

**06 Waste and Recycling**



# 06 Waste and Recycling

## Preface – Update 2015

- This replacement November 2015 Environmental Statement (hereafter referred as the 'November 2015 Replacement ES' or 'this Replacement ES') takes into account the design changes to the Blossom Street project (refer *Chapter 4: Proposed Development*) that have occurred since the submission of the application in December 2014 ES and concludes if any changes to the likely significant effects occur as a result of those changes. This Replacement ES consolidates the environmental assessment of the design changes into a single ES, presenting commentary (under the heading 'Update 2015') for the design changes in the March 2015 ES Addendum (the 'March 2015 ES Addendum') by blue text, and the design changes arising from the current design changes by red text. Where relevant, text removed will be denoted by strike-through, e.g. effect), and updated tables and figures will be denoted by the suffix 'A' (e.g. Table 2.10A).
- This Replacement ES adopts the following terminology to describe the development descriptions and design changes:
  - Proposed Development: description of the development presented in the December 2014 ES;
  - Revised Scheme: description of the scheme incorporating the design changes to the Proposed Development in March 2015 (the design changes referred as the 'March 2015 amendments'), assessed within the March 2015 ES Addendum;
  - Amended Proposed Development: description of the development incorporating the current design changes to the Revised Scheme (the design changes referred as the 'November 2015 amendments'), to be assessed within the November 2015 Replacement ES.
- For clarification, since the preparation of the December 2014 ES, AECOM has merged with URS Infrastructure & Environment UK Limited (URS) to become a single environmental consultancy. Reference within the text to 'URS' in the November 2015 Replacement ES has now been replaced by AECOM Infrastructure & Environment UK Limited (hereafter referred to as 'AECOM').
- Further details in regard to the approach taken in this November 2015 Replacement ES are outlined in *Chapter 2: EIA Methodology*.

## Introduction

- 6.1 This chapter of the Environmental Statement (ES) assesses the potential and residual effects pertaining to waste and recycling due to the proposed Blossom Street development (hereafter referred to as the 'Proposed Development') located within the London Borough of Tower Hamlets (LBTH). This chapter summarises the relevant requirements placed upon new developments under national legislation and adopted and emerging planning policy on a national, regional and local scale.
- 6.2 The potential for combined waste and recycling effects pertaining to the Proposed Development in conjunction with other considered cumulative schemes are also discussed within this chapter.
- 6.3 This chapter has been prepared by ~~URS Infrastructure and Environment UK Limited (URS)~~ AECOM with information provided by Allford Hall Monaghan Morris (Architects) and Arup (transport consultants).
- 6.4 A Waste Management Strategy has been prepared by Arup, which has been used to inform the assessment process. This strategy is presented within *ES Volume III: Appendix B*.
- 6.5 A full description of waste streams used within this chapter can be found within *ES Volume III: Appendix B*; an overview of management responsibilities pertaining to each waste stream is also included.

## Legislation and Planning Framework

### National Legislation

- 6.6 National legislation considered relevant to the redevelopment of the application site (hereafter referred to as the 'Site') is set out as follows:
- Clean Neighbourhoods and Environment Act 2005 (Ref. 6-1);
  - Control of Pollution (Amendment) Act (COPA) 1989 (Ref. 6-2);
  - The Environment Act 1995 (Ref. 6-3);

- Environmental Protection Act 1990 (EPA) (Ref. 6-4);
- The Animal By-Products (Enforcement) (England) Regulations 2013 (Ref. 6-5);
- The Controlled Waste (England and Wales) (Amendment) Regulations 2012 (Ref. 6-6);
- The Environmental Permitting (England and Wales) (Amendment) Regulations 2013 (Ref. 6-7);
- The Environmental Protection (Duty of Care) (England) (Amendment) Regulations 2003 (Ref. 6-8);
- The Hazardous Waste (England and Wales) (Amendment) Regulations 2009 (Ref. 6-9);
- The List of Wastes (England) (Amendment) Regulations 2005 (Ref. 6-10);
- The Packaging (Essential Requirements) (Amendment) Regulations 2013 (Ref. 6-11);
- The Producer Responsibility Obligations (Packaging Waste) (Amendment) Regulations 2013 (Ref. 6-12);
- The Waste Batteries and Accumulators Regulations 2009 (Ref. 6-13);
- The Waste Electrical and Electronic Equipment Regulations 2013 (Ref. 6-14);
- The Waste (England and Wales) (Amendment) Regulations 2014 (Ref. 6-15);
- The Waste Management (England and Wales) (Amendment) Regulations 2006 (Ref. 6-16);
- The Control of Asbestos Regulations 2012 (Ref. 6-17);
- Scrap Metal Dealers Act 2013 (Ref. 6-18); and
- The Landfill Tax Regulations 1996 (Ref. 6-19).

### National Policy and Guidance

#### National Planning Policy Framework (2012)

- 6.7 The National Planning Policy Framework (NPPF) (Ref. 6-20) outlines Government's planning policies for England and how they are expected to be applied. It does not contain specific waste policies. Instead, national waste planning policy is contained within the Planning Practice Guidance (PPG) (Ref. 6-21), and the Waste Management Plan for England (2013) (Ref. 6-22).

#### Planning Practice Guidance (2014)

- 6.8 The Planning Practice Guidance (PPG) was launched in March 2014 and provides a web-based resource in support of the NPPF. With regards to waste, the PPG states within planning guidance document 'Design' that carefully planning bin storage is particularly important. The local authority should ensure that each dwelling is carefully planned so that sufficient storage is provided, which is discretely designed and accessible. Storage should be allocated based on practices within the local authority (e.g. recycling, food waste collection and landfilling).

#### Waste Management Plan for England (2013)

- 6.9 The Waste Management Plan for England was published in December 2013. The Plan is a high level document with the key aim of outlining the steps required to move towards a zero waste economy as part of the transition to a sustainable economy. It fulfils the Waste Framework Directive (WFD) Article 28 mandatory requirements (Ref. 6-23), and other required content as set out in Schedule 1 to the Waste (England and Wales) Regulations 2011. The Plan provides an analysis of current waste management practices in England, and evaluates implementation of the objectives and provisions of the revised WFD.

#### National Planning Policy for Waste (2014)

- 6.10 The National Planning Policy for Waste was published in October 2014 (Ref. 6-24) and provides the planning framework to enable local authorities to put forward, through local waste management plans, strategies that identify sites and areas suitable for new or enhanced facilities to meet the waste management needs of their areas. It states that when determining planning applications for non-waste development, local authorities should ensure that:

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- “the likely impact of proposed, non-waste related development on existing waste management facilities, and on sites and areas allocated for waste management, is acceptable and does not prejudice the implementation of the waste hierarchy and/or the efficient operation of such facilities;
- new, non-waste development makes sufficient provision for waste management and promotes good design to secure the integration of waste management facilities with the rest of the development and, in less developed areas, with the local landscape. This includes providing adequate storage facilities at residential premises, for example by ensuring that there is sufficient and discrete provision for bins, to facilitate a high quality, comprehensive and frequent household collection service;
- the handling of waste arising from the construction and operation of development maximises reuse/recovery opportunities, and minimises off-site disposal.”

## Regional Policy and Guidance

### The London Plan (2011)

**6.11** The London Plan (Ref. 6-25) outlines the Mayor’s commitment to making better use of waste and its management in an attempt to reduce London’s effect on climate change. The London Plan describes waste as a valuable resource that can be exploited for London’s environmental, economic and social benefit. As outlined in Table 6.1, the London Plan emphasises the importance of four policies in relation to waste management.

**Table 6.1 The London Plan Waste Management Policies**

Policy	Description
Policy 5.3 Sustainable Design and Construction	States that the highest standard of sustainable design and construction should be achieved in developments to improve the environmental performance of new developments. This should be achieved through a number of sustainable design principles including minimising the generation of waste and maximising re-use and recycling.
Policy 5.16 Waste Self-sufficiency	States that the Mayor will work with various stakeholders and authorities to ensure that by 2031, 100% of London’s waste will be managed within London and zero biodegradable or recyclable waste will be sent to landfill.
Policy 5.17 Waste Capacity	States the need to increase the waste processing capacity in London and that all new developments should have suitable waste and recycling storage facilities.
Policy 5.18 Construction, Excavation and Demolition Waste	States that waste should be removed from construction sites, and materials should be brought to the site, by water or rail transport wherever that is practicable.

### The London Plan – Revised Early Minor Alterations (2013)

**6.12** The London Plan Revised Early Minor Alterations (Ref. 6-26) were published in October 2013. In regards to waste, the Revised Early Minor Alterations states that the Mayor intends to work closely with agencies and authorities in neighbouring regions in order to develop and implement policies pertaining to waste management.

### Draft Further Alterations to the London Plan, January (2014) and July (2014)

**6.13** The Draft Further Alterations to The London Plan (Ref. 6-27) were published for further consultation in January 2014 to build upon the Revised Early Minor Alterations (2013). These alterations include greater emphasis on deriving energy from waste (EfW), determining the best pathways for waste in order to gain maximum benefits with regard to climate change mitigation and London becoming self-sufficient in terms of waste management by 2026.

**6.14** In July 2014, the Mayor published a schedule of ‘suggested changes’ to the Draft Further Alterations to the London Plan (Ref. 6-28). In particular paragraph 5.67 of the alterations acknowledges that waste contracts do not recognise administrative boundaries and that waste flows across borders. Consequently, the aim of the Mayor’s waste policies is to achieve net self-sufficiency for household and commercial waste by 2026. If

achieved, this would mean enough sites are identified within London to deal with the equivalent of 100% of the waste apportioned to the boroughs regardless of the waste’s origin. Paragraph 5.67 of the Draft FALP details the responsibility of the Mayor to apportion Household and Commercial Waste to each borough; there is no requirement to apportion Construction, Excavation and Demolition Waste; consequently the Mayor has not done so. Hazardous Waste is not an additional waste stream on top of Household and Commercial waste but a subset of these waste streams.

- 6.15** The Mayor recognises that in the short term this may mean that non-recyclable waste, in the form of solid recoverable fuel, may be exported outside of London, including Europe, whilst London markets are established. Equally, the Mayor encourages the flow of appropriate materials, such as recyclable waste and solid recoverable fuels, into London where economically beneficial.
- 6.16** As a result, clause Bc of Policy 5.16 – Waste Net Self Sufficiency replaces target values set for Municipal Solid Waste (MSW) with Local Authority Collected Waste (LACW), placing a greater emphasis on Household waste (HH) that is collected under Local Authority residential contracts rather than waste collected under private contracts.

### The Greater London Authority’s Sustainable Design and Construction, Supplementary Planning Guidance (2014)

- 6.17** The Greater London Authority’s (GLA) Sustainable Design and Construction Supplementary Planning Guidance (SPG) (Ref. 6-29) was published in April 2014. The Sustainable Design and Construction SPG provides additional guidance on Policy 5.3 Sustainable Design and Construction, as well as a range of other policies, of the London Plan. As such, the SPG provides further details and best practice on how to achieve the various targets described by policies of the London Plan in the most efficient and effective way.
- 6.18** In relation to waste, Section 2.7 Materials and Waste of the SPG provides guidance on how materials generated by the demolition phase of new developments can be managed within the construction phase through application of the waste hierarchy. It also provides guidance in order to ensure developments contain sufficient space for the storage of recyclables, organic material and waste. The SPG also states that 95% of construction, demolition and excavation waste should be recycled or re-used by 2020, with 80% being recycled as aggregates.

### The Business Waste Management Strategy (2011)

**6.19** In addition to the policies outlined in the over-arching London Plan, the Business Waste Management Strategy (Ref. 6-30) provides further policy guidance on the management of business waste. It sets out initiatives to help many different London businesses (including shops, restaurants and offices) save money and reduce harm to the environment through better waste management practices. The strategy is aimed at encouraging waste reduction and promoting better re-use and recycling from commercial activities. It looks to improve the efficiency of resource management and reduce the financial and environmental impact of waste by managing as much as is practical within the London boundaries.

### The Municipal Waste Management Strategy (2011)

**6.20** The Municipal Waste Management Strategy (Ref. 6-31) provides further policy guidance on the management of municipal waste in addition to policies contained within the overarching London Plan. The strategy sets six additional targets listed in Table 6.2, which aim to reduce the amount of municipal waste generated by the capital and significantly increase recycling and composting performance. The strategy goes on to explain that municipal waste, which cannot be re-used or recycled, will be used to produce energy from waste in the most environmentally sensitive way possible.

**Table 6.2 The Municipal Waste Management Targets**

Target	Description
Target 1	Achieve zero municipal waste sent directly to landfill 2025.



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Target	Description
Target 2	Reduce the amount of household waste produced in 2008/09 from 970 kilograms (kg) per household to 790kg per household by 2031; this is equivalent to a 20% reduction per household.
Target 3	Increase London's capacity to re-use municipal waste from approximately 6,000 tonnes each year in 2008 to: <ul style="list-style-type: none"> <li>20,000 tonnes a year in 2015; and</li> <li>30,000 tonnes a year in 2031.</li> </ul>
Target 4	With respect to municipal waste, recycle or compost at least: <ul style="list-style-type: none"> <li>45% by 2015;</li> <li>50% by 2020; and</li> <li>60% by 2031.</li> </ul>
Target 5	Cut London's greenhouse gas emissions through the management of London's municipal waste, achieving annual greenhouse gas emission savings of approximately: <ul style="list-style-type: none"> <li>545,000 tonnes of carbon dioxide equivalent (CO<sub>2</sub>e) in 2015;</li> <li>770,000 tonnes of CO<sub>2</sub>e in 2020; and</li> <li>1,000,000 tonnes of CO<sub>2</sub>e in 2031.</li> </ul>
Target 6	To generate as much energy as practicable from London's organic and non-recycled waste in a way that is no more polluting in carbon terms than the energy source it is replacing.

## Local Policy and Guidance

### LBTH Core Strategy (2010)

**6.21** The LBTH Core Strategy (Ref. 6-32) sets out, with regards to waste, strategic objective SO14 which states that LBTH will "...plan for and manage the borough's waste efficiently, safely and sustainably, by minimising the amount of waste produced, maximising recycling, and managing non-recyclable waste using treatment methods other than landfill." Further to SO14, strategic policy SP05 discusses how the LBTH will achieve SO14 and its objectives for the Borough.

### LBTH Managing Development Document (2013)

**6.22** The LBTH Managing Development Document (Ref. 6-33) policy DM14 Managing Waste states that to meet the requirements of the London Plan and implement SP04 of the Core Strategy, the LBTH needs to identify how waste apportionment targets will be met and how any new development will manage waste it generates. As part of Policy DM14, the safeguarding of existing waste sites is discussed, as well as the need to provide additional waste management facilities within the Borough (see paragraphs 6.77 to 6.81).

### Draft Waste Management Strategy for LBTH (2011)

**6.23** The Draft Waste Management Strategy for LBTH (Ref. 6-34) guides the way waste is managed within the LBTH during the period 2003 to 2018. The draft waste management strategy discusses how waste is currently managed within the Borough, objectives for sustainably managing waste in the future and actions needed to meet these objectives. It is intended that the strategy will run until 2016, during which time it will be reviewed (every three years).

**6.24** The strategy states a waste recovery target (including recycling and composting) for the Borough of 67% by 2015/16 in relation to municipal waste. For commercial and industrial (C&I) waste, a waste recovery target of 50% was set in 2005/06; no further targets have been set for this waste stream.

### LBTH Storage and Collection Supplementary Guidance (2012)

**6.25** The LBTH Supplementary Guidance (Ref. 6-35) provides guidance aimed at informing pre-application discussions and the implementation of planning policy as part of the development management process.

## Other Relevant Policy and Guidance

**6.26** There is no other relevant policy and guidance applicable to the Proposed Development and this assessment.

### Legislation and Planning Framework - Update 2015

#### March 2015 ES Addendum

**6.27** Since the submission of the December 2014 ES, the Further Alterations to the London Plan (FALP) (Ref. 6-55) were adopted on 10 March 2015. The London Plan has been updated, to incorporate the FALP and the Revised Early Minor Alterations to the London Plan (REMA) that were published in October 2013, and forms part of the development plan for Greater London. Additionally, the Plan recommends that for Boroughs' whose waste planning functions may go to adjoining Mayoral Development Corporations (MDCs), the responsibility for meeting waste apportionment targets should be shared. It should be noted that the LBTH is within an MDC, the London Legacy Development Corporation (LLDC) and that the current Mayor of Tower Hamlets sits on the LLDC Board. It is therefore expected that the LBTH will be able to successfully co-operate with the MDC upon apportionment of waste management targets. However, this document does not affect the assessment or conclusions of *Chapter 6: Waste and Recycling* of the December 2014 ES.

**6.28** There have been no further updates to legislation or planning policy with regards to waste and recycling since the December 2014 ES.

#### November 2015 Amendments

**6.29** Since the submission of the March 2015 ES Addendum, the following changes to legislation and planning policy are outlined below:

#### National Legislation

**6.30** The following updates to the national legislation have occurred since the preparation of the March 2015 ES Addendum:

- The Environmental Permitting (England and Wales) (Amendment) (no.2) Regulations 2015 (Ref. 6-56);
- The Landfill Tax 1996 (Ref. 6-19), (Amended) Regulations 2015 (Ref. 6-57); and
- The Packaging (Essential Requirements) Regulations 2015 (Ref. 6-58).

**6.31** The above alterations do not propose any significant changes to the policy relevant for the assessment.

#### The London Plan (2015)

**6.32** As acknowledged within the March 2015 ES Addendum, the Mayor adopted the FALP in March 2015 resulting in the consolidation of changes to the London Plan (2011) to become the 'London Plan (2015)'. The London Plan (2015) also incorporates the REMA, which were published in October 2013.

**6.33** No changes were made to the policy affecting the assessment as part of the adoption of the London Plan 2015 and does not alter the overarching content of the policy review undertaken as part of the December 2014 ES.

#### Minor Alterations to the London Plan (2015)

**6.34** On 11<sup>th</sup> May 2015 the Mayor of London published for six weeks public consultation (11<sup>th</sup> May to 22<sup>nd</sup> June) two sets of Minor Alterations to the London Plan – on Housing Standards and on Parking Standards. Both sets of minor alterations were to be considered at a public examination, commencing on 21<sup>st</sup> October 2015.

**6.35** These minor alterations have been prepared to bring the London Plan in line with new national housing standards and car parking policy. These alterations do not propose any significant changes to the policy relevant for the assessment.

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## Assessment Methodology and Significance Criteria

### Consultation

- 6.36** LBTH has been consulted throughout the evolution of the Proposed Development. The scope of the waste and recycling assessment for the EIA was set out in the EIA Scoping Report submitted to LBTH in July 2014. The EIA Scoping Opinion identified a list of information to be accounted for within the assessment. These have been addressed within this chapter (refer below) or where topics have not been addressed, justification has been provided.
- 6.37** Matters addressed are detailed in Table 6.3 of this ES chapter.

**Table 6.3 Matters raised within Scoping Opinion**

Topic	Reference in Chapter / Application Documentation
<b>London Borough of Tower Hamlets</b>	
The Council will require the implementation of a Site Waste Management Plan (SWMP), even though it is no longer a formal requirement. The principle of Waste Hierarchy should be practiced through waste minimisation, reuse and recycling.	A SWMP/ Construction Resource Management Plan (CRMP) will be produced for the Proposed Development.  The specific content of the CRMP will be provided at a later date, however details on the type of information that will be provided within the CRMP is outlined in the 'CRMP / Environmental Management Plan (EMP)' section (refer to paragraph 6.100 of this ES chapter).
The EIA Scoping Report proposes to incorporate appropriate waste storage and recycling facilities in accordance with LBTH Managing Development Document (DPD) 2013. This is the guiding principle which will assist in calculating waste volumes, storage and capacity once the Site is operational.	Details of the waste storage and recycling facilities, which have been developed in-line with LBTH's Managing Development Document guidance, are included within the 'Operational Phase – Design and Management' section (refer to paragraphs 6.95-6.156 of this ES Chapter).  Specific waste and recycling recommendations of LBTH have been taken into account in the preparation of this ES Chapter and associated operational waste specific waste and recycling strategy.  All correspondence with the LBTH Waste Officer regarding waste management within the Proposed Development can be found within the Waste Management Strategy (please see <b>Volume III: Appendix B</b> ).

### Assessment Methodology

- 6.38** The methodology used to identify baseline conditions, and assess the potential for likely significant effects pertaining to waste and recycling arising from the Proposed Development, has involved the following stages:
- Identification of potentially sensitive receptors within the context of waste and recycling;
  - Determination of the anticipated volume and composition of waste arisings generated by the Proposed Development during all phases;
  - Design of suitable management measures that will be incorporated into the Proposed Development, for all phases of the Proposed Development, in relation to waste and recycling;
  - Evaluation of the significance of effects upon potentially sensitive receptors as a result of waste and recycling. This evaluation will assess the effects with the assumption that the outlined management measures and good practice guidelines are adhered to; and

- Assessment of any residual effects, and resultant significant environmental effects, that may result from the Proposed Development in regards to waste and recycling, following the incorporation of mitigation measures.

### Methodology for Determining Baseline Conditions

- 6.39** This waste and recycling assessment has been set against a review of the existing conditions at the Site and at the local (i.e. LBTH) scale. The existing buildings have been assumed to be fully occupied as this would be a potential future scenario should the Site remain as it is. Waste arisings have been calculated for each building dependant on current (or most recent past) land-uses. In order to be consistent the calculations and assumptions that have been used are the same as those used for calculating the Proposed Development's operational phase waste arisings. These calculation methods and assumptions can be found within Table 6.5 of this ES chapter.
- 6.40** The following sources of information have been reviewed as part of the baseline analysis at the local/district scale:
- Department for the Environment, Food and Rural Affairs (Defra): Local Authority Municipal Waste Statistics 2008/09 (Ref. 6-36), 2009/10 (Ref. 6-37), 2010/11 (Ref. 6-38), 2011/12 (Ref. 6-39); 2012/13 (Ref. 6-40) and 2013/14 (Ref. 6-41)
  - LBTH's Local Development Framework Waste Evidence Base Report Update (Ref. 6-42);
  - LBTH's Managing Development Document; and
  - GLA's Future Waste Arisings in London 2010-2031 Summary Note (Ref. 6-43).
- 6.41** A heavy emphasis is placed upon the local scale due to the nature of waste management, which is conducted on a much larger scale than that of Site. Data provided by Defra was used to calculate current local waste arisings (Ref. 6-36 - Ref. 6-40).
- 6.42** Where figures have been provided in weights (i.e. tonnes), Environment Agency standard conversion factors have been applied to establish volumes of materials and vice versa. These standard conversion factors were taken from Waste And Resources Action Plan's (WRAP) A Guide to Volume Mass Conversion Factors and List of Waste (LoW) Categories used within WRAP's Tools (Ref. 6-44). Different material types have very different conversion factors, however, for the purpose of this assessment a conversion factor of 0.21 has been used for LACW and commercial and industrial (C&I) waste; and a conversion factor of 0.87 has been used for waste arising from construction, demolition and excavation (CD&E) activities.
- 6.43** Potentially sensitive receptors were identified following the review of existing conditions at the Site. Further details of the criteria used for evaluating receptor sensitivity are included within Table 6.6 of this ES chapter.

### Methodology for Determining Demolition and Construction Wastes

- 6.44** Various types and quantities of waste are anticipated to be generated during the demolition and construction phase of the Proposed Development, referred to as 'CD&E waste'. Specific CD&E waste compositions and quantities expected to be produced during this phase has been based on information provided by BlueSky Building in conjunction with the Design and Consultant Team, as presented within **Chapter 5: Demolition and Construction** of this ES.
- 6.45** The estimates of CD&E waste have been used to identify the key waste streams and potentially suitable management measures which will be required to help reduce potential adverse risks to sensitive receptors are not adversely impacted. These CD&E management measures are discussed within the Environmental Design and Management section of this ES chapter (refer to paragraphs 6.95-6.156 of this ES chapter).
- 6.46** With regard to the assessment process, quantities of CD&E waste anticipated to be produced by the Proposed Development have been evaluated against the existing local context to confirm that adequate waste infrastructure capacity is available.

### Methodology for Determining Operational Wastes

- 6.47** Quantities of waste anticipated to be produced by the operational phase of the Proposed Development have been calculated and co-ordinated in accordance with the following guidance:

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- LBTH's Managing Development Document;
- LBTH's Refuse and Recycling and Collection Supplementary Guidance;
- British Standards 5906:2005 Waste Management in Buildings, Code of Practice (BS5906:2005) (Ref. 6-45); and
- Arup's in-house waste calculator (for A4 (drinking establishments) land-uses).

**6.48** The estimates of operational wastes have been used to identify the key waste streams and potentially suitable management measures which will be required to help reduce potential adverse risks to sensitive receptors. These operational management measures are discussed within the Environmental Design and Management section within paragraphs 6.95-6.156 of this ES chapter, as well as, being outlined within the Waste Management Strategy prepared by Arup and found within **ES Volume III: Appendix B**.

**6.49** With regards to the assessment process, quantities of waste expected to be produced during the operational phase (i.e. LACW and C&I waste) have been evaluated against the existing local context to confirm that adequate waste infrastructure capacity is available.

### Residential Uses

**6.50** It is proposed that the residential element of the Proposed Development will aim to achieve Code for Sustainable Homes (CfSH) Level 4. CfSH states that in order to achieve Level 4, new developments should allow for the greater volume of waste storage from either of the following: Local Planning Authority guidance (i.e. LBTH) or BS5906:2005. As the LBTH guidance provides for a more conservative (i.e. greater) storage allocation than that of BS5906:2005, this methodology has been used to calculate the residential waste arisings and required storage for the operation of the Proposed Development.

**6.51** In accordance with LBTH requirements, residential waste rooms have been sized to accommodate eight days of waste storage, to allow for bank holidays and missed collections. Table 6.4 of this ES chapter outlines the LBTH residential waste storage requirements, in addition to mixed dry recyclable, organic food waste and residual (i.e. non-recyclable) waste streams generated by the operational phase of the Proposed Development.

**Table 6.4 LBTH Residential Storage Requirements**

Unit Type	Minimum Capacity per 7 day Week (L)			
	Residual Waste	Mixed Dry Recyclables	Organic Food Waste	Total
Studio/1 bed	100	60	20	180
2 bed	120	60	20	200
3 bed	180	80	30	290

*Note: Capacity guidelines included within Table 6.4 have been taken from the LBTH Refuse and Recycling Storage and Collection Supplementary Guidance, which states the minimum seven day week storage allowance for different unit mixes. The LBTH further identify that the storage capacity must allow for a minimum of eight days' worth of waste, to allow for bank holidays and mixed collections. The storage capacity within this table is used to calculate the eight days' worth of storage required for the Proposed Development (refer to Table 6.17 and Table 6.18 of this ES chapter for calculated waste arisings, and Table 6.20 and Table 6.21 of this ES chapter for calculated eight day storage requirements for the Proposed Development).*

### Commercial Uses

**6.52** The commercial waste arisings have been calculated in accordance with BS5906:2005 guidance and Arup's in-house waste calculator tool for the calculation of the proposed A4 land use (a public house). This approach was agreed with the LBTH Waste Officer; all correspondence with the LBTH Waste Officer regarding waste management within the Proposed Development can be found within **ES Volume III: Technical Appendix B** of this ES. Commercial waste storage requirements have then been calculated using a two-day storage capacity and a compaction ratio of 2:1 (except for separated glass and food waste streams).

**6.53** Table 6.5 below outlines the methodology used to calculate weekly waste arisings relating to the various commercial land uses within the Proposed Development, including various assumptions specific to each land use of the Proposed Development.

**Table 6.5 Commercial Waste Storage Capacity Guidelines**

Land Use	Weekly Waste Arisings (L)	Assumptions	Waste Stream Composition
Retail (A1)	10L per m <sup>2</sup> Net Internal Area (NIA) floor space	Assumed to be non-food retail	50:50 (mixed dry recyclables: residual waste)
Retail (A3)	75L generated per cover	1 cover per 1.5m <sup>2</sup> of the sales floor area. Sales floor area = 2/3 of the Net Internal Area (NIA)	60:40 (residual: recyclables (11% mixed dry recyclables, 5% glass and 24% food waste)
Bar (A4)	Calculated using Arup's in-house calculator*	Data gathered from surveys	22:78 (residual: recyclables (36% mixed dry recyclables, 18% food waste and 24% glass)
Office (B1)	50L generated per employee	One employee per 10m <sup>2</sup> of NIA	20:80 (residual: recyclable)

\* Arup's in-house waste calculator calculates the waste generation from A4 (public house) land uses based on survey data. The data is analysed and then generated according to the area (m<sup>2</sup> GIA) of the proposed land use.

## Significance Criteria

### Effect Significance Terminology Overview

**6.54** The assessment of effect significance outlined within the below sections is consistent with the terminology and criteria outlined within **Chapter 2: EIA Methodology** of this ES. The terminology used to describe the sensitivity of resources / receptors and magnitude of the impact will be as follows:

- High;
- Medium;
- Low; and
- Very Low (this terminology is only applied in the context of magnitude of impact).

**6.55** The key terminology to be used to describe the classification of effects is as follows and is further described in the 'Evaluating Effects and Significance' section below.

- Major;
- Moderate;
- Minor; and
- Negligible.

**6.56** The nature of the effects may be either adverse (negative) or beneficial (positive).

### Evaluation of Effect and Significance – Waste and Recycling

**6.57** There is no published or formalised technical guidance available for the assessment of potential waste and recycling related effects. As such, professional judgement and experience has been relied upon in assessing likely significant waste related impacts resulting from the demolition and construction and operational phases of the Proposed Development.

### Identification of Potentially Sensitive Receptors and Receptor Sensitivity

**6.58** Receptors that are potentially sensitive to changes in waste and recycling as a result of the Proposed Development have been identified following the assessment of baseline conditions. Using professional



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judgement, each receptor has been assigned a level of sensitivity (i.e. high, medium, low) based on the function of the receptor in relation to the Proposed Development. Table 6.6 below outlines the classification of receptor sensitivity in relation to waste generation, collection and management.

**Table 6.6 Receptor Sensitivity**

Sensitivity	Receptor Description
High	Demolition and construction-site workers – workers present and working on the Site during the demolition and construction phase (e.g. direct dermal contact, handling of waste and inhalation).
	Future on-site users - residents, staff, internal management, customers, commercial tenants, etc.
	Local waste management infrastructure – minimal range of facilities available within the Borough providing a waste management system with only one management route (i.e. recycling) in addition to final disposal. Those that are available have only a small amount of remaining capacity for addressing waste arisings.
Medium	Neighbouring users/occupiers of local commercial/retail/residential property – proximal location (i.e. within 200m) to the Proposed Development during demolition and construction and once the Proposed Development is complete and operational. Includes reference to potential occupiers of the Proposed Development whilst construction works are underway on other phases (e.g. inhalation / dispersal and noise / nuisance).
	Local waste management infrastructure – moderate range of facilities available within the Borough providing a waste management system with more than one management route disposal (e.g. recycling and composting) in addition to final disposal. Those that are available have only a moderate amount of remaining capacity for addressing waste arisings.
Low	Local waste management infrastructure – wide range of facilities available within the Borough providing a waste management system with several management routes (e.g. recycling, composting, energy recovery) in addition to final disposal. Facilities have a large amount of remaining capacity for addressing waste arisings.

## Magnitude of Change

- 6.59** The magnitude of change describes the degree of variation from current baseline conditions due to the Proposed Development. Once determined, the magnitude of change is applied to each potentially sensitive receptor to determine the significance of any potential impacts. The magnitude of change has been based on the following key factors:
- Volume of waste arisings; and
  - Waste composition.
- 6.60** Each factor is separately defined as having a ‘high’, ‘medium’, ‘low’ or ‘very low’ magnitude of change. However, it is possible that the same magnitude of change may not be applied for both factors. In this instance, an overall magnitude of change will be determined. For example, if the volume of waste is considered to have a high magnitude of change, but waste composition is considered to have a low magnitude of change, the overall magnitude of change will be medium.
- 6.61** In the event that an average magnitude of change cannot be determined in this way (i.e. volume of waste is deemed to have a low magnitude of change and waste composition is considered to have a medium magnitude of change), the higher magnitude of change will be defaulted to, so as to provide a worst case approach to the assessment.
- 6.62** Table 6.7 below outlines the key factors used to assess the magnitude of change due to the Proposed Development in relation to waste generation and management.

**Table 6.7 Factors for Assessing the Magnitude of Change due to the Proposed Development**

Magnitude of Change	Description of Magnitude	
	Negative	Positive
High	<i>Volume of Waste</i>	
	Activities result in an increase in waste generation from the baseline in the order of $10^7$ (i.e. increase in waste arisings in the order of >10 million tonnes annually*).	Activities result in a decrease in waste generation from the baseline in the order of $10^7$ (i.e. decrease in waste arisings in the order of >10 million tonnes annually*).
	<i>Waste Composition</i>	
	Hazardous waste streams requiring highly specialised handling, storage and treatment methods (i.e. radioactive waste, clinical waste generated by medical practices such as hospitals, dentists, veterinary clinics and pharmacies).	Substantial increase in the proportion of inert/non-hazardous waste streams relative to the baseline proportion. No generation of hazardous or specialised waste streams; majority/all waste is inert. Composition of waste is such that the majority can be re-used with minimal/no pre-treatment.
<i>Either one or a combination of these criteria has the potential to have a substantial negative/positive impact upon potentially sensitive receptors from baseline conditions.</i>		
Medium	<i>Volume of Waste</i>	
	Activities result in an increase in waste generation from the baseline in the order of $10^6$ (i.e. increase in waste arisings in the order of 1 million tonnes annually**).	Activities result in a decrease in waste generation from the baseline in the order of $10^6$ (i.e. decrease in waste arisings in the order of 1million tonnes annually**).
	<i>Waste Composition</i>	
	Includes some materials requiring specific (but not necessarily highly specialised) consideration in regards to safe management and disposal. For example: WEEE (i.e. batteries, fluorescent tubes); biodegradable waste (i.e. organic kitchen waste, green waste); animal by-products (e.g. carcasses, animal products not intended for human consumption); solvents and paints; and clinical waste generated by non-medical practices (e.g. hair and beauty activities, tattooists).	Noticeable increase in the proportion of inert/non-hazardous waste relative to the baseline proportion and decrease in the proportion of hazardous/specialised waste streams relative to the baseline proportion. Majority of waste is non-hazardous with some inert streams. Composition of waste is such that the majority can be recycled with minimal/no pre-treatment.
<i>Either one or a combination of these criteria has the potential to have a noticeable negative/positive impact upon potentially sensitive receptors from baseline conditions.</i>		
Low	<i>Volume of Waste</i>	
	Activities result in an increase in waste generation from the baseline in the order of $10^5$ (i.e. increase in waste arisings in the order of 100,000 tonnes annually***).	Activities result in a decrease in waste generation from the baseline in the order of $10^5$ (i.e. decrease in waste arisings in the order of 100,000 tonnes annually***).
	<i>Waste Composition</i>	
	Inert and/or non-hazardous waste streams typically generated by household and commercial activities such as office and retail (e.g. mixed dry recyclables, packaging waste, residual waste).	Barely perceptible increase in proportion of non-hazardous/ municipal waste relative to the baseline proportion and decrease in the proportion of hazardous/specialised waste streams relative to the baseline proportion; majority of waste is non-hazardous or municipal. Composition of waste is such that the majority can be recycled with specialised pre-treatment.
<i>Either one or a combination of these criteria has the potential to have a barely perceptible negative/positive impact upon potentially sensitive receptors from baseline conditions.</i>		
Very Low	Insignificant increase/decrease in the volume of waste and no discernible change or adverse/beneficial impact due to waste composition on a local, regional or national scale from the baseline. No adverse/beneficial impact to human health or the environment from the baseline conditions.	
<ul style="list-style-type: none"> <li>• * This order of magnitude for waste volume is based on the following national waste arising figures: <ul style="list-style-type: none"> <li>- Approximately 25 million tonnes of local authority collected waste (LACW) (which is in the order of <math>10^7</math>) (i.e. approximately 119 million kL) (Ref. 6-46);</li> </ul> </li> </ul>		



# 06 Waste and Recycling

Magnitude of Change	Description of Magnitude	
	Negative	Positive
	<ul style="list-style-type: none"> <li>- Approximately 48 million tonnes of C&amp;I (which is in the order of <math>10^7</math>) (i.e. approximately 229 million kL) (Ref. 6-47); and</li> <li>- Approximately 77 million tonnes of CD&amp;E (which is in the order of <math>10^7</math>) (i.e. approximately 89 million kL) (Ref. 6-48).</li> </ul>	
	<ul style="list-style-type: none"> <li>• <b>**This order of magnitude for waste volume is based on the following regional waste arising figures:</b> <ul style="list-style-type: none"> <li>- Approximately <del>4</del> 3.6 million tonnes of LACW (which is in the order of <math>10^6</math>) (i.e. approximately <del>19</del> 17 million kL) (<del>Ref. 6-46</del>) (Ref. 6-59);</li> <li>- Approximately 5 million tonnes of C&amp;I (which is in the order of <math>10^6</math>) (i.e. approximately 24 million kL) (Ref. 6-47); and</li> <li>- Approximately 10 million tonnes of CD&amp;E (which is in the order of <math>10^7</math>) (i.e. approximately 12 million kL) (Ref. 6-25).</li> </ul> </li> </ul>	
	<ul style="list-style-type: none"> <li>• <b>*** This order of magnitude for waste volume is based on the following local waste arising figures:</b> <ul style="list-style-type: none"> <li>- Approximately <del>424</del> 106 thousand tonnes of LACW (which is in the order of <math>10^5</math>) (i.e. approximately <del>594,000</del> 505,000 kL) (<del>Ref. 6-46</del>) (Ref. 6-59);</li> <li>- Approximately <del>268</del> 272 thousand tonnes of C&amp;I (which is in the order of <math>10^5</math>) (i.e. approximately 1.3 million kL) (<del>Ref. 6-43</del>) (Ref. 6-60); and</li> <li>- Approximately <del>326</del> 746 thousand tonnes of CD&amp;E (which is in the order of <math>10^5</math>) (i.e. approximately <del>375</del> 857 thousand kL) (<del>Ref. 6-43</del>) (Ref. 6-60).</li> </ul> </li> </ul>	

## Significance Criteria Assessment

- 6.63** It should be noted that the generic effects matrix outlined in **Chapter 2: EIA Methodology** differs to the matrix used within this chapter in that the negligible magnitude of change produces negligible effects with regards to high sensitivity receptors. The effects matrix in this chapter (refer Table 6.8 below) differs in that negligible magnitudes of changes will result in negligible effects with regards to high sensitivity receptors. All negligible magnitudes of change will therefore produce negligible effects. The matrix has been adapted so that once a comprehensive CRMP and Operational Waste Strategy has been implemented, the effects relating to waste will have been minimised and the Proposed Development should be able to provide sufficient storage capacity in-line with national, regional and local policy requirements and best practice guidelines. Therefore, resulting at most in a negligible effect on high sensitivity receptors.
- 6.64** The management measures recommended within this chapter will be designed into the Proposed Development with the intention of minimising effects resulting from waste. Therefore when looking at the waste management strategy for the residential elements of the Proposed Development, it is acceptable to presume that there will be a negligible effect on the residents during the operational phase. For example, where an operational waste strategy provides sufficient storage capacity for waste collected regularly (to minimise odours and prevent vermin), has been agreed in principle with the local waste minimisation and recycling officer and is in-line with national, regional and local policy requirements and good practice guidelines then there will be a negligible effect to residents of the Proposed Development.

**Table 6.8 Waste Assessment - Significance Matrix**

Receptor Sensitivity	Magnitude of Change			
	High	Medium	Low	Very low
High	Major	Major	Moderate	Negligible
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible

- 6.65** Further to the above descriptions, effects can be described to be both 'direct' and 'indirect' in nature, as well as the temporal dimension. The temporal dimension can be further defined as short-term (i.e. 0-5 years), medium-term (i.e. 6-10 years) or long term (i.e. > 10 years).

- 6.66** Effects relating to waste and recycling of the demolition and construction phase are temporary in nature (i.e. activities cease at the end of the construction phase). Therefore, it is anticipated that effects associated with the demolition and construction phase will be temporary in duration, defined as short-term (0-5 years) as explained above.

## Limitations and Assumptions

- 6.67** This waste and recycling assessment work is based on the final designs submitted with the planning application and assumes that the Proposed Development will be developed in accordance with this information. It is also assumed that the Proposed Development will be implemented in accordance with the recommended management measures presented within this ES chapter.
- 6.68** With regards to data analysis, collection of C&I and CD&E waste services are generally provided by private contractors. Therefore, data pertaining to the volume and composition of C&I and CD&E waste, and their associated management methods, is typically not widely available. Consequently, only estimates of C&I and CD&E waste produced within the LBTH were available (these estimates were published in 2010).
- 6.69** These estimates have been used to provide baseline context at the local scale. In comparison, collection and management of municipal waste generated by households (i.e. LACW) falls to the local authority (i.e. LBTH). As a result, data relating to the volume, composition and management of this waste stream is collated and passed onto the Environment Agency on a regular basis; as a result this information is typically more accessible relative to other streams.

## Assessment Methodology and Significance Criteria - Update 2015

### March 2015 ES Addendum

- 6.70** Since the submission of the December 2014 ES, there have been minor changes to the commercial plots of S1 and S1c, it should be noted that there have been no changes to the residential aspect of the Proposed Development. Since the submission of the December 2014 ES, there have been no changes to the methodology for calculating commercial waste arisings and storage requirements. With regards to the commercial aspects of the Revised Scheme, the changes to the commercial area schedule include a decrease in S1 and S1c office (B1 land use class) area space of 84m<sup>2</sup> Net Internal Area (NIA) (from 14,834m<sup>2</sup> NIA to 14,750m<sup>2</sup> NIA). Additionally, there has been a decrease in retail (restaurant and café) (A3 land use class), (hereafter referred to as restaurant (A3)), area space of 16m<sup>2</sup> NIA (from 1,420m<sup>2</sup> NIA to 1,404m<sup>2</sup> NIA). In-line with LBTH guidance, office (B1) waste arisings are calculated based on 50 litres (L) waste generated per employee, with the assumption of one employee per 10m<sup>2</sup> NIA. Restaurant (A3) waste arising estimates have been calculated based on 75L waste per cover, with the assumption of one cover per 1.5m<sup>2</sup> sales floor area (SFA). The SFA is calculated as two-thirds of the total NIA. It should be noted that office (B1) waste will be split into two waste streams: recyclable waste and residual waste; 80% of the total estimated waste arising from this land use class will be allocated to recyclable waste, with 20% of total waste arising from this land use class allocated to residual waste. With regards to restaurant (A3) land uses, the waste will be split at a 40:60 ratio between recyclable waste and residual waste respectively. The recyclable waste arising from restaurant (A3) land uses is further split into mixed dry recyclables (MDR) waste (11%), glass (5%), and food waste (24%). This is consistent with the methodology used in the December 2014 ES. In-line with the December 2014 ES, commercial waste storage requirements have been calculated based on a two day storage capacity and a two day collection frequency, furthermore residual and MDR waste streams will be compacted at a 2:1 compaction ratio (food waste and glass waste streams will not be compacted). This methodology is consistent with the December 2014 ES and was previously agreed with the LBTH. As there have been no changes to the residential unit mix, and to the commercial aspects of S1a, S1b, S2 and S3, these will not be assessed within this ES addendum, and it can be assumed that the conclusions of Chapter 6: Waste and Recycling of the December 2014 ES remain valid with regards to these Sites.

# 06 Waste and Recycling

## November 2015 Amendments

- 6.71** The most up-to-date references have been used for regional and local waste volumes and have been updated in Table 6.7, however the change in waste volumes to assist in gauging magnitude of change have not altered significantly. Therefore, there have been no material changes to the methodology used to calculate impact significance.
- 6.72** The November 2015 amendments provide for the separation of 12-13 Blossom Street from S1, so that it operates as an independent building. The amendment includes changes to the office and retail floor space provision within S1. Whilst 12-13 Blossom Street is now a self-contained building, this does not however affect the assessment as S1, S1c and 12-13 Blossom Street share a commercial waste store. The updated area schedules and working capacities of S1, S1c and 12-13 Blossom Street are outlined in Table 6.1A.

**Table 6.1A Comparison of the area schedule of the March 2015 ES Addendum and the November 2015 Replacement ES**

Development Plot	Area				Working Capacity	
	March 2015 ES Addendum		November 2015 Replacement ES		March 2015 ES Addendum	November 2015 Replacement ES
	GIA (m <sup>2</sup> )	NIA (m <sup>2</sup> )	GIA (m <sup>2</sup> )	NIA (m <sup>2</sup> )		
<i>Commercial Area Schedule</i>						
<b>S1, S1c and 12-13 Blossom Street</b>						
Retail (A1)	579	406	611	415	406m <sup>2</sup> NIA	415m <sup>2</sup> NIA
Restaurant (A3)	1,821	1,404	1,643	1,259	SFA: 936m <sup>2</sup> 624 covers	SFA: 839m <sup>2</sup> 560 covers
Office (B1)	21,202	14,750	21,188	14,355	1,475 employees	1,436 employees

## Baseline Conditions

### On-Site Waste Arisings and Management

- 6.73** The Site is currently occupied by 22 commercial properties, comprising: retail; commercial and business services; digital consulting; marketing; design; health and beauty; and recruitment. Table 6.9 below outlines the existing on-site land uses, their areas and a summary of the estimated waste arisings that could be generated by the existing Site should all buildings be occupied.

**Table 6.9 Current On-Site Land Uses, Areas And Weekly Waste Arisings**

Building	Area (m <sup>2</sup> NIA)	Land use	Working Capacity	Weekly Waste Generation (L)
<b>S1c</b>				
2 Shoreditch High Street	164.9	Commercial use: restaurant, shop and linen warehouse* (A3)	Sales floor area: 109.9m <sup>2</sup> NIA 74 covers	5,550
3-10 Shoreditch High Street	7,054.8 (3-10 Shoreditch High Street (including 12/14 Blossom Street & 15 Blossom Street))	Warehouses (B6)	Floor area: 7054.8m <sup>2</sup> NIA	35,274

Building	Area (m <sup>2</sup> NIA)	Land use	Working Capacity	Weekly Waste Generation (L)
20 Norton Folgate	549.2	Offices and warehouses (B1/B6)*	55 employees	2,750
1887 warehouse and 1970s warehouse	1549.4	Warehouse (B6)***	Floor area: 1,549.4m <sup>2</sup> NIA	7,747
<b>S1a</b>				
13, 14 Norton Folgate	551.2	Shops (A1)	Floor area: 551.2m <sup>2</sup> NIA	5,512
15 Norton Folgate	197.8	Shops and silversmith (A1)	Floor area: 197.8m <sup>2</sup> NIA	1,978
16-19 Norton Folgate	1,056.6	Commercial buildings (A3)	Floor area: 704.4m <sup>2</sup> NIA 470 covers	35,250
<b>S1b</b>				
16-17 Blossom Street	589.3	Offices and warehouses (B1/B6)*	59 employees	2,950
5-11a Folgate Street	1,378.7	Offices and shops (B1/A1)*	Floor area: 1,378.7m <sup>2</sup> NIA	13,787
<b>S2</b>				
2 Elder Street**	Unknown	Warehouse (B6)***	Unknown	No information available
1927 warehouse	1,868.3	Warehouse (B6)***	Floor area: 1,868.3m <sup>2</sup> NIA	9,341.5
161 Commercial St	173.4	Retail (A1)	Floor area: 173.4m <sup>2</sup> NIA	1,734
4 Elder Street	428.5	Warehouse (B6)***	Floor area: 428.5m <sup>2</sup> NIA	2,142.5
6 Elder Street	417.7	Warehouse (B6)***	Floor area: 417.7m <sup>2</sup> NIA	2,088.5
8 Elder Street	317.5	Warehouse (B6)***	Floor area: 317.5m <sup>2</sup> NIA	1,587.5
161 Commercial Street	173.5	Retail space (A1)	Floor area: 173.5m <sup>2</sup> NIA	1,735
<b>S3</b>				
10 Blossom Street – the depot site	492.7	The Depot (B6)	Floor area: 492.7m <sup>2</sup> NIA	2,463.5
14-22 Elder Street, 11-16 Fleur de Lis Street	1951.7	Offices (B1)	Floor area: 1,951.7m <sup>2</sup> NIA 196 employees	9,800
<b>Total</b>	<b>18,915.2</b>	-	-	<b>141,690.5</b>

\* Where more than one land use is provided per building, the land use that generates the most waste has been used in order to provide a worst case assessment for the calculation of waste arisings.

\*\* No information could be found regarding 2 Elder Street, it is therefore not included in the calculation of the waste arisings.

\*\*\* The calculation methodology used to generate weekly waste arisings relating to warehouse (B6) land use was not included within Table 6.5; it was calculated based on 5L per m<sup>2</sup> NIA.

### Local Waste Arisings and Management

- 6.74** The LBTH is a Unitary Authority for waste and as such is responsible for the collection, treatment and final disposal of all municipal waste generated within the Borough. Table 6.10 below provides an overview of the current levels of municipal waste arisings and management routes within LBTH.

# 06 Waste and Recycling

**Table 6.10 Local (LBTH) Waste Arisings and Management (LACW)**

Waste Management Method	Waste Arisings (thousand tonnes)					
	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Landfill	<del>87.6 (83%)</del>	66.0 (63%)	61.5 (59%)	52.8 (52%)	17.9 (17%)	8.5 (8%)
Incineration (with Energy from Waste, EFW)	<del>2.6 (2%)</del>	11.2 (11%)	7.2 (7%)	15.8 (16%)	52.4 (51%)	68.1 (64%)
Recycled/composted	<del>15.3 (15%)</del>	20.5 (19%)	20.3 (20%)	20.1 (20%)	20.1 (20%)	20.8 (20%)
Other	<del>0 (0%)</del>	7.4 (7%)	14.4 (14%)	12.1 (12%)	12.1 (12%)	8.9 (8%)
Diverted from landfill	<del>17.9 (17%)</del>	39.1 (37%)	41.9 (41%)	48 (48%)	84.6 (83%)	97.8 (32%)
<b>Total</b>	<del>105.5 (100%)</del>	<b>105.4 (100%)</b>	<b>103.4 (100%)</b>	<b>100.8 (100%)</b>	<b>102.5 (100%)</b>	<b>106.3 (100%)</b>

Note: Data adapted from Defra: Local Authority Municipal Waste Statistics 2008/09 (Ref. 6-36) 2009/10 (Ref. 6-37), 2010/11 (Ref. 6-38), 2011/12 (Ref. 6-39) 2012/13 (Ref. 6-40) and 2013/14 (Ref. 6-41).

- 6.75 According to the GLA's Future Waste Arisings in London 2010-2031 Summary Note, the LBTH were expected to produce 268,000 tonnes of C&I waste and 326,000 tonnes of CD&E waste in 2013.
- 6.76 The LBTH have targets set out within the London Plan that require them to achieve 85% self-sufficiency with regards to waste management within the Borough. Table 6.11 below identifies the LBTH current and future waste apportionment targets as set out in the London Plan.

**Table 6.11 LBTH Waste Apportionment Targets for Municipal Solid Waste (MSW) and C&I Waste (in thousand tonnes)**

Waste Stream	Target Year		
	2016	2021	2026
MSW	73,000	79,000	83,000
C&I	169,000	169,000	169,000
<b>Total</b>	<b>242,000</b>	<b>248,000</b>	<b>252,000</b>

Note: These targets taken from the Draft Further Alterations to The London Plan document. There are no apportionment targets for CD&E waste set out in the London Plan, this is because London already reuses or recycles 90% of its generated CD&E waste, and this is expected to continue. Therefore the LBTH does not need to allocate sites for CD&E waste facilities.

- 6.77 In order to achieve these targets the LBTH have identified six licensed waste management facilities which are required to be safeguarded in accordance with the London Plan and LBTH Core Strategy:
- Clifford Devlin Ltd (0.37 ha);
  - Fish Island Mid (0.025 ha);
  - Ailsa Street (part of a larger sites) (0.89 ha);
  - Northumberland Wharf (0.62 ha); and
  - Fish Island South (part of a larger site) (0.41 ha); and
  - McGrath (2.68 ha).
- 6.78 The above locations provide 4.99 hectares (ha) of land towards meeting the LBTH's waste apportionment target, which requires a range of between approximately 3.6 and 7.3 ha (Ref. 6-33). However, LBTH has stated that these locations may not be the best long-term solution for the sustainable management of waste.
- 6.79 Over the past few years, the LBTH have undertaken various exercises to identify appropriate locations for new waste management facilities. Currently the most favourable site to have been identified is the Ailsa Street site and as such it has been safeguarded within the LBTH Managing Development Document. This site covers an area of 5.76 ha and currently comprises industrial storage and processes, a waste transfer station and a former primary school. However, the Ailsa Street site is not yet under construction (and the timeline for development is currently unknown) and therefore the LBTH are reliant on their existing facilities.

- 6.80 Under an 11-year contract with Veolia Environment, LBTH are seeking to divert as much waste away from landfill as possible (i.e. the Rainham Landfill Site) and use existing alternative treatments (i.e. the Frog Island Mechanical Biological Treatment (MBT) plant and Northumberland Wharf Recycling and Reuse Centre). Largely due to Government directives and local targets set by the LBTH, the Borough is moving away from their historical reliance on landfill and is instead focussing on the principles of the waste hierarchy.
- 6.81 Where possible, waste will be avoided or reduced in the first instance. Where this is not achievable, recycling and recovery opportunities will be explored prior to disposal, which is considered the final management option by the LBTH. New waste treatment technologies will be favoured over landfill with regards to the management of residual waste within the Borough.

## Baseline Summary

- 6.82 Based on current Site uses, it has been calculated that the Site would produce approximately 141,690.5L of waste per week, equating to approximately 1,547 tonnes per year. This is a relatively small portion of the ~~102,500~~ 106,300 tonnes of LACW produced in LBTH during 2012/13-2013/14. In recent years, there has been a trend in LBTH for movement away from landfill and towards other management methods for LACW.
- 6.83 According to the GLA's Future Waste Arisings in London 2010-2031 Summary Note, the LBTH are expected to produce ~~268,000~~ 272,000 tonnes of C&I waste and ~~326,000~~ 746,000 tonnes of CD&E waste in ~~2013~~ 2015.
- 6.84 In order to meet targets of the London Plan, the LBTH has safeguarded several existing waste management facilities and identified a potential new site suitable for an additional waste management facility (known as the Ailsa Street site). With regards to existing waste management facilities, it has been assumed that all facilities have a remaining capacity of 75% (in accordance with assumptions of the London Plan).

## Summary of Sensitivity of Resources / Receptors

### Demolition and Construction

- 6.85 The LBTH provides a wide range of facilities for the management of waste using a variety of methods. Waste arisings generated during the construction phase have the potential to impact upon local waste management infrastructure. The Northumberland Wharf Recycling and Re-use Centre for example, accepts wood, scrap metal, fluorescent light bulbs and glass waste arisings for processing and recycling purposes.
- 6.86 Where there is uncertainty surrounding the remaining capacity of existing facilities, and little data available, the estimated capacity is assumed to be 75% of the annual permitted tonnage; this approach is consistent with that taken by the London Plan and has been adopted for the purpose of this assessment.
- 6.87 Based on this assumption, the range of facilities available within the LBTH and the need to provide additional facilities to meet the apportionment targets, the local waste management is considered to have a medium sensitivity rating.

### Operational

- 6.88 In accordance with the London Plan, it is assumed that the remaining capacity of the waste management facilities is 75% of the annual permitted tonnage. However, LBTH requires additional waste management facilities to be constructed in order to meet the apportionment targets set by the London Plan.
- 6.89 Whilst a site has been safeguarded to provide a new waste management facility, it is not anticipated that the facility will be constructed prior to completion of the Proposed Development. Therefore, local waste management infrastructure is considered to have a sensitivity rating of medium due to the capacity of remaining facilities.



# 06 Waste and Recycling

## Summary

**6.90** Based on the assessment of baseline conditions, the following sensitive receptors have been identified as likely to be affected by the Proposed Development. Table 6.12 below presents the resource / receptor likely to be affected by the Proposed Development and their sensitivity.

**Table 6.12 Likely Resource / Receptor and Sensitivity**

Resource / Receptor	Sensitivity of Resource / Receptor
Demolition and construction site workers	High
Neighbouring users/occupiers of local commercial/retail/residential property	Medium
Local Waste Management Infrastructure (both Demolition and Construction, and Operational)	Medium
Future on-site users	High

## Baseline Conditions - Update 2015

### March 2015 ES Addendum

**6.91** There are no changes to the baseline conditions since the December 2014 ES submission.

### November 2015 Amendments

#### Local Waste Arisings and Management

**6.92** There have been minor alterations to the baseline conditions of Local Waste Arisings since the March 2015 ES Addendum and this has been updated within Table 6.10 to represent a 5 year period and conveyed within the 'Baseline Summary'. According to the GLA's Future Waste Arisings in London 2010-2031 Summary Note (Ref. 6-43), the LBTH is expected to produce 272,000 tonnes of C&I waste and 746,000 tonnes of CD&E waste in 2015. With regards to CD&E waste, the LBTH do not need to allocate waste sites for these activities as London already reuses or recycles 90% of CD&E waste.

**6.93** The London Plan has set apportionment targets for all London Boroughs, with the LBTH expected to manage 3.8% of London's waste arisings. This equates to the LBTH managing 90% of the Borough's current waste arisings in 2016, rising to managing 120% of anticipated waste arisings in 2036. Table 6.1B identifies the LBTH waste apportionment targets as set out in the London. The London Plan sets a target to manage 75% of municipal waste by 2015 and 80% of municipal waste by 2020. In 2016 the LBTH is predicted to generate 242,000 tonnes (ktonnes), relating this back to the 218,000 tonnes apportioned to the LBTH in 2016, it is predicted that the LBTH will have to provide capacity for 90% of their total waste arisings.

**Table 6.1B LBTH Waste Apportionment Targets for Municipal Solid Waste (MSW) and C&I Waste (in thousand tonnes)**

2016			2021			2026			2031			2036		
MSW	C&I	Total	MSW	C&I	Total	MSW	C&I	Total	MSW	C&I	Total	MSW	C&I	Total
87	131	218	104	148	252	127	175	302	131	176	307	135	178	313

**6.94** The minor alterations to the baseline conditions of Local Waste Arisings since the March 2015 ES Addendum are not considered to affect the consideration of the likely impacts arising from the November 2015 Amendments on the Amended Proposed Development.

## Environmental Design and Management

**6.95** This section discusses aspects of the design of the Proposed Development that relate to waste and any standard management practises that will be implemented during the demolition and construction phase or the operational phase of the Proposed Development.

### Demolition and Construction

#### Design and Management

**6.96** As described within **Chapter 5: Demolition and Construction**, the demolition and construction of the Proposed Development will be a staged process taking place over 3 years. During demolition of the existing buildings, approximately 20,000 cubic metres (m<sup>3</sup>) (17,400 tonnes) of building volume / material is expected to be generated, largely consisting of concrete and steel. A total of 12,000m<sup>3</sup> (10,440 tonnes) of this can be re-used or recycled.

**6.97** Following demolition, approximately 21,000m<sup>3</sup> (18,270 tonnes) of material is expected to be generated during the excavation of the single storey basement and building foundations, 16,000m<sup>3</sup> (13,920 tonnes) of which will be utilised elsewhere as fill material. Therefore, a total of 8,000m<sup>3</sup> of demolition waste and 5,000m<sup>3</sup> of excavation waste is anticipated to be produced as a result of these activities.

**6.98** Construction of the Proposed Development will involve the use of additional materials that also have the potential to generate waste on-site through temporary storage, packaging materials and over-ordering of materials. Estimates of bulk material quantities for key construction components of the Proposed Development are presented in Table 6.13 below.

**6.99** The majority of CD&E waste is expected to comprise inert/non-hazardous materials (e.g. bricks, rock and cement).

**Table 6.13 Bulk Material Quantities for Key Construction Components**

Material	Quantity	Wastage	Waste Volumes (m <sup>3</sup> )	Estimated potential for reuse/ recycling (as a proportion of the waste volumes) (m <sup>3</sup> )	Waste volumes after resource reuse/ recycling as a proportion of the waste volumes (m <sup>3</sup> )
Reinforced concrete	15,300m <sup>3</sup>	≈5%	750m <sup>3</sup>	562.5m <sup>3</sup> (75%)	187.5
Façade cladding	18,400m <sup>2</sup>	5%	920m <sup>3</sup> (packaging)	552m <sup>3</sup> (60%)	368
High performance roofing membrane	4,000m <sup>2</sup>	15%	600m <sup>3</sup>	120m <sup>3</sup> (20%)	480
Internal walls and partitions	12,500m <sup>3</sup>	20%	2,500m <sup>3</sup>	750m <sup>3</sup> (30%)	1,750
External paving	1,500m <sup>2</sup>	3%	45m <sup>3</sup>	33.75m <sup>3</sup> (75%)	11.25
<b>Total</b>	<b>51,700m<sup>2</sup> (44,979 tonnes)</b>	<b>Approximately 9.6%</b>	<b>4,815m<sup>3</sup></b>	<b>2018.25m<sup>3</sup></b>	<b>2,796.75m<sup>3</sup></b>

#### Construction Resource Management Plan (CRMP) / Environmental Management Plan (EMP)

**6.100** Whilst the Site Waste Management Plan Regulations 2008 (Ref. 6-49) were revoked as of 1 December 2013, producing a Construction Resource Management Plan (CRMP) for new developments is considered good practice. Therefore, it is anticipated that the Applicant will instruct the production of a CRMP for the demolition and construction phase of the Proposed Development, in line with the Building Research Establishment Environmental Assessment Methodology (BREEAM) UK New Construction Technical Manual (2014) (Ref. 6-50), which will form part of the overall EMP.



# 06 Waste and Recycling

**6.101** The specific content of the CRMP will be provided at a later date, however, it is anticipated that it will include identification of the type and quantity of waste expected to be generated, as well as opportunities to reduce, re-use and recycle waste materials where feasible. The CRMP will also focus on the management of waste in accordance with the 'proximity principle' (i.e. managing waste as close to its origin of source as possible). The CRMP will be prepared and agreed with the LBTH prior to the commencement of any on-site works. An appropriate person (i.e. the Principal Contractor) will be responsible for producing the CRMP, implementing and updating it throughout the development process, in agreement with the LBTH. This approach will aim to increase the success of the CRMP implementation, allowing for a CRMP which is adhered to and effectively monitored. A CRMP should contain the following measures:

- Classification of all wastes;
- Performance measures and target setting against estimated waste forecasts;
- Measures to minimise waste generation;
- Opportunities for reuse and recycling;
- Provision for the segregation of waste streams on site;
- Recording of proposed carriers and licences for disposal sites;
- An audit trail encompassing waste disposal activities and waste consignment notes;
- Measures to avoid fly tipping by others on land being used for construction;
- Measures to provide adequate training and awareness through toolbox talks; and
- Considerable alternatives means of removing waste other than by road.

**6.102** In order to reduce the potential risks through the demolition and construction phases of the Proposed Development, the following waste management measures will be implemented on-site:

- Throughout the construction phase, pre-assembly and pre-fabrication of construction materials will be prioritised wherever practicable to minimise on-site generation of waste and packaging.
- Full Personal Protective Equipment (PPE) will be worn by demolition and construction-site workers whilst performing activities on-site;
- Burning of waste or unwanted materials will not be permitted on-site;
- Wherever possible, materials will be segregated and recycled or re-used on-site. Skips will be colour coded and signposted to reduce risk of cross contamination. Skips will be covered to prevent dust and debris blowing about the site and immediate environment;
- All hazardous material, including chemicals, cleaning agents, solvents and solvent containing products will be limited as far as possible. In the event that hazardous materials are required as part of the construction process, Control of Substances Hazardous to Health data sheets will be obtained to confirm suitable storage facilities are available on-site. All operatives will be fully briefed in the handling and use of hazardous materials, the use of PPE that will be required to be worn during material handling and the safe disposal of excess materials and storage containers. All hazardous materials will be properly sealed and secured when not in use in appropriately protected and bunded storage areas; and
- Dust monitoring will comprise passive deposition monitoring techniques (glass slides/ Frisbee gauges/ sticky pads) at locations on site boundaries or near to local receptors. Results will be filed and available for inspection upon request.

**6.103** Table 6.14 below outlines the key waste streams and any associated identified on-site management processes.

**Table 6.14 On-Site Waste Management Processes For Key Waste Streams**

Waste Stream	On-site Management Process
Concrete	If appropriate and agreeable to LBTH, a small on-site crushing machine would be utilised to crush concrete and masonry in order to reduce the number of vehicles leaving the Site and to prepare material for re-use in piling mats and temporary hardstandings.
Asbestos containing materials (ACMs)	Any asbestos containing materials (ACMs) will be appropriately removed and disposed of prior to the start of demolition by a suitably qualified contractor, in accordance with the Control of Asbestos Regulations, 2006 (Ref. 6-51). In this

Waste Stream	On-site Management Process
	instance, protection will be put in place along the site boundary where any buildings abut or lie in close proximity to the boundary. Further detail regarding the mitigation and management of identified sources of contamination, and ACM in particular, can be found in <b>Chapter 5: Demolition and Construction</b> of this ES.
Metal	Segregated for recycling off-site.
Excavated spoil	With regards to stockpiling of materials on-site, no long term period of demolition waste stockpiling is anticipated and all stockpiling periods will be kept at a minimum. All spoil will be stored on surfaced areas, with bunding, to the satisfaction of the Environment Agency to help prevent potential contaminated material coming into contact with flora or fauna. The bunded areas will also prevent contaminated water seeping out into surrounding watercourses.
Contaminated materials	Should any potentially contaminated materials be identified during demolition and excavation activities, work in the area will temporarily cease. The area will then undergo a subsequent assessment and an appropriate strategy for treatment and management of the material will be agreed with LBTH. Site-specific chemical tests will be conducted to ascertain the composition of the potential contamination and evaluate the material against Waste Acceptance Criteria (WAC). In this way, materials can be classified as inert, non-hazardous or hazardous and disposed of in accordance with relevant legislation or processed for off-site treatment prior to final disposal. Further detail regarding potentially contaminated demolition and excavation materials can be found within <b>Chapter 12: Ground Conditions</b> of this ES.
Wastewater	All surface drainage, groundwater seepage and any dewatering of the site will pass through a settlement tank prior to entering the foul water sewer. Discharge arrangements into the foul water sewer will be agreed with Thames Water Utilities Limited (TWUL). The Principal Contractor will ensure that any water, which may have come into contact with contaminated materials, will be disposed of in accordance with the Water Resources Act 1991 (Ref. 6-52) and other legislation, and to the satisfaction of the Environment Agency or TWUL.
Façade cladding (packaging)	Packaging will be segregated and recycled off-site, where practicable.
High performance roofing membrane	Waste roofing membrane will be segregated and reused, where practicable.
Internal walls and partitions	Any waste from installing the internal walls and partitions will be segregated and reused / recycled, where practicable.
External paving	Any waste from external paving activities will be segregated and reused / recycled, where practicable.
Food waste from the welfare facilities on-site	Food waste will be suitably packaged and stored for collection by the authorities to reduce the risk of infestation by pests or vermin. Where there is a local infestation then the local environmental health officer will be consulted about the action to be taken.

**6.104** A docket system will be operated on-site to prove that correct procedures have been followed for the depositing of all site waste. The trade contractors will operate a sequentially numbered system, to confirm that each load is received at the approved disposal site.

**6.105** Copies of the dockets will be provided to the nominated manager and be available for inspection at the Site. In addition, direct routes via main roads to designated waste recycling/disposal facilities will be agreed with the trade contractors.

## Operational

### Design and Management - Summary of Proposed Development

The Proposed Development comprises an office led mixed-use scheme. Table 6.15 and Table 6.16 of this ES chapter outline the key components of the Proposed Development. Further details of the Proposed Development are provided in **Chapter 4: The Proposed Development**.

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**Table 6.15 Proposed Residential Unit Mix**

Unit	Quantity
<b>S3 - Private Residential</b>	
1 bed/studio	7
2 bed	18
3 bed	5
<i>Total</i>	<i>30</i>
<b>S3 - Social Residential</b>	
1 bed/studio	3
2 bed	4
3 bed	3
<i>Total</i>	<i>10</i>
<b>Total Residential</b>	<b>40</b>

**Table 6.16 Proposed Commercial Area Schedule**

Land Use	GIA (m <sup>2</sup> )	NIA (m <sup>2</sup> )	Working Capacity
<b>S1a and S1b</b>			
Retail (A1)	451	338	Floor area: 338m <sup>2</sup> NIA
Retail (A3)	445	337	Sales floor area: 224.7m <sup>2</sup> NIA 150 covers
Retail (A4)	553	393	Arup's in-house calculator
Office (B1)	3,600	2,628	Employees: 263
<b>S1 and S1c</b>			
Retail (A1)	579	406	Floor area: 406m <sup>2</sup> NIA
Retail (A3)	1,845	1,420	Sales floor area: 946.7m <sup>2</sup> NIA 631 covers
Office (B1)	21,117	14,834	1,484 employees
<b>S2</b>			
Retail (A3)	1,280	858	Sales floor area: 572m <sup>2</sup> NIA 381 covers
Office (B1)	10,922	6,964	697 employees
<b>S3</b>			
Retail (A1)	92	62	Floor area: 62m <sup>2</sup> NIA

### Residential Waste Generated by the Operational Proposed Development

**6.106** Residential waste generated by the Proposed Development have been calculated in accordance with the LBTH guidance (refer to Table 6.4 for further details). Table 6.17 and Table 6.18 of this ES chapter summarise the total estimates of weekly private and social residential waste arisings (located within Site S3 of the Proposed Development) respectively.

**Table 6.17 Private Residential Waste Arisings**

Unit Type	Unit Number	Weekly Waste Arisings (L)			
		Residual	Mixed Dry Recyclables	Organic Food Waste	Total
Studios/ 1 Beds	7	700	420	140	1,260
2 Beds	18	2,160	1,080	360	3,600
3 Beds	5	900	400	150	1,450
<i>Total</i>	<i>30</i>	<i>3,760</i>	<i>1,900</i>	<i>650</i>	<i>6,310</i>
<b>8 day storage</b>	<b>30</b>	<b>4,297</b>	<b>2,171</b>	<b>743</b>	<b>7,211</b>

**Table 6.18 Social Residential Waste Arisings**

Unit Type	Unit Number	Weekly Waste Arisings (L)			
		Residual	Mixed Dry Recyclable	Organic Food Waste	Total
Studios/ 1 Beds	3	300	180	60	540
2 Beds	4	480	240	80	800
3 Beds	3	540	240	90	870
<i>Total</i>	<i>10</i>	<i>1,320</i>	<i>660</i>	<i>230</i>	<i>2,210</i>
<b>8 day storage</b>	<b>10</b>	<b>1,509</b>	<b>754</b>	<b>263</b>	<b>2,526</b>

### Commercial Waste Generated by the Operational Proposed Development

**6.107** Waste arisings for the commercial elements of the Proposed Development have been calculated in accordance with the guidance outlined in Table 6.5 earlier. Table 6.19 of this ES chapter summarises the estimates of weekly commercial waste produced by the Proposed Development for each waste stream and the two day capacity storage requirement.

**Table 6.19 Commercial Waste Arisings**

Land use	Total weekly waste arisings (L)	2 day waste arisings (L)	2 day storage capacity (L) after a 2:1 compaction ratio		
			Residual	Recyclable	Total
<b>S1a and S1b</b>					
Retail (A1)	3,380	966	241.5	241.5	483
Retail (A3)	11,250	3,214	964	177; 161; 771 (11% mixed dry recyclables; 5% glass; 24% food waste**)	2,073
Retail (A4)	8,960	2,560	282	461; 614; 461 (36% mixed dry recyclables; 24% glass; 18% food waste; **)	1,818**
Office (B1)*	13,150	5,260	526	2,104	2,630
<b>S1 and S1c</b>					
Retail (A1)	4,060	1,160	290	290	580
Retail (A3)	47,325	13,521	4,056	744; 676; 3,245 (11% mixed dry recyclables; 5% glass; 24% food waste**)	8,721**

# 06 Waste and Recycling

Land use	Total weekly waste arisings (L)	2 day waste arisings (L)	2 day storage capacity (L) after a 2:1 compaction ratio		
			Residual	Recyclable	Total
Office (B1)*	74,200	29,680	2,968	11,872	14,840
<b>S2</b>					
Retail (A3)	28,575	8,164	2,449	449; 408; 1,959 (11% mixed dry recyclables; 5% glass; 24% food waste**)	5,265**
Office (B1)*	34,850	13,940	1,394	5,576	6,970
<b>S3</b>					
Retail (A1)	620	177	44.5	44.5	89
<b>Total</b>	<b>226,370</b>	<b>78,642</b>	<b>13,215</b>	<b>30,254</b>	<b>43,469</b>

\* B1 land use (office) waste arisings have been generated based on a five day week.

\*\* Volumes for glass and food waste are not compacted.

## Residential Waste Storage provided within the Proposed Development

**6.108** Two residential waste rooms will be located on the ground floor of S3 of the Proposed Development (one for private units and one for social affordable units, which will both be equally sufficient in providing the necessary storage for the expected waste arisings). The residents will travel via lift to the ground floor waste rooms and deposit their waste into the appropriate bin: residual waste, mixed dry recyclable waste, or organic food waste. The waste rooms will be managed by the internal management team. Table 6.20 and Table 6.21 below details the residential waste storage provision for private and social housing located within S3 of the Proposed Development.

**Table 6.20 Private Residential Storage Requirements**

Waste Stream	Total Weekly Waste Arisings (L) (Uncompacted 8 day capacity)	Storage Requirements (8 day capacity)
Residual Waste	4,297	4 x 1,100L bins
Mixed dry recycle	2,171	2 x 1,100L bins
Food Waste	743	3 x 240L bins
<b>Total</b>	<b>7,211</b>	<b>6 x 1,100L bins 3 x 240L bins</b>

**Table 6.21 Social Residential Storage Requirements**

Waste Stream	Total Weekly Waste Arisings (L) (Uncompacted 8 day capacity)	Storage Requirements (uncompacted 8 day capacity)
Residual Waste	1,509	2 x 1,100L bins
Mixed dry recycle	754	1 x 1,100L bins
Food Waste	263	1 x 240L bins
<b>Total</b>	<b>2,526</b>	<b>3 x 1,100L bins 1 x 240L bins</b>

## Code for Sustainable Homes

**6.109** The Proposed Development is aiming to meet the requirements of CfSH Level 4. In order to meet these requirements, sufficient storage must be provided within the Proposed Development for one week's worth of waste generation (i.e. seven days). This is based on the most conservative methodology, between guidance

provided by the LPA (i.e. LBTH) or BS5906:2005. Guidance provided by LBTH provides a greater storage allocation than that of BS5906:2005.

**6.110** The Proposed Development has been designed to incorporate sufficient storage capacity for eight days of uncompacted residential waste arisings according to LBTH guidance; it is considered that the CfSH Level 4 requirements will be achieved with regards to waste.

## Bulky Waste

**6.111** The LBTH Refuse and Recycling Storage and Collection Supplementary Guidance states that consideration should be given to the storage of bulky waste items (e.g. disused furniture and white goods). In accordance with LBTH guidance, one bulky waste store should be allocated per 50-75 residential units, with each store providing a minimum of 7m<sup>2</sup> storage space.

**6.112** The Proposed Development will provide a total of 40 residential units. A total provision of 6m<sup>2</sup> storage space for bulky waste will be provided (refer to the Waste Management Strategy which is included within the Service and Delivery Plan (refer to **ES Volume III: Appendix B**) which details the location of the bulky waste stores within the Proposed Development.

**6.113** This bulky waste storage provision has been agreed with the LBTH Waste Officer (refer to **ES Volume III: Technical Appendix B**).

## Unique Waste

**6.114** It is likely that a small component of the overall waste arisings generated by the residential element of the Proposed Development will consist of other waste streams including hazardous WEEE, printer and toner cartridges, batteries and fluorescent light tubes. This type of waste is referred to as "unique waste" as it is not produced on a regular basis and consequently, its management will be on special arrangement with a registered waste handler for that specific waste type.

**6.115** Separate arrangements will be made for the storage and safe disposal of these waste streams, as covered by the Hazardous Waste Regulations and WEEE Regulations. All waste management will comply with the Environmental Protection (Duty of Care) Regulations 2003. As the total quantity of these waste streams is anticipated to be limited, it is expected that such waste arisings will be managed alongside residential waste.

## Maintenance and Fit-out

**6.116** Building maintenance and fit-out works have the potential to yield waste materials such as paints and waste lubricating oils, which will require separate storage in dedicated sealed containers. It is anticipated that sufficient space will be provided within the bulky waste stores in the Proposed Development for the storage of materials used (and waste generated) by maintenance and fit-out activities.

## Commercial Waste Storage provided within the Proposed Development

**6.117** The commercial land uses of the Proposed Development are situated within plots S1a, S1b, S1, S1c, S2 and S3. The commercial waste stores are located as follows:

- S1a and S1b – a combined waste store consisting of two waste rooms will be provide at ground level;
- S1 and S1c - a shared basement waste store will be provided;
- S2 - a separate basement level waste store will be provided; and
- S3 – a small waste room with the retail unit will be provided.

**6.118** Commercial waste will be collected from the commercial units by the on-site management team and placed in the relevant waste store within the appropriate bin: residual waste; mixed dry recyclable waste; organic food waste; or glass.

**6.119** A two day storage capacity will be provided for all commercial waste streams. The residual waste and mixed dry recycle will be compacted using a ratio of 2:1 by the on-site management team using wheeled bin compactors. Neither segregated glass nor organic food waste will be compacted.

**6.120** Table 6.22 below details the commercial waste storage provision for the Proposed Development.



# 06 Waste and Recycling

**Table 6.22 Commercial Storage Requirements**

Site / Building	2 day residual waste volume (compaction ratio 2:1) (L)	Storage Requirements	2 day recycle volume (compaction ratio 2:1 excluding glass and food)	Storage Requirements	Total Storage Requirements
S1a and S1b	2,013.5	2 x 1,100L bin	4,990.5	4 x 360L bins (food) 3 x 360L bins (glass) 3 x 1,280L bins	4 x 360L bins (food) 3 x 360L bins (glass) 2 x 1,100L bin 3 x 1,280L bins
S1 and S1c	7,314	7 x 1,100L bins	16,827	9 x 360L bins (food) 2 x 360L bins (glass) 10 x 1,280L bins	9 x 360L bins (food) 2 x 360L bins (glass) 7 x 1,100L bins 10 x 1,280L bins
S2	3,843	4 x 1,100L bins	8392	6 x 360L bin (food) 2 x 360L bins (glass) 5 x 1,280L bin	6 x 360L bin (food) 2 x 360L bins (glass) 4 x 1,100L bins 5 x 1,280L Euro Bin
S3	44.5	1 x 1,100L bin	44.5	1 x 1,100L bin	1 x 1,100L bin 1 x 1,100L bin
<b>Total</b>	<b>13,215</b>	<b>14 x 1,100L bins</b>	<b>30,254</b>	<b>26 x 360L bin</b> <b>1 x 1,100L bin</b> <b>19 x 1,280L bin</b>	<b>26 x 360L bins</b> <b>15 x 1,100L bins</b> <b>18 x 1,280L bins</b>

## Waste Storage Room Requirements

**6.121** In line with BS5906:2005, Part H6 of the Building Regulations (2010) (Ref. 6-53) and LBTH guidance, the following measures will be adhered to in order to ensure compliance with all mandatory waste storage requirements:

- The entrance of the waste storage room will be free from steps and projections;
- The total horizontal distance a resident will be expected to carry waste from their dwelling to the storage room will not exceed 25m;
- Storage areas for waste and recyclable material will be clearly designated for this use only, by a suitable door or wall sign and, where appropriate, with floor markings. Colour coding will be used for bins of different streams;
- The waste room will have adequate lighting, proper ventilation and wash down facilities (waste pipe and drainage). Gullies will be positioned so as not to be in the track of container trolley wheels;
- Headroom in the waste rooms will have a minimum clearance of 2.6 metres (m) for rooms that only provide bins. Where other management equipment is included within the waste rooms, this headroom may need to increase dependent on the equipment specifications;
- All bins will be accessible in the bin store. There will be a space of 150mm around all sides of each bin and between walls;
- The storage facilities will not block any utility service point and be positioned so that the disturbance to residents or neighbours is kept to a minimum;
- The route between the storage area and collection point will be wide enough to allow bins to pass through easily and does not involve bins being taken through a building;
- Any access doors to the bins must be without locks unless standard Fire Brigade (FB) locks (i.e. FB1 or FB2 locks) are used. If other locking arrangements are installed, four sets of keys (or fobs), and replacement sets as required, must be supplied to the Waste Management section of the LBTH at no cost; and
- The waste room will be constructed within a fire compartment structure, which is designed to contain a fire. Where fire risks are greater, for example in multi-storey buildings, fire extinguishers should be deployed, and an automatic fire sprinkler or waste mist system considered.

## Residential Waste Collection

**6.122** Prior to collection, residential waste bins from S3 will be moved from the residential waste rooms on the ground floor by the on-site management team to the collection point at the junction with Elder Street (via Fleur De Lis Street) on the day of collection. Residential waste will be collected on a once a week basis by LBTH contracted refuse vehicles.

**6.123** In line with BS5906:2005, Building Regulation Part H6 and LBTH guidance, the following collection requirements will also be adhered to in order to comply with all mandatory waste storage requirements:

- All roads will be suitable for taking a refuse collection truck with a maximum weight of 30 tonnes when fully laden;
- Waste collection vehicles are able to enter and exit the site in a forward gear and reversing does not exceed 20m. A safe stopping bay (or equivalent) will be provided with sufficient turning area and manoeuvring space for the collection vehicle;
- All paths used to transport bins from the storage area to the collection point will have a minimum width of 1.5m, will be free from kerbs or steps, have a solid foundation and will be finished with a smooth, continuous finish;
- There will not be any routes where wheeled bins are to be pushed that will have a gradient more than 1 in 20 towards the vehicle, or that include steps or kerbs;
- Waste collection operatives will not be required to transport bins more than 10m in total;
- Collection points are within 10m of the nearest stopping point for refuse vehicles and located at basement level as agreed with LBTH; and
- Collection points for 360L food waste bins, either incorporated into the building or roadside, will be able to accommodate LBTH's largest refuse vehicle:
  - Length: 8.25m;
  - Width: 2.5m;
  - Height: 3.5m (3.7m in operation);
  - Turning Circle; 17.5m (kerb to kerb); and
  - Maximum Weight: 26 tonnes (30 tonnes when fully laden).

**6.124** Swept path analysis diagrams can be found within **ES Volume III: Appendix B**.

## Commercial Waste Collection

**6.125** Commercial waste will be collected by privately contracted vehicles every two days. This refuse vehicle will be smaller than the residential council refuse vehicles. The smaller refuse vehicle dimensions are as follows:

- Length: 6.62m;
- Width: 2.2m;
- Height: 3.15m; and
- Kerb to Kerb Turning Radius: 6.75m.

**6.126** Prior to collection, commercial waste bins will be moved from the waste stores within each Site / Building by the internal management team to the relevant collection point. The commercial waste for each plot will be collected from the following locations:

- S1a and S1b – commercial waste will be collected from Folgate Street;
- S1 and S1c - commercial waste will be collected from Folgate Street;
- S2 - commercial waste will be collected from Fleur De Lis Street; and
- S3 - commercial waste will be collected from the corner of Fleur De Lis Street and Elder Street.

**6.127** Collection requirements in line with BS5906:2005 and Building Regulation Part H6 will be adhered to in order to comply with all mandatory waste storage requirements (see paragraph 6.123 above).

## Waste Contractor Requirements

**6.128** Waste management activities have the potential to cause pollution via two predominant methods:

- Leachate generation as waste undergoes various degradation processes; and



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- Gas liberation (including methane and hydrogen sulphide) due to biological activity under anaerobic conditions within landfill sites.

6.129 To minimise these pollution impacts, the following steps will be undertaken:

- Only appropriately licensed waste carriers will be used in accordance with the Duty of Care Regulations 2003;
- The contractor responsible for waste transport and disposal will be required to provide confirmation that the receiving facility is permitted under both the Environmental Permitting (England and Wales) Regulations (Amendment) 2013 and the Pollution Prevention and Control (England and Wales) (Amendment) (England) Regulations 2006 (Ref. 6-54). As such, appropriate controls will be in place to monitor and control pollution from waste transport disposal; and
- Where possible, the waste management contractor will manage waste in accordance with the waste hierarchy, avoiding disposal of waste at landfill wherever feasible.

## Environmental Design and Management - Update 2015

### March 2015 ES Addendum

6.130 The March 2015 ES Addendum detailed no additional Environmental Design and Management measures to those detailed within the December 2015 ES.

### November 2015 Amendments

#### Code for Sustainable Homes

6.131 Although the Code for Sustainable Homes (CfSH) has been withdrawn, national planning policy is yet to finalise plans for a replacement scheme (Ref. 6-61). In the absence of further standards, the requirements of CfSH are considered to represent good practice and retained for the purpose of this assessment.

6.132 The CfSH stated that in order to achieve Level 4, new developments should allow for the greater volume of waste storage for residential waste arisings from either of the following: the Local Planning Authority (LPA) (i.e. LBTH); or BS 5906:2005. This is based on un-compacted waste volumes generated over a weekly period.

6.133 With regards to residential waste arisings, the agreed methodology provides a greater storage allocation when compared to that of BS 5906:2005. Therefore, in order to meet CfSH Level 4 targets, the Amended Proposed Development retains sufficient floor space to accommodate seven days' worth (i.e. one week) of waste generation based on the calculation methodology used within this Strategy and it can be concluded that the Amended Proposed Development complies with CfSH Level 4 and sufficient space for the storage.

6.134 Table 6.1C outlines the updated weekly waste arisings for the commercial aspects of S1, S1c and 12-13 Blossom Street as a result of the November 2015 amendments. The Replacement ES is likely to result in changes to the weekly waste arisings from the commercial aspects of S1, S1c and Blossom Street. The weekly waste arising from retail (A1) is likely to increase by 90L per week from 4,060L to 4,150L. The weekly waste arising from restaurant (A3) is likely to decrease by 4,800L per week from 46,800L to 42,000L. The weekly waste arising from office (B1) is likely to decrease by 1,950L per week from 73,750L to 71,800L.

6.135 The commercial waste arisings predicted to be generated by the Amended Proposed Development have altered, as the November 2015 amendments have resulted in an overall reduction in total weekly waste arisings by 6,660L. Therefore it is considered that the waste and recycling assessment of the March 2015 ES Addendum provides a worst case scenario. It is noted that the combined S1, S1c and 12-13 Blossom Street commercial waste store still requires 10 x 1,280L Euro Bins and 2 x 360L wheeled bins (glass). However, due to the reduction in waste generation, the combined S1, S1c and 12-13 Blossom Street commercial waste store will require 8 x 360L wheeled bins (food) (a reduction of 1 x 360L wheeled bin) and 7 x 1,100L Euro Bins (a reduction of 1 x 1,100L Euro Bin). Table 6.1C outlines the updated waste storage requirements for the combined S1, S1c and 12-13 Blossom Street waste store.

**Table 6.1C Summary Predicted Commercial Waste Arisings and Storage Requirements of S1, S1c and 12-13 Blossom Street for the November 2015 Replacement ES**

Waste Stream	Commercial waste arisings (L) and storage requirements					
	Volume of waste per week (L) with a 50:50 split between recyclable waste and residual waste	Two day storage requirements with a 2:1 compaction ratio applied to recyclable and residual waste streams	Volume of waste per week (L) with a 40:60 split between recyclable waste and residual waste	Two day storage requirements with a 2:1 compaction ratio applied to recyclable waste (with the exception of food and glass waste) and residual waste	Volume of waste per week (L) with a 80:20 split between recyclable waste and residual waste	Two day storage requirements with a 2:1 compaction ratio applied to recyclable waste and residual waste
	Retail (A1)	Retail (A1)	Restaurant (A3)	Restaurant (A3)	Office (B1)	Office (B1)
Recyclables	2,075	1 x 1,100L Euro bin 1 x 1,280L Euro bin	16,800 (11% MDR: 4,620L; 5% Glass: 2,100L; 24% Food waste: 10,080L)	3 x 1,100L Euro bins 1 x 1,280L Euro bins 10 x 360L wheeled bins (8 allocated to food waste, 2 allocated to glass waste)	57,440	3 x 1,100L Euro bins 9 x 1,280L Euro bins
Residual waste	2,075		25,200		14,360	
<b>Total</b>	<b>4,150</b>		<b>42,000</b>		<b>71,800</b>	

Note: Office waste has been calculated based on a five day week

## Potential Effects and Mitigation Measures

6.136 This section discusses the potential impacts and likely effects pertaining to waste and recycling during the demolition and construction phase, and during the operation of the Proposed Development.

### Site Preparation, Demolition and Construction Effects

#### Effects on Construction Workers

6.137 Given the waste and recycling design and management measures that will be incorporated and implemented as part of the Proposed Development (refer to the 'Environmental Management and Design' section in paragraphs 6.95-6.156 of this ES chapter), the potential impacts upon demolition and construction workers are likely to result in **negligible** effects.

#### Effects on Neighbouring Users/Occupiers of Local Commercial/Retail/Residential Property

6.138 Given the waste and recycling design and management measures that will be incorporated and implemented as part of the Proposed Development (refer to the 'Environmental Management and Design' section within paragraphs 6.95-6.156 of this ES chapter), the potential impacts upon neighbouring users/occupiers of local commercial/ retail/residential property are likely to result in **negligible** effects.

#### Effects on Local Waste Management Infrastructure

6.139 The LBTH provides a wide range of waste management facilities for the management of waste using a variety of methods. Waste arisings generated during the construction phase have the potential to impact upon local waste management infrastructure. Where there is uncertainty surrounding the remaining capacity of existing facilities, and little data available, the estimated capacity is assumed to be 75% of the annual permitted tonnage. This approach is consistent with that taken by the London Plan and has been adopted for the purpose of this assessment.

# 06 Waste and Recycling

- 6.140** In total, demolition, construction and excavation of the Proposed Development is anticipated to result in the generation of approximately 15,797m<sup>3</sup> of CD&E waste. This equates to 13,743 tonnes of CD&E waste over the three year period. Therefore, approximately 4,581 tonnes of CD&E waste are anticipated to be generated during each year of the construction phase. This volume of waste represents an annual increase in waste generation in the order of 1000 tonnes (10<sup>3</sup>) when compared to baseline conditions, resulting in a very low magnitude of change with regards to waste volume.
- 6.141** The majority of CD&E waste is expected to comprise inert/non-hazardous materials (e.g. bricks, rock and cement) identified during the demolition and construction phases (e.g. contaminated soils and dust, asbestos containing materials (ACMs) or from handling of waste chemicals and hazardous materials); such waste is likely to require specific (but not necessarily highly specialised) management methods. Consequently, this represents a medium (negative) magnitude of change with regards to waste composition.
- 6.142** Therefore, taking into account the magnitude of change with regards to waste composition (medium) and waste volume (very low), the average magnitude of change can be identified as low (negative) with regards to waste arisings generated during the construction phase.
- 6.143** This is likely to result in a **minor adverse** effect (direct, short term) on local waste management infrastructure.

## **Site Preparation, Demolition and Construction Effects - Update 2015**

### *March 2015 ES Addendum*

- 6.144** The scheme changes will not affect the indicative demolition, construction and refurbishment methodology / process as detailed in *Chapter 5: Demolition and Construction* and *Chapter 6: Waste and Recycling* of the December 2014 ES. However, the anticipated volume of demolition, construction and excavation (DC&E) waste expected to be generated during each year of the demolition and construction phase of the Proposed Development has been recalculated based on a 29 month time frame. The quantities therefore have increased by 939 tonnes per year (from approximately 4,581 tonnes to approximately 5,520 tonnes per year).
- 6.145** This increased volume of waste has not affected the conclusions of the waste and recycling assessment within *Chapter 6: Waste and Recycling* of the December 2014 ES, and the assessment of waste and recycling upon potentially sensitive receptors remain valid.

### *November 2015 Amendments*

- 6.146** Taking into account the nature and scale of the proposed November 2015 Amendments, it is not considered that the Amended Proposed Development would result in any new or change to the likely effects and significance concluded within the December 2014 ES and March 2015 ES Addendum.
- 6.147** It is considered that the likely residual effects concluded in the December 2014 ES and March 2015 ES Addendum remain valid.

## **Effects Once the Site is Operational**

### *Effects on Neighbouring Users/Occupiers of Local Commercial/Retail/Residential Property*

- 6.148** Given the waste and recycling design and management measures that will be incorporated and implemented as part of the Proposed Development (refer to the 'Environmental Management and Design' section in paragraphs 6.95-6.156 of this ES chapter), the potential impacts upon neighbouring users/occupiers of local commercial/ retail/residential property are likely to result in **negligible** effects.

### *Effects on Future On-Site Users*

- 6.149** Given the waste and recycling design and management measures that will be incorporated and implemented as part of the Proposed Development (refer to the 'Environmental Management and Design' section in paragraphs 6.95-6.156 of this ES chapter), the potential impacts upon future on-site users are likely to result in **negligible** effects.

### *Effects on Local Waste Management Infrastructure*

- 6.150** In accordance with the London Plan, it is assumed that the remaining capacity of the waste management facilities is 75% of the annual permitted tonnage. However, LBTH requires additional waste management facilities to be constructed in order to meet the apportionment targets set by the London Plan.
- 6.151** A site has been safeguarded to provide a new waste management facility, but it is not anticipated that the facility will be constructed prior to completion of the Proposed Development and therefore has not been accounted for in terms of assessing the impact of the Proposed Development on the capacity of the remaining facilities.
- 6.152** Once completed and operational, the Proposed Development is anticipated to produce 8,520L of waste per week due to residential uses and 226,370L of waste due to commercial uses. In total this represents 234,890L of waste per week, which is considered typical for a development of this size and nature.
- 6.153** Annually, this volume of waste equates to 2,565 tonnes, which represents an increase from the baseline conditions (i.e. the existing Site) in the order of 100 tonnes per year. This results in a very low magnitude of change with regards to the volume of waste arisings.
- 6.154** The majority of waste produced during the operational phase of the Proposed Development is expected to comprise inert and non-hazardous waste streams. A proportion of the total waste arisings will comprise organic food waste and there is potential for limited volumes of hazardous waste (e.g. unique waste such as solvents and paints) to be generated during maintenance and fit-out activities. However, given the current uses of the Site include warehousing storage and processing of paints and solvents, a very low change in magnitude is expected in relation to waste composition.
- 6.155** Therefore, taking into account the magnitude of change with regards to waste composition (very low) and waste volume (very low), the average magnitude of change can be identified as very low (negative) with regards to waste arisings generated during the operational phase.
- 6.156** This is likely to result in **negligible** effect (direct, long term) upon local waste management infrastructure.

## **Effects Once the Site is Operational – Update 2015**

### *March 2015 ES Addendum*

- 6.157** The scheme changes are likely to result in an overall reduction in total weekly waste arisings anticipated to be generated during the operational phase of the Revised Scheme by 975L when compared against the December 2014 ES, however, the resulting waste storage requirements have not changed. Therefore, the March 2015 ES Addendum concluded that the effects on the potentially sensitive receptors (as a result of the waste and recycling on the operation of the Proposed Development) remain valid when compared to the December 2014 ES.

### *November 2015 Amendments*

- 6.158** The scheme changes are likely to result in an overall reduction in total weekly waste arisings anticipated to be generated during the operational phase of the Amended Proposed Development by 6,660L generated during the operational phase. The resulting waste storage requirements have reduced by 1 x 360L wheeled bin and 1 x 1,100L Euro Bin.
- 6.159** Taking into account the nature and scale of the proposed November 2015 Amendments, it is considered that the likely residual effects concluded in the December 2014 ES and March 2015 ES Addendum remain valid.

## **Mitigation and Monitoring Measures**

- 6.160** This section outlines the mitigation measures proposed, that are over-and-above the environmental design and management measures discussed previously. Where appropriate, future monitoring and / or environmental management measures required to verify the effect predictions and/or fine tune mitigation measures, or ensure the potential effects are adequately controlled, are also outlined.

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## Demolition and Construction Phase

6.161 No additional mitigation measures are deemed necessary for the Proposed Development.

## Operational Phase

6.162 No additional mitigation measures are deemed necessary for the Proposed Development.

## Mitigation and Monitoring Measures - Update 2015

### March 2015 ES Addendum

6.163 No additional mitigation measures or changes to those measures identified previously are assessed as being required to alleviate the impacts associated with the proposed changes.

### November 2015 Amendments

6.164 No additional mitigation measures or changes to those measures identified previously are assessed as being required to alleviate the impacts associated with the November 2015 Amendments.

## Residual Effects and Conclusions

### Residual Effects – Update 2015

6.165 The Proposed Development aims to be sustainable with high standards of environmental performance. As such, due consideration has and will continue to be given to the waste generated by the building during its operation.

6.166 Waste management within the Proposed Development has the following aims.

- To contribute towards achieving current and long-term government, GLA and the LBTH targets for waste minimisation, recycling and reuse;
- To be compliant with all legal requirements for handling and management of demolition and construction waste;
- To be compliant with all legal requirements for handling and management of operational waste management; and
- To provide tenants with convenient, clean and efficient waste management systems that enhance the operation of the buildings and promote high levels of recycling.

6.167 The provision described within this ES chapter, and the Arup Waste Management Strategy (see *ES Volume III: Appendix B*) will enable all waste produce from all elements and phases of the Proposed Development to be handled in accordance with The Environmental Protection (Duty of Care) (England) (Amendment) Regulations 2003 at all times. All waste infrastructure introduced to the Proposed Development will comply with Building Regulations Part H6, British Standards BS5906:2005 and the Chartered Institute of Building Services Engineers (CIBSE) Guide G (Ref. 6-55) and the requirements of the Duty of Care Regulations 2003.

6.168 Table 6.23 below provides a summary of the residual impacts relating to the Proposed Development upon the considered sensitive receptors below presents the residual effects following the assessment of the Amended Proposed Development. There are **no likely significant effects** relating to waste and recycling.

Table 6.23 Summary of Residual Effects in Waste and Recycling – Update 2015

Resource / Receptor	Effect (incorp. environmental design & management)	Additional Mitigation	Residual Effect (incorp. mitigation and monitoring)	Significance Conclusion
<b>Demolition and Construction</b>				
Demolition and construction site workers	Negligible (short term)	No additional mitigation required.	Negligible (short term)	Not Significant
Neighbouring users/occupiers of local commercial/retail/residential property	Negligible (short term)	No additional mitigation required.	Negligible (short term)	Not Significant
Local Waste Management Infrastructure	Minor Adverse (short term)	No additional mitigation required.	Minor Adverse (short term)	Not Significant
<b>Operational</b>				
Future on-site users	Negligible (long term)	No additional mitigation required.	Negligible (long term)	Not Significant
Neighbouring users/occupiers of local commercial/retail/residential property	Negligible (long term)	No additional mitigation required.	Negligible (long term)	Not Significant
Local Waste Management Infrastructure	Negligible (long term)	No additional mitigation required.	Negligible (long term)	Not Significant

### Conclusion – Update 2015

6.169 By applying the same methodology used for assessing cumulative schemes in the December 2014 ES, the scheme changes do not materially affect the assessment presented in the December 2014 ES. The commercial waste arisings generated by the November 2015 amendments have altered from that presented within the March 2015 ES Addendum. As the Amended Proposed Development has resulted in an overall reduction in total waste arisings, it is considered that the waste and recycling assessment presented in the March 2015 ES Addendum provides a worst case scenario. As such, the conclusions set out within the March 2015 ES Addendum and the December 2014 ES remain valid.

## Effect Interactions and Cumulative Effect Assessment

### Assessment of Combined Effect of Individual Effects on a Single Receptor

6.170 The combined effect of individual impacts occurs when a single receptor is affected by more than one effect at any point in time. An exercise which tabulates the residual effects identified within the ES against relevant receptors, and so identifies the potential for combined cumulative effects, has been undertaken.

6.171 Reference should be made to **Chapter 16: Effect Interactions** for further details.

### Assessment of Cumulative Effect of the Proposed Development with Other Development Schemes

6.172 This section of the chapter assesses the potential effects of the Proposed Development in combination with the potential effects of other development schemes within the surrounding area, as listed within **Chapter 2: EIA Methodology** of this ES.



# 06 Waste and Recycling

## *Cumulative Effects during Demolition and Construction*

- 6.173** Demolition and construction of the considered cumulative schemes would result in the generation of CD&E waste, similar in composition to that of the Proposed Development. Due to uncertainty regarding the specific demolition and construction materials and activities, it is difficult to accurately quantify the volume of waste expected to be generated by the cumulative schemes during their demolition and construction phases.
- 6.174** However, it is expected that the volume of waste produced would be of a similar scale to that generated by the Proposed Development. Therefore, as the demolition and construction works of the Proposed Development coincides with more than one of the cumulative schemes, a minor adverse temporary effect is expected upon sensitive receptors.
- 6.175** The duration of this effect would depend upon the specific demolition and construction programmes of each considered scheme. However, effects relating to the demolition and construction phase are due to activities associated with demolition and construction works, which are themselves temporary in nature (i.e. activities cease at the end of the demolition and construction phase). Therefore, it is anticipated that the effects would be temporary and cease to occur once demolition and construction activities have ended.
- 6.176** It is highly unlikely that demolition and construction of all of the cumulative schemes would be undertaken simultaneously to the Proposed Development. In addition, employment of industry accepted management practises for construction sites, and an expectation that each of the cumulative schemes will produce a CRMP (in accordance with good practice), results in the probability that all waste materials produced during this phase will be effectively and appropriately managed.
- 6.177** It is anticipated that the majority of waste material generated by demolition and construction works would be segregated for recycling and re-use purposes, and diverted from landfill. Therefore, the demolition and construction phase of the Proposed Development in combination with the cumulative schemes would result in a **negligible** effect on highly sensitive receptors.

## *Cumulative Effects Once the Proposed Development is Completed and Operational*

- 6.178** It is anticipated that due to the likely end-uses of the cumulative schemes (i.e. mixed use schemes of residential and commercial land uses), the composition of waste arisings generated by the developments would be of largely inert and non-hazardous origin (i.e. similar to that of the Proposed Development).
- 6.179** Due to uncertainty regarding the final uses of each of the cumulative schemes, it is difficult to accurately quantify the amount of waste each development will produce. However, it is assumed that the volume of waste produced by each of the schemes will be of a similar proportion to (or less than) that produced by the Proposed Development, with the exception of five of the larger cumulative schemes, including:
- Principle Place;
  - Bishopsgate Good Yard;
  - Goodman's Field Site;
  - 22-24 Bishopsgate,
  - 38 Bishopsgate and 4 Crosby Square; and
  - 5 Broadgate, London.
- 6.180** All of these schemes are significantly larger than the Proposed Development, i.e. the 5 Broadgate development will include 108,213m<sup>2</sup> GEA of B1 commercial office use amongst other land uses.
- 6.181** Each cumulative scheme will need to make provision to appropriately deal with any waste produced during the schemes operation, and will be required to apply management techniques that are in accordance with all guidance and national, regional and local policy.
- 6.182** For schemes falling with under the authority of LBTH, to manage waste arisings, LBTH currently provide a wide range of waste management facilities, with additional facilities planned to meet the London Plan apportionment targets.
- 6.183** On the assumption that all the planned facilities come forward, there are not expected to be any concerns regarding the capacity of waste management facilities. The volume of waste arisings generated by the cumulative schemes and the Proposed Development are expected to be less than what is required to meet

the apportionment targets. Therefore, sufficient provision will be available within the LBTH for the management of waste.

- 6.184** It is also expected that as technology advances, further recovery and recycling methods will become available to the LBTH, resulting in an even lower demand for disposal at landfill. Therefore, the operational phase of the Proposed Development in combination with the cumulative schemes would result in a **negligible** effect.

## **Assessment of Cumulative Effect of the Site with Other Development Schemes - Update 2015**

### *March 2015 ES Addendum*

- 6.185** There are no additional or amended schemes to consider as part of this ES Addendum. Therefore, the cumulative assessment as set out in the December 2014 ES remains valid.

### *November 2015 Amendments*

- 6.186** Since the preparation of the March 2015 ES Addendum, there have been several new applications which have come forward for development, including applications for revisions to development schemes considered within the list of other development schemes (i.e. cumulative schemes) presented in the December 2014 ES (refer *Chapter 02: EIA Methodology*).
- 6.187** Examples of additional cumulative schemes for consideration include the new application for 97-137 Hackney Road, which was submitted in October 2015. This application proposes a maximum of 183 residential units, office space and flexible retail/commercial space. In addition, the application for 22 Bishopsgate consists of the construction of a 45 storey tower with proposed office, retail and restaurant space.
- 6.188** The additional cumulative schemes are of a similar size and scale to that of the Amended Proposed Development, and it is anticipated that the waste arising from the operation of the cumulative schemes would be similar in composition and quantity to that likely to be generated from the Amended Proposed Development. Due to the anticipated likely end-uses of the cumulative schemes, the composition of waste arisings generated during their operation is anticipated to be largely inert and non-hazardous in origin. The LBTH provide a wide range of waste management facilities and have additional facilities planned to meet the London Plan apportionment targets. As the volume of waste anticipated to be generated by the Amended Proposed Development and the cumulative schemes (should they come forward) is less than what is required to meet the apportionment targets, it is assumed that sufficient provision will be available within the LBTH and its partners for the management of waste.
- 6.189** Furthermore, in relation to DC&E waste, it is assumed that best practice management techniques discussed within the December 2014 ES would be applied. As such, the conclusions set out within the March 2015 ES Addendum and the December 2014 ES remain valid.

## **Summary of the 2011 Consent**

- 6.190** A Waste Management Statement was produced (dated December 2010) and compilation of extracts from three of the supporting documents of the planning application, including:
- *Design Statement* - The proposed buildings are linked at basement level by a shared servicing zone, with a shared Refuse Management area. This enabled waste from each building to be delivered to this zone and types of waste segregated, compacted and packaged away from the publicly accessible parts of the development. The packaged waste would then be delivered to the service lift adjacent to the Blossom Street entrance and taken to ground level prior to refuse collection during the early morning.
  - *Sustainability Statement* – For the construction phase, a detailed Site Waste Management Plan will be prepared by the main contractor prior to construction with a view to minimising waste and maximising the potential for recycling. Best practice waste management practices will be put into place during construction to control and reduce waste. Practical methods of waste management which will be



# 06 Waste and Recycling

implemented by all site operatives and site procedures for sorting, reusing and recycling construction waste into defined waste groups will also be outlined. An ambition of the project is to divert from landfill at least 75% by weight or 65% by volume of nonhazardous construction waste generated by the project.

During the operational phase, the aim was to achieve a high recycling rate for the development and therefore to provide residents and office and retail tenants with the facilities to separate household waste (both internally and externally). The commercial uses will be provided with adequate space to sort and store recyclable and nonrecyclable waste internally and externally.

- *Transport Assessment* - In terms of refuse waste storage associated with the proposed office/retail development, an on-site waste compactor, would have been used. The compacted waste would have been brought to ground level via a lift for collection by a refuse vehicle in Blossom Place. In terms of refuse collection, LBTH operate a refuse vehicle for the collection of refuse bags and/or Eurobins, which is 10 metres in length. However, due to the restricted carriageway width on Blossom Street and Fleur de Lis Street, it would not be possible for this size vehicle to gain access to the Site without vehicle bodywork oversailing footways. The CoL operate a 7.75m refuse vehicle and discussions have indicated, since the Site is located adjacent to their Borough boundary, that it may be possible in principle to extend their collection service to include this Site. Further discussions would have been undertaken with the CoL and LBTH in this respect. Alternatively, a private waste collection service could have been sought.

## References

- Ref. 6-1 Her Majesty's Stationary Office (HMSO), (2005); Clean Neighbourhoods and Environment Act 2005.
- Ref. 6-2 HMSO, (1989); Control of Pollution (Amendment) Act 1989.
- Ref. 6-3 HMSO, (1995); The Environment Agency, (1995); Environment Act 1995.
- Ref. 6-4 HMSO, (1990); Environmental Protection Act 1990.
- Ref. 6-5 HMSO, (2013); The Animal By-Products (Enforcement) (England) Regulations 2013.
- Ref. 6-6 HMSO, (2012); The Controlled Waste (England and Wales) (Amendment) Regulations 2012.
- Ref. 6-7 Department for Environment and Rural Affairs (DEFRA), (2013); The Environmental Permitting (England and Wales) (Amendment) Regulations 2013.
- Ref. 6-8 HMSO, (2003); The Environmental Protection (Duty of Care) (England) (Amendment) Regulations 2003.
- Ref. 6-9 HMSO, (2009); The Hazardous Waste (England and Wales) (Amendment) Regulations 2009.
- Ref. 6-10 HMSO, (2005); The List of Wastes (England) (Amendment) Regulations 2005.
- Ref. 6-11 Department for Business Innovation & Skills (DBIS), (2013); The Packaging (Essential Requirements) (Amendments) Regulations 2013.
- Ref. 6-12 Defra, (2013); The Producer Responsibility Obligations (Packing Waste) (Amendment) Regulations 2013.
- Ref. 6-13 HMSO, (2009); Environment Agency, (2009); The Waste Batteries and Accumulators Regulations 2009.
- Ref. 6-14 HMSO, (2013); The Waste Electrical and Electronic Equipment (WEEE) (Amendment) Regulations 2013.
- Ref. 6-15 HMSO, (2014); The Waste (England and Wales) (Amendment) Regulations 2014.
- Ref. 6-16 HMSO, (2006); The Waste Management (England and Wales) Regulations 2006.
- Ref. 6-17 HMSO, (2012); Control of Asbestos Regulations 2012.
- Ref. 6-18 HMSO, (2013); Scrap Metal Dealers Act 2013.
- Ref. 6-19 HMSO, (1996); Landfill Tax Regulations 1996.
- Ref. 6-20 Department for Communities and Local Government (DCLG), (2012); National Planning Policy Framework.
- Ref. 6-21 DCLG, (2014); National Planning Practice Guidance.
- Ref. 6-22 Defra, (2013); Waste Management Plan for England.
- Ref. 6-23 Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on Waste and repealing certain Directives (Waste Framework Directive).
- Ref. 6-24 DCLG, (2014); National Planning Policy for Sustainable Waste Management.
- Ref. 6-25 Greater London Authority (GLA), (2011); The London Plan, Spatial Development Strategy for Greater London 2011.
- Ref. 6-26 GLA, (2013); The London Plan Revised Minor Early Alterations.
- Ref. 6-27 GLA, (2014); The London Plan Draft Further Alterations.
- Ref. 6-28 GLA, (2014); 'Suggested Changes' to The London Plan Draft Further Alterations.
- Ref. 6-29 GLA, (2014); Sustainable Design and Construction Supplementary Planning Guidance.
- Ref. 6-30 GLA, (2011); The Mayor's Business Waste Management Strategy.
- Ref. 6-31 GLA, (2011); The Mayor's Municipal Waste Management Strategy.
- Ref. 6-32 London Borough of Tower Hamlets (LBTH), (2010); Core Strategy.
- Ref. 6-33 LBTH, (2013); Managing Development Document, Development Plan Document.
- Ref. 6-34 LBTH, (2011); Draft Waste Management Strategy for LBTH.
- Ref. 6-35 LBTH, (2012); Refuse and Recycling Storage and Collection Supplementary Guidance.
- Ref. 6-36 Defra, (2009); Local Authority Collected Waste Statistics 2008/09.
- Ref. 6-37 Defra, (2010); Local Authority Collected Waste Statistics 2009/10.
- Ref. 6-38 Defra, (2011); Local Authority Collected Waste Statistics 2010/11.
- Ref. 6-39 Defra, (2012); Local Authority Collected Waste Statistics 2011/12.
- Ref. 6-40 Defra, (2013); Local Authority Collected Waste Statistics 2012/13.
- Ref. 6-41 Defra, (2014); Local Authority Collected Waste Statistics 2013/14.
- Ref. 6-42 LBTH, (2011); LDF Waste Evidence Base Report Update.
- Ref. 6-43 GLA, (2010); Future Waste Arisings in London 2010-2031 Summary Note.
- Ref. 6-44 Waste and Resources Action Plan (WRAP), (2010); A Guide to Volume Mass Conversion Factors and List of Waste (LoW) Categories used within WRAP's Tools.
- Ref. 6-45 British Standard Institute (BSI), (2005); BS5906:2005 Waste Management in Buildings, Code of Practice.
- Ref. 6-46 Defra, (2012); Local Authority Collected Waste Generation from 2000/01 to 2012/13 (England and regions data).
- Ref. 6-47 Defra, (2010); Survey of Commercial and Industrial Waste Arisingsref. 2009 – Final Results.
- Ref. 6-48 Defra, (2012); Construction, Demolition and Excavation Waste Generation Estimate (England).
- Ref. 6-49 Defra, (2008); Site Waste Management Plans (SWMP) Regulations 2008.
- Ref. 6-50 Building Research Establishment Environmental Assessment Methodology (BREEAM), (2014); BREEAM UK New Construction: Non-Domestic Buildings England Technical Manual.
- Ref. 6-51 HMSO, (2012); Control of Asbestos Regulations 2012.
- Ref. 6-52 HMSO, (1991); The Water Resources Act 1991.
- Ref. 6-53 Office of the Deputy Prime Minister (ODPM); (2014) Approved Document H: Requirement H6 solid waste storage Consultation draft September 2014.
- Ref. 6-54 HMSO, (2006); The Pollution Prevention and Control (England and Wales) (Amendment) (England) Regulations 2006.
- Ref. 6-55 Chartered Institute of Building Services Engineers, (2004); Public Health Engineering. CIBSE, London.
- Ref. 6-56 HMSO, (2015); The Environmental Permitting (England and Wales) (Amendment) (no.2) Regulations 2015.
- Ref. 6-57 HMSO, (1996); Landfill Tax Regulations (Amendment) 2015.
- Ref. 6-58 HMSO, (2013); The Packaging (Essential Requirements) (Amendments) Regulations 2015.

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- Ref. 6-60 Defra, (2015); Provisional Statistics on waste managed by local authorities in England including April to June 2014
- Ref. 6-61 DCLG, (2015); Planning Update March 2015 [online] <https://www.gov.uk/government/speeches/planning-update-march-2015> (accessed July 2015)