7 Site preparation and earthworks

6.1.7.1 A Site-Wide CEMP (Doc 5023-UA006156-UE21R-01 – CEMP) has been prepared for the proposed development which outlines a series of strategies, standards, best practice techniques and procedures that would be observed through the construction process in order to ensure compliance with environmental legislation and regulations. This would ensure minimal disruption and nuisance from the construction process to the existing communities in the surrounding area and the new communities to be established within the proposed development.

6.1.7.2 Waste arisings from the site clearance, infrastructure and earthworks are expected to comprise vegetation, topsoil, rubble, tarmac from former hard standings, gravel and clay material.

6.1.7.3 It is anticipated that where practicable, topsoil would be reused for landscaping. Any non-hazardous excavated materials that cannot be re-used on-site would be removed by licensed waste carriers and sent for re-use at other development sites or sent for disposal at adequate licensed facilities.

6.1.7.4 Any hazardous material that would require removal from the proposed development would be collected by suitable waste carriers and sent for disposal at adequate licensed hazardous waste facilities.

6.1.8 Materials

6.1.8.1 During the site clearance and excavation works, consideration would be given, where practicable, to the re-use and recycling of excavated material generated. Document '5025- UA006156-UE21R-01 – Remediation Strategy' sets out the earthworks strategy, which would be put in place prior to undertaking these works. The Remediation Strategy would be approved by all relevant parties including SCDC.

Materials recovery

6.1.8.2 To ensure that waste minimisation, re-use and recycling is properly implemented, project specific targets and a suitable monitoring programme would be set to:

- Quantify raw material wastage
- Quantify the generation of each waste stream
- Record any improvements in current working practices
- Record and improve construction methods by which the waste streams are being handled and stored
- Record and improve the waste disposal routes used

6.1.8.3 The Principal Contractor would be responsible for the setting and review of waste targets from the outset to ensure that high standards are maintained with the emphasis being on continual improvement. Table 17 below provides an overview of WRAP's standard, good and best practice recovery rates by material.

Table 17: Standard, good and best practice recovery rates

Material	Recovery rates (%)		
	Standard practice	Good practice	Best practice
Timber	57	90	95
Metals	95	100	100
Plasterboard	30	90	95
Packaging	60	85	95
Ceramics	75	85	100
Concrete	75	95	100
Inert	75	95	100
Plastics	60	80	95
Miscellaneous	12	50	75
Electrical equipment	Limited information	70*	95
Furniture	0-15	25	50
Insulation	12	50	75
Cement	Limited information	75	95
Liquids and oils	100	100	100
Hazardous	50	Limited information**	Limited information**

*Required recovery target for the type of waste electrical and electronic equipment (WEEE) likely to be produced from construction sites.

**Cannot be 100% as most hazardous waste streams (e.g. asbestos) must be landfilled.

Promotion of best practice

6.1.8.4 As part of the encouragement of on-site best practice, the Principal Contractor would ensure that suppliers of raw materials are committed to reducing surplus packaging associated with materials deliveries. This includes the reduction of plastics, cardboard and wooden pallets. This may also involve improved procurement and consultation with preferred suppliers regarding commitments to waste minimisation, recycling and continuous improvement in environmental performance.

Table 18: Measures to reduce raw materials wastage

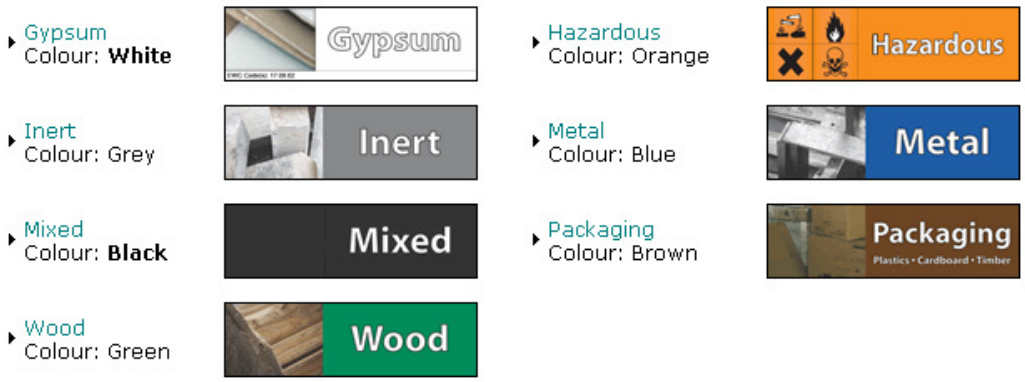
Ordering	Delivery
Avoid: ▪ Over ordering – order 'just in time'; ▪ Ordering standard lengths rather than lengths required; and ▪ Ordering for delivery at the wrong time – update the programme regularly.	Avoid: ▪ Damage during unloading; ▪ Delivery to inappropriate site areas; and ▪ Accepting incorrect deliveries, specifications or quantities.

Storage	Handling
Avoid: ▪ Damage to materials from inadequate storage; and ▪ Loss, theft or vandalism through secure storage and on-site security.	Avoid: ▪ Damage or spillage through incorrect or repetitive handling.

Storage areas

6.1.8.5 Where space permits, a specific area would be laid out and labelled to facilitate the separation of materials for potential recycling, reuse and return. Recycling and waste bins are to be kept clean and clearly marked in order to avoid contamination of materials. The labelling systems for Waste Management & Recycling shall follow the Waste Awareness Colour Coding Scheme.

Figure 2: Waste awareness colour coding scheme



6.1.8.6 If the skips are clearly identified, the bulk of the workforce would deposit the correct materials into the correct skip. Skips for segregation of waste currently include:

- Gypsum waste
- Inert Waste

- Mixed waste (e.g. canteen and office waste, general waste, etc.)
- Wood waste
- Hazardous waste
- Metal waste
- Packaging waste (e.g. plastic, paper, etc.)

6.1.8.7 As works progress and other trades come to site, the skips should be placed to enable the original waste types to be removed from site with ease.

6.1.8.8 Although every effort would be made to retain all suitable materials on-site, it is possible that some of these materials cannot be re-used or recycled during the construction process. In these situations, the Site Manager would work to identify suitably licensed waste facilities to redistribute materials and only send them to landfill as a last resort.

Transportation

6.1.8.9 The impact of traffic associated with the movement of CD&E waste on surrounding neighbourhoods and the local road network would be minimised by a combination of factors. These include:

- Careful on-site management
- Reducing the need to import and export materials
- Limiting the off-site disposal of recyclables and disposal of residual waste to landfill

6.1.8.10 Also, the quantities and types of waste materials generated would fluctuate during the CD&E phases affecting the number of waste collections, the amount of storage space for waste needed for each phase, the capacity of containers used, the types of materials segregated for recycling and whether any on-site processes would be used for reducing the volume of waste (compactors, balers, shredders, etc.).

6.1.8.11 The Principal Contractor would agree dedicated haulage routes and construction waste logistics forecast with SCDC for the off-site disposal of residual waste materials and the delivery of materials to the site. This would ensure that peak traffic periods are avoided and disturbance to local communities is minimised.

6.1.8.12 In order to reduce the import and export of material and hence the number of vehicle trips to and from the site, emphasis would be placed on re-using material on-site. Following appropriate testing, material suitable for re-use on-site would be stockpiled and incorporated into the construction process for roads, car parking areas and soft landscaped areas.

6.1.8.13 It has been estimated that 45,132 tonnes (83,973 m^3) of waste would arise from the buildings. This would result in 5,506 vehicle movements (one way) based on collections of 20 yards (15.25 m^3) skips. In addition, it has been estimated that 3,200 tonnes (3,574m^3) of waste would arise from infrastructure. This would equate to a total of 234 vehicles assuming loads of 15.25 m^3. These would also result in 1.55 kg/CO_2 emissions per mile (DEFRA's Guidelines for Company Reporting on Greenhouse Gas Emissions). For a haulage distance of 10 miles this would be equivalent to 88,982 kg of CO_2 emissions (one way) that could be saved by re-using the materials on-site.

6.1.8.14 It has been estimated that 1,408,773 tonnes (1,127,018 m^3) of waste arising from the excavation phase would be re-used on-site. This would result in 75,134 vehicle movements (one way) being avoided, based on collections of 15 m^3 vehicles.

6.1.8.15 It has been estimated that 30,420 vehicle movements onto site (one way) would be needed to import construction materials during construction, based on the 2011 UK Industry Performance Report KPI.

Table 19: Vehicle movements for construction materials and waste by sub-phase

	Sub-Phases					
Vehicle movements (one way)	**A**	**B**	**C**	**D**	**E**	**F**
Construction materials	717	7,203	8,366	11,473	14,848	4,919
Waste from buildings	87	809	1,240	1,243	1,566	561
Waste from form infrastructure	4	34	53	53	67	24
Total one-way vehicle movements per day (average)	2	11	14	18	16	8
Total two-way vehicle movements per day (average)	4	22	28	36	32	16

6.1.8.16 During the construction of buildings and structures on-site emphasis would also be placed on using locally sourced recycled materials. To further reduce waste disposal requirements and CO_2 emissions, emphasis should be placed, upon a commitment, to sustainable waste management practices and Best Practicable Environmental Option (BPEO). This would include encouraging waste minimisation initiatives and the segregation of waste streams suitable for on-site re-use. Where re-use on-site is not a practicable option, material suitable for recycling should be segregated and disposed of off-site to the nearest suitable waste management facility for recovery in accordance with the Proximity Principle.

6.1.9 Monitoring and reporting

6.1.9.1 It would be a condition of the Principal's Contractor contract to discuss and agree any recovery rates (see Table 17) to be targeted at the kick-off meeting. A monitoring report would then be generated on a monthly basis which would include details of the progress made in diverting waste materials from landfill, against these pre-agreed targets.

6.1.9.2 All waste collected from site by the employed waste carrier(s) must be recorded and monitored using the SWMP. The waste carrier(s) would provide Waste Transfer Notes on collection of the waste, and in due course, provide records of the quantities of waste recycled or sent to landfill. This procedure would apply whether the waste has been 'pre-treated' (sorted into separate waste streams); or sent 'untreated' as general mixed waste. The preference should always be to pre-treat waste, as this is generally a cheaper alternative to sending away untreated waste.

6.1.9.3 However, if 'untreated' general mixed waste is sent for separation into the different waste streams at the waste transfer station, the waste management contractor carrying out this operation must be required to provide records of the quantities of each waste stream to allow tracking on the SWMP.

6.1.9.4 Skips shall be monitored to ensure that there is no contamination of the separate waste streams. The waste segregation arrangements must be clearly identified on each container and regularly reinforced to personnel through tool-box talks. The type of surplus materials being produced must be regularly reviewed so that the site set-up can be changed to maximise reuse or recycling of waste. Sub-contractors producing waste from their works should also record all waste movements and provide Waste Transfer Notes on collection of the waste and provide records of the quantities of waste recycled or sent to landfill.

6.1.9.5 Office/Welfare waste shall be sorted into a separate container, typically an 1100L Eurobin. The proposed development may also be able to take advantage of the Local Authority's recycling scheme by obtaining separate bins for recyclable waste for regular collection by the Local Authority.

6.2 Operational waste

6.2.1 Targets and objectives

6.2.1.1 The WFD on waste sets a five-step hierarchy of waste management options, with waste prevention as the preferred option, and then reuse, recycling, recovery (including energy recovery) and safe disposal, in descending order. It sets targets of 50% for household recycling and reuse, to be reached by the UK by 2020. Targets are cascaded through national strategies, in this case the Waste Strategy for England (DEFRA 2007).

6.2.1.2 The East of England Plan 2008 (subject to anticipated revocation of RSS) sets regional policy regarding planning for waste. It seeks to minimise the environmental impact of waste management, viewing waste as a resource and maximising re-use, recycling, composting and energy recovery. It seeks to achieve high levels of recycling, and has set the specific target of 70% municipal waste recovery by 2015.

6.2.1.3 RECAP has established long term voluntary targets for recycling across Cambridgeshire and Peterborough. These are illustrated in Table 20 below.

Table 20: Recycling targets for Cambridgeshire and Peterborough (voluntary)

Targets		2010	2015	2020
MH waste	Recycling and or composting	45% - 50%	50% - 55%	55% - 60%

Note: MH = municipal household waste

6.2.1.4 SCDC is responsible for planning for waste, and therefore has prepared a Minerals and Waste Local Development Framework (in partnership with Peterborough City Council). The Core Strategy was adopted in July 2011, and aims to enable delivery of new modern waste management facilities, and to manage waste in a better way than landfill. As well as meeting the needs of new development, and minimising the need for the movement of waste, the plan seeks a proactive approach to sustainable construction, maximising reuse, recovery and recycling of construction materials.

Table 21: Cambridgeshire and Peterborough minerals and waste targets

Targets		2016	2021	2026
MH waste	Recycling and or composting	60%	67%	67%
	Total recovery	84%	86%	86%
CI waste	Recycling and or composting	84.2%	88%	88%
	Total recovery	92%	99%	99%

Note: MH = municipal house waste, CI = commercial industrial waste

6.2.2 Adoption of best practice

6.2.2.1 To deliver the sustainability credentials set out by SCDC, the proposed development must not only meet the RECAP voluntary targets, but must also achieve and seek to exceed the high performance already being achieved within the district.

6.2.2.2 A number of waste management measures would be put in place to minimise the impacts of operational waste. These are outlined in Table 22 below.

Table 22: Mitigation measures

Impact	Mitigation Measure	Comment
Increased generation of waste	Extend the SCDC recycling and waste collection system to the proposed development.	The recycling and waste collection system provided by SCDC achieves a high recycling performance. This successful system would be extended to the proposed development to utilise existing waste infrastructure and a proven system to increase recycling and reduce waste. The system comprises an alternate weekly collection for co-mingled recyclables, mixed food and garden waste, and residual waste.
	Initial recycling or composting target of 70%	This is the target set out in the waste strategy as a requirement under PPS10, and has been taken into consideration in preparing the planning application.
	Initial residual waste level target of 300kg/household	This is set out in the waste strategy as requirement under PPS10.

6.2.2.3 In addition to the mitigation measures above there are number of alternative initiatives that could already be utilised or be undertaken in the future, although no specific provision has been made within the proposed development at present.

- Community composting project - compliant with the third tier of the waste hierarchy (recycling) a community composting project could possibly be established.
- Public Incentives Scheme - a scheme could be implemented to incentivise participation in recycling including performance based charging schemes.

6.2.3 Household recycling centre and bring sites

6.2.3.1 Providing a strategic facility for the whole of Northstowe, the HRC is located in the employment area in Phase 1 and is to be designed in accordance with the principles from SCDC's Location Design of Waste Management Facilities SPD. The HRC is unlikely to be built towards the final build-out period of Phase 1 development. Phase 2 will also be expected to make a financial contribution to this facility.

6.2.3.2 Based on the standards listed in the table beneath section 9.7 of the RECAP Guide[11], a maximum density of one bring site per 800 homes would be sought. By the completion of the proposed development, five bring sites may be needed. However, the requirement for five bring sites is to be reviewed if the HRC is operational as it is likely to provide comprehensive recycling facilities for the

[11] RECAP waste Management Design Guide, Supplementary Planning Document Adopted February 2012, www.recap.co.uk

proposed development. Confirmation of the need for bring sites, their number and location would be detailed as part of the reserved matters application.

6.2.4 Storage of waste

Household municipal waste - internal storage houses/flats

6.2.4.1 Based on the guidance contained in sections 4.4 and 4.5 of the RECAP Guide, internal waste storage containers that are easily accessible to residents would be provided within the kitchens of all residential units. The containers would have a total capacity of 35 to 40 litres and should be divided to allow the separation of recycling from refuse and, where appropriate, organic waste for composting.

6.2.4.2 Table 23 below provides the typical dimensions for the internal storage containers.

Table 23: Examples of internal storage containers dimensions

Container type	Dimensions (mm)		
	Length	Width	Height
40 litre bin (semi-cylindrical)	435	302	716
30 litre bin (cylindrical)	293 ø		722
20 litre bin (cylindrical)	251 ø		717
38 litre bin (cuboid)	400	310	648
45 litre (cuboid)	400	280	737
Two compartments 30 litre capacity (1x19 litre and 1x11 litre housed in one unit)	47	25	44
Three compartments 33 litre capacity (3x11 litre housed in one unit)	47	25	44
Three compartments 40 litre capacity (1x19 litre, 1x12 litre and wire frame housing)	For installation in hinged door cabinets. To fit cabinet with minimum of 500mm horizontal clear space and a height of 525mm.		
Four compartments 39 litre capacity (1x12 litre and 3x9 litre seated in single wire frame housing)	For installation in hinged door cabinets. To fit cabinet with minimum of 500mm horizontal clear space and a height of 525mm.		
Three compartments plus 2 cleaner baskets 43.2 litre capacity (1x18 litre and 2x8.5 litre plus 2x4.1 cleaner baskets housed in one unit)	For installation in drawers or door front fixing cabinets. Minimum 433mm depth and height of 320mm.		
Three compartments plus 2 cleaner baskets 37.2 litre capacity (1x12 litre and 2x8.5 litre plus 2x4.1 cleaner baskets housed in one unit)	For installation in drawers or door front fixing cabinets. Minimum 433mm depth and height of 320mm.		

Household municipal waste - external storage – houses

6.2.4.3 Based on the guidance contained in section 4.7 of the RECAP Guide, each house would have a suitable hard surface within the curtilage of the property of sufficient size onto which the required external storage containers (with an aggregated capacity of 775 litres) would fit. This is assumed to be three wheeled bins for refuse, recycling and compostable waste.

- A brown 240 litre wheeled bin for mixed organics;
- A blue 240 litre wheeled bin for co-mingled recyclables; and
- A green 240 litre wheeled bin for residual waste.

6.2.4.4 Table 24 below provides the typical dimensions for two-wheeled bins and boxes of varying capacities.

Table 24: Two-wheeled bin and boxes dimensions

Capacity	Dimensions (mm)		
	Length	Width	Height
38 litre box	385	585	275
55 litre box	395	585	375
140 litre	500	555	950
240 litre	580	740	1,100
360 litre	480	880	1,100

6.2.4.5 The preferred location for these storage areas is at the rear of the property within a designated area. To ensure safe usage, sufficient space would be allocated to allow each wheeled bin to be individually accessed and removed by residents.

6.2.4.6 Storage of wheeled bins within front gardens or driveways would be generally avoided, unless it can be designed as an integral part of the building and architectural design, or another agreed container from within the front garden in accordance with the RECAP Guide.

6.2.4.7 For bulky waste, it has been assumed that residents would make arrangements with the local authority for collection and temporarily store the waste in an agreed location on their property.

Household municipal waste - external storage - flats

6.2.4.8 Waste storage for flats would comprise high quality communal bin stores with larger capacity wheeled bins for the separate collection of refuse and recycling. Residents would be required to deposit their refuse and recycling in the communal bin stores (unless a private facilities management firm is provided to undertake this service). Residents should not be required to walk more than 30 metres with their waste to a communal store.

6.2.4.9 These stores would be sensitively located and designed to cater for no more than six flats, taking into account the aesthetics of the area.

6.2.4.10 Suitable hard surfaces would be used and sufficient space to allow each wheeled bin to be individually accessed and removed to ensure safe usage for residents and collection crews. In accordance with the RECAP Guide, 150mm clear space would be provided between and around containers.

6.2.4.11 Table 25 below provides typical dimensions for four-wheeled bins.

Capacity	Dimensions (mm)		
	Length	Width	Height
500 litre	1,305	745	1,145
660 litre	1,265	740	1,320
770 litre	1,265	810	1,360
820 litre	1,250	1,800	1,370
940 litre	1,450	915	915
1,100 litre	1,270	1,000	1,380
1,280 litre	1,280	1,000	1,445

6.2.4.12 At this outline application stage, the number of floors and units has not been determined so it is not possible to accurately estimate the number of bins needed for the proposed flats. However, it has been assumed that the use 1,100 litre wheeled bins would be the prevalent choice for flats; however the availability of a range of four-wheeled bins would enable tailored waste storage options where appropriate.

6.2.4.13 Table 25 below shows RECAPs recommended external storage capacities for various types of residential development based on alternate weekly collection. Where reference is made to a '1 room unit', '2 room unit', etc. lounge, dining room and bedrooms are counted. The kitchen and bathroom are excluded.

Table 25: RECAP recommended external storage capacities

Residential development type	Aggregated capacity provision		Guidance notes
	Unit rooms	Litres	
Low rise (up to 4 floors with communal gardens)	2 3 4 5	420 520 620 720	Capacities detailed are maximum capacity 'footprints'. Developers should ensure that sufficient space is provided for the appropriate external storage containers. SCDC must be consulted on capacity split and the types of external storage containers that the developer would be required to provide. It should be noted that capacity 'footprints' and splits would change overtime as SCDC works towards national targets
Low rise (up to 4 floors without communal gardens)	2 3 4 5	340 440 540 640	
High rise (above 4 floors)	2 3 4 5	340 440 540 640	

6.2.4.14 Capacity would not be provided on an individual residence basis. This would be calculated for each unit and combined giving a total that would be utilised to calculate the required number of communal bins.

6.2.4.15 For bulky waste, it has been assumed that residents would make arrangements with SCDC for collection and temporarily store the waste in an agreed location at ground level.

Commercial and industrial (CI) waste - external storage

6.2.4.16 At this stage, it is expected that the CI units would be provided with large four-wheel bins for refuse and recycling. These could be for their own or shared use and they would have easy access for end users and for collection vehicles.

6.2.4.17 All waste storage areas would be clearly labelled to ensure cross contamination of refuse and recycling is minimised.

6.2.4.18 Floor surfaces would be of a smooth, continuous finish and free from steps or other obstacles. Any steps would incorporate a drop-kerb. Measures would be taken by the tenants to ensure that access to the agreed collection point would not be restricted on collection day.

6.2.4.19 The following three pieces of key legislation also affect CI enterprises:

- The Hazardous Waste Regulations 2005 make it a legal requirement to separate all hazardous wastes before collection for disposal. This includes fluorescent tubes, computer monitors and batteries;
- The Waste Electrical and Electronic Equipment (WEEE) Regulations 2006 make the recycling and recovery of such waste types compulsory; and
- The Landfill Directive makes the initial separation of waste types essential prior to any landfilling.

6.2.5 Collection of waste

Household municipal waste

6.2.5.1 The 'Northstowe Innovative Waste Collection Project Report – Assessment of Shortlisted Collection Options (August 2010)' assessed a series of waste collection options against the 'default' business as usual system. The report recommended that the most suitable method of collecting waste at the proposed development is an integrated underground waste system (which is a hybrid between the traditional and underground waste collection systems), with the traditional 'default' collection coming a close second. Table 26 below shows the summary assessment criteria of the default and integrated UWS collection systems.

Table 26: Summary of Assessment Criteria

Assessment Criteria	"Default" Collection System	Integrated UWS
Capital Cost	£988,230	£3,762,370
Operational Cost	£545,947	£436,995
Material Capture Rates	Achieves 65% diversion rate by 2020	Two communication strategies would be required one for traditional component and one for underground component
Collection of High Quality material	Slightly worse than UWS	Two communication strategies would be required one for traditional component and one for underground component. Greatest potential to collect high quality waste.
Carbon Footprint of Collection Service	192 tCO_2/year	160 tCO_2/year
Land Savings	4,333m^2	2,463m^2

Health and Safety	Managed through Risk Assessment & Regular Reviews	Managed through Risk Assessment & Regular Reviews
Ease of Use For Customers	Customers are familiar with existing collection service	Customers would have to travel to dispose of waste in communal containers. Confusion among customers as two collection systems in operation at Northstowe
Integration with Existing Services and Local Recycling Centre	Good Integration	Default component full Integrated Underground component good integration
Operational Risks and Mitigation	Lowest risk as this is the existing system	Risk of confusion among customers as two collection systems in operation at Northstowe

6.2.5.2 Whilst the above report ranked the integrated underground waste system as the 'preferred' collection option for Northstowe; it should be noted that the traditional default collection system was ranked second. It is the applicant's view that in reality other negative factors, as listed below, would also be significant relative to the underground waste system.

- Leachate running out and over footway / carriageway area during collection and emptying;
- Access / zoning restriction requirements to ensure collection vehicles are able to pull up alongside (if blocked then cant access) for collection;
- Potential conflict with other street furniture including signage and lighting;
- Possible disruptions to cyclist and pedestrians during collection operation;
- Odour issues, particularly significant during summer months;
- High groundwater levels causing ingress to the underground collection; requiring significant construction and tanking of below ground structures (additional cost);
- Proliferation of insects or rodents and due to location; and
- Reduced social drivers leading to reduced recycling.

6.2.5.3 The applicant proposes to develop a traditional wheeled bin delivery strategy, which has proven materials capture rates, and pre-order the necessary number of wheeled bins with SCDC. It would be the responsibility of the developers to agree with SCDC as to the specific number and frequency of wheeled bin deliveries.

6.2.5.4 The applicant would also be responsible for the delivery of wheeled bins to each unit before the first collection and for the wheeled bins until the residential units have received their first waste collection. This would avoid delivery of wheeled bins to unoccupied properties.

6.2.5.5 For bulky waste, it has been assumed that residents would make arrangements with SCDC for collection and temporarily store the waste in an agreed location at ground level.

6.2.5.6 In accordance with the RECAP Guide, the distance from the curtilage of houses (or the agreed collection point for the wheeled bins) to the refuse collection vehicle should not exceed 25 metres.

6.2.5.7 In accordance with the RECAP Guide, the distance from the flat's communal bin stores to the refuse collection vehicle should not exceed 10 metres. It has been assumed that four-wheeled containers would be the primary storage option.

Commercial and Industrial (CI) waste

6.2.5.8 At this stage, it has been assumed that collection of CI waste would be undertaken via external waste management contractors. It would be the responsibility of the tenants to arrange for refuse and recycling collection from their premises. The type of collection would be dependent on the nature of the business.

6.2.5.9 Waste collection frequency would be dependent upon the volume of waste generated, the storage method and the schedule of the appointed waste contractor.

6.2.5.10 For bulky waste, it has been assumed that residents would make arrangements with SCDC for collection and temporarily store the waste in an agreed location at ground level.

Summary

Construction, demolition and excavation (CD&E) waste

6.2.5.11 Using waste benchmarking data from BRE, WRAP NetWaste wastage rates and the Northstowe Masterplan Cost Assessment Option A Phase 2 the amount of CD&E waste has been forecast. The total tonnage of waste arising from CD&E phases is 1,507.846. However, this figure may be (substantially) reduced with good site management and implementation of the SWMP and the mitigation and management measures included in Section 6.

6.2.5.12 It is anticipated that any non-hazardous generated material may be reused on-site for landscaping or other purposes, therefore only minimal volumes of non-hazardous material may require disposal off-site. Hazardous materials, such as asbestos would be disposed off-site in an appropriate manner.

6.2.5.13 The alignment, location, level and grading of both the Main Phase 2 development area and the Southern Access Road (West) have been designed to minimise unnecessary excavation volumes. It has also been designed to enable flexibility in the landscaping, so that it can accommodate the changes in spoil volumes that may arise when site conditions differ from those assumed during the design. Both these approaches should enable all excavation waste (including treated soils except where it remains hazardous) to be reused on-site where conditions allow. It is expected that only minimal volumes of material may require disposal off-site.

6.2.5.14 This report outlines the proposed strategy to minimise and successfully manage the waste arisings from the CD&E phases of the proposed development. It provides guidance on issues relating to best practice for the management of waste which, would minimise the total waste generated without impacting the cost of the proposed development. It is recommended that the Principal Contractor:

- Registers with the Considerate construction Scheme
- Implements a SWMP
- Adopts best practice along with the designers

6.2.5.15 There would be a requirement for the Principal Contractor to discuss and agree any recovery rates. Regular monitoring reports would include details of the progress made in diverting waste materials from landfill, against these pre-agreed targets.

Operational Waste

6.2.5.16 The residential component of the proposed development would comprise of approximately 3,500 residential units. Likely volumes of arising for construction wastes from the proposed development would be estimated to identify available options for recycling, reuse, treatment or disposal.

6.2.5.17 Based on recent WasteDataFlow returns from SCDC it is estimated that approximately 3,336 tonnes of municipal waste (including domestic and non-domestic waste) would be generated during operation of the proposed development per annum. This figure represents the total household operations and does not take into account of any proposed recycling or composting. If current recycling rates (55.97% 2012/13) for SCDC are applied to this figure then an annual residual waste level of 1,458 tonnes of waste is projected. Current waste production levels and subsequent residual waste levels are used to present a worst case scenario of no improvement in both of these areas.

6.2.5.18 At this stage, it is estimated that the proposed development could potentially generate around 20,690 tonnes of CI waste per annum (around 397 tonnes per week).

6.2.5.19 A wheeled bin delivery strategy would be implemented, pre-ordering the necessary number of wheeled bins with SCDC. It would be the responsibility of the developers to agree with SCDC as to the specific number and frequency of wheeled bin deliveries.

Appendix A: RECAP Waste Design Guide Toolkit – Design Standards Checklist

Table 27: RECAP Waste Design Guide Toolkit – Design Standards Checklist

Key consideration	Step 1		Step 2
	Aware of standard minimum expectations?	Does this apply to you?	Submit proposals to planning authority (Provide plan/document reference)
Residential internal storage requirement Refer to part 4.4 of the RECAP Waste Design Guide	30-40 litres of single dwellings and multi-occupancy developments (low-rise and high rise) permitting segregation of waste as appropriate.	Yes	To be addressed at reserved matters stage.
Residential external storage requirement Refer to part 4.7 of the RECAP Waste Design Guide	Single dwelling – Space for containers allowing 775 litres of capacity must be provided. Provision of containers and/or financial contributions towards may also be required.	Yes	To be addressed at reserved matters stage.
	Low-rise with communal gardens – Space for containers allowing 320 litres to a maximum of 720 litres of capacity per unit (depending upon to the number of rooms – see Table 4.1) must be provided. Typical container specifications are detailed at Appendix A. Provision of containers and/or financial contributions may also be required.	No	
	Low-rise without communal gardens – Space for containers allowing between 240 litres to a maximum of 640 litres of capacity per unit (depending upon to the number of rooms – see Table 4.1) must be provided. Typical container specifications are detailed at Appendix A. Provision of containers and/or financial contributions may also be required.	No	
	High rise – Space for containers allowing between 240 litres to a maximum 640 litres of capacity per unit (depending upon the number of rooms – see Table 4.1) must be provided. Typical container specifications are detailed at Appendix A. Provision of containers and/or financial contributions may also be required.	Yes	To be addressed at reserved matters stage.
Commercial – storage requirements	Offices – 2,600 litres per 1,000m gross floor area. Typical container specifications detailed at Appendix A.	Yes	To be addressed at

Key consideration	Step 1		Step 2
	Aware of standard minimum expectations?	Does this apply to you?	Submit proposals to planning authority (Provide plan/document reference)
Refer to part 4.15 of the RECAP Waste Design Guide	Retail – 5,000 litres per 1,000m gross floor area. Typical container specifications detailed at Appendix A.	Yes	reserved matters stage.
	Restaurants and fast food outlets – 1,500 litres per 20 dining spaces. Typical container specifications detailed at Appendix A.	Yes	
	Hotels – 1,500 litres per 20 dining spaces. Typical container specifications detailed at Appendix A.	No	
Waste storage point – single houses Refer to part 5.6 of the Design Guide.	• Waste should not have to be moved more than 30m to storage area; • Store location should not be more than 25m distance from the collection point; • Collection crews should not have to carry individual waste containers or move 2-wheeled containers more than 25m; • Passage of a 2 wheeled container from store to collection point should avoid steps, but where not possible should avoid transfer over more than 3 steps; Gradients over which containers must traverse must not exceed 1:12; and Not have to be moved through a building to the collection point.	Yes	To be addressed at reserved matters stage.
Waste storage point – flats and apartments and commercial developments Refer to part 5.9 of the RECAP Waste Design Guide	• Waste should not have to be moved more than 30m (excluded vertical distance) to storage area; • Storage location should not be more than 10m distance from the collection point; • Passage of waste containers from store to collection point should avoid steps, but where not possible should avoid transfer over more than 3 steps; and Gradients over which containers must traverse should not exceed 1:12.	Yes	To be addressed at reserved matters stage.
Waste storage infrastructure Refer to part 6 of the RECAP Waste Design Guide	Where infrastructure is installed for the communal storage of waste a SIMPLE assessment of the location and the proposed infrastructure must be made against the key factors specified in the accompanying Assessment Criteria. The size of any storage area should be capable of accommodating the required number of waste receptacles (and their associated dimensions) or provide adequate capacity.	Yes	To be addressed at reserved matters stage.

Key consideration	Step 1		Step 2
	Aware of standard minimum expectations?	Does this apply to you?	Submit proposals to planning authority (Provide plan/document reference)
	General design features for above-ground storage compounds: • Sufficient clearance provided to allow full opening of container lid; • 150mm clear space between and around containers; • Minimum working headroom of at least 2m (where compound is covered); and • Layout such that any one receptacle can be serviced without having to move any other receptacle. Specific design requirements are detailed at Appendix D and should be referred to. Underground storage systems require: • Area(s) of ground free from services; and • Sufficient clear space above and around to allow emptying of containers. An indicative generic specification of an underground Bring Site facility is attached at Appendix G.		
Highways Refer to part 7.3 of the RECAP Waste Design Guide	Where development proposals will seek to utilise a standard service as provided by the Waste Collection Authority, highways should: • Have a minimum width of 5m; • Permit collection vehicles to continue mainly in a forward direction; • Not require vehicles to reverse more than 12m; • Be constructed in accordance with relevant guidance; and • Allow at least 4m vertical clearance. In addition a minimum of 3.5m width and 4m in length should be allowed where the emptying of containers takes place. Sufficient overhead clearance should also be provided to allow for operation.	Yes	To be addressed at reserved matters stage.
Household recycling centre requirement Refer to part 8.7 of the	Where appropriate, developers will be expected to: • Provide finance for upgrading existing household recycling centres; or	No	Site for MH waste recycling centre included as part of Phase 1

Key consideration	Step 1		Step 2
	Aware of standard minimum expectations?	Does this apply to you?	Submit proposals to planning authority (Provide plan/document reference)
RECAP Waste Design Guide	• Provide finance for new household recycling centres; and/or provide land for strategically located household recycling centres. Section 106 agreements or other suitable legal agreements, will be used to secure contributions/land and ensure that adequate provision is made. In Peterborough, contributions to related off-site infrastructure for development will be consistent with the Planning Obligations Implementation Scheme.		proposals – refer to Planning Obligation / draft scope for S106 Heads of Terms within Planning Supporting Statement of Phase 1.
Bring site requirement Refer to part 9.5 of the RECAP Waste Design Guide	To ensure provision of 1 additional bring site for every 800 dwellings, developers will be required to: • Provide finance and/or provision of additional bring sites; and • Provide finance for upgrading existing facilities. Residential developers will be minimally required to provide temporary on-site facilities by occupation of the 50th residential property. Both temporary and permanent bring site facilities should be located at least 20m distance from the nearest property, accessible by service vehicles and located so as to avoid damage to overhead services during servicing. Section 106 agreements or other suitable legal agreements, will be used to secure contributions and ensure that adequate provision is made. A SIMPLE assessment of the location and proposed infrastructure must be made against the key factors as specified in the accompanying assessment criteria. In Peterborough, contributions related to off-site provision for development will be consistent with the Planning Obligations Implementation Scheme.	Yes	To be addressed at reserved matters stage.
Alternative waste management schemes Refer to part 1.17 of the RECAP Waste Design Guide	A DETAILED assessment of the scheme must be made against the key factors as specified in the accompanying assessment criteria. A developer will be required to fund such schemes beyond the amount the Local Authority would otherwise pay for standard service and pay for and provide non-standard infrastructure.	Yes	To be addressed at reserved matters stage.

Appendix B: Preliminary Site Waste Management Plan

1. The now repealed Site Waste Management Plan Regulations 2008 were previously the only legislative requirement governing the assessment of CDE waste matters. However, the implementation of a SWMP remains industry best practice, is a requirement of PPS10: Planning for Sustainable Waste Management.

2. This Preliminary SWMP forecasts the type and quantity of waste that would be produced on the proposed development and sets out how waste might be managed so that it is reused, recycled, or disposed of appropriately.

3. The SWMP is a live document and would be updated during the duration of the project by the HCA and the Principal Contractor to record the movements of waste, how it was managed and to encourage better waste management practices.

4. Preparing the SWMP encourages the review of current waste reduction and recovery practice levels, highlighting areas where Good and Best Practice in waste minimisation and management can be achieved. The SWMP also facilitates the identification and implementation of waste minimisation at the design stage and reuse and recycling opportunities during on-site operations, reducing the quantities of waste sent to landfill. The SWMP is presented in 5 Stages that cover the construction works from policy and setup, to works completion:

- Stage 1: policy and setup: the pre-construction team records the administration details and sets targets;
- Stage 2: design: the pre-construction team forecasts the waste and records the waste reduction/minimisation actions;
- Stage 3: pre-construction: the pre-construction team records the waste carriers, waste destinations and waste management and recovery actions;
- Stage 4: construction: the project team records the actual waste movements and updates Duty of Care information, and
- Stage 5: post completion and use: the project team reviews KPIs, reports, compares actual quantities with estimates and signs the declaration.

5. The SWMP can be used in conjunction with existing waste management tools and systems, such as the Waste & Resources Action Programme (WRAP) Net Waste Tool, WRAP SWMP Tracker, SmartWaste Plus or the WRAP Site-specific Waste Analysis Tool (SSWAT).

6. A SWMP provides options for planning and processing waste during the construction activities on the site. It also demonstrates that HCA is a considerate client who is interested in maximising opportunities for reuse and recycling that are cost neutral (or cost negative) and in diverting waste from landfill.