

THE GOODSYARD

Environment Statement Addendum Volume 2

September 2019 – Chapter 6 of 21

ballymore.



CHAPTER 6: WASTE MANAGEMENT

6.1 PREFACE

- 6.1.1
- This ES Addendum chapter has been submitted to support amendments that are being made to the 2015 Amended Scheme, submitted to both LBTH and LBH for the redevelopment of the site.
- 6.1.2
- The 2015 Amended Scheme comprised of a comprehensive mixed-use redevelopment of the site comprising of up to 1,356 residential units (Class C3), up to 65,859 m2 Gross Internal Area (GIA), retail (Class A1, A2, A3 and A5) up to 17,499 m2 GIA, assorted uses (Class D1, D2, sui generis) and 22,642 m2 of new public open space and landscaping.
- 6.1.3
- Following further consultation with the GLA, LBTH and LBH, the Applicant now submits the Proposed Amendments which consist of: a comprehensive redevelopment of the site which will include the provision of up to 138,575 m² Gross External Area (GEA) of commercial floorspace (B1 use), up to 19,260 m² GEA of retail floorspace (A1, A2, A3 and A5 use) the provision of up to 500 residential homes and the provision for up to a 150 room hotel and public realm.
- 6.1.4
- The Revised Scheme to the 2015 Amended Scheme have required some changes to be made to the Operational Waste Management Strategy. In order to ensure that this document is easy to read, a "stand alone" Operational Waste Management Strategy (the 'OWM Strategy') has been reissued, incorporating the changes into the text. This is found in **ES Addendum Volume 4: Appendix B Waste**.

6.2 SCOPE OF ASSESSMENT

- 6.2.1
- This chapter of the ES Addendum assesses the likely significant effects of the Revised Scheme in terms of waste and recycling; it is supported by **ES Addendum Volume 4: Appendix B Waste**.
- 6.2.2
- The predominant waste and recycling effects arising from the construction and operation of new development, result from:
 - The composition of waste (i.e. whether the waste generated is inert, or whether it comprises waste potentially hazardous to human health, requiring specialist management e.g. asbestos containing materials (ACMs), clinical waste, hazardous waste) and the potentially negative impacts on construction site workers, future on-site users and neighbouring users or/and occupiers of local commercial, retail or residential property (hereafter referred to as 'sensitive neighbouring receptors'. The composition of waste can also impact the local waste management infrastructure; the local waste management infrastructure may not have capacity for the waste streams generated as a result of new development; and
 - The quantity of waste generated (i.e. how the quantities of waste are forecasted for and managed appropriately (e.g. by ensuring sufficient bins are sufficient to meet the waste likely to be generated from operational activities, and managing waste appropriately, for instance, ensuring high levels of recycling of demolition and construction waste, and the management of such waste in line with the proximity principle – as close to the source of waste as possible). Resultant impacts of the quantities of waste generated from developments can be experienced by the local waste management infrastructure. Provided sufficient waste storage is provided within new development, in line with relevant local, regional and national policy and guidance, the volume of waste will not have an impact on future on-site users and sensitive neighbouring receptors.
- 6.2.3
- With regards to the composition and volume of waste generated during the construction works associated with the Revised Scheme, information has been provided by Second London Wall (Avison Young). With regards to the composition and volume of waste generated during the operation of the Revised Scheme, these have been calculated for the OWM Strategy, located within **ES Addendum Volume 4: Appendix B Waste**. Residential waste and recycling storage requirements were calculated in accordance with LBTH calculation methodologies, as the residential uses are located only within that part of the site fully within LBTH. Waste generated from the non-residential uses has been calculated using British Standards 5906:2005 and LBTH methodology (given that LBTH provide a more conservative methodology than LBH with respect to waste volumes, and thus presents a worst-case approach to waste storage requirements).
- 6.2.4
- The composition and volume of construction-related and operational-related waste, has the potential to have an effect on the following sensitive receptors:
 - Demolition, excavation, and construction site workers ('construction site workers'), who are sensitive to the composition of the waste arising during the construction programme;
 - Sensitive neighbouring receptors (e.g. the occupiers/users of the commercial and residential property along Bethnal Green Road, Sclater Street, Commercial Street, Shoreditch High Street, Quaker Street and Brick Lane), who are sensitive to the composition of waste arising during the construction and operation of the Revised Scheme;
 - Future on-site users of the residential and non-residential uses, who are sensitive to the composition of waste; and
 - Local Waste Management Infrastructure, which is sensitive to the volume of waste. As stated above, the Revised Scheme is located within both LBTH and LBH. LBTH is a unitary waste authority, meaning it is responsible for the collection, treatment and final disposal of all municipal waste generated within the borough. LBH forms one of the seven constituent Boroughs of the North London Waste Authority (NLWA), which is responsible for the collection and
- management of municipal waste generated within the authority boundary. As such, LBH is obliged to deliver all municipal waste generated within the Borough to NLWA designated facilities.
- 6.2.5

This ES Addendum chapter describes: the methodology used to identify existing baseline conditions and sensitive receptors, and to assess likely significant effects pertaining to waste; the baseline conditions currently existing at the site and in the surrounding area; the likely significant environmental effects taking account of embedded mitigation; the mitigation measures required to prevent, reduce or offset any significant adverse effects; the likely residual effects after these measures have been employed; and the cumulative effects associated with the Revised Scheme in combination with other developments within 1km of the site.

6.2.6

Residual effects of moderate or major significance will be referred to as 'significant effects' throughout this ES Addendum chapter; residual impacts found to be minor and negligible are considered to be 'not significant effects'.

6.2.7

This assessment and ES Addendum chapter has been produced by Trium Environmental Ltd (Trium) with information provided by Faulkner Browns Architects, Buckley Grey Yeoman, Eric Parry Architects, Chris Dyson Architects LLP, WSP, Second London Wall Avison Young, and the Applicant.
- # 6.3 KEY LEGISLATION, POLICY AND GUIDANCE CONSIDERATIONS
- 6.3.1

The waste and recycling assessment has been undertaken within the context of relevant planning policies, guidance documents and legislative instruments. These are summarised below, with a full discussion of relevant policies/guidance within these documents presented within Appendix 1 of the OWM Strategy (refer to **ES Addendum Volume 4: Appendix B Waste**).
- ## Legislation and Regulation
- 6.3.2

Relevant regulations and legislation relevant to this ES chapter include:
 - Clean Neighbourhoods And Environment Act 2005;
 - Control Of Pollution (Amendment) Act (Copa) 1989;
 - The Environment Act 1995;
 - Environmental Protection Act 1990 (Epa);
 - The Animal By-Products (Enforcement) (England) Regulations 2013;
 - The Controlled Waste (England And Wales) (Amendment) Regulations 2012;
 - The Environmental Permitting (England And Wales) (Amendment) Regulations 2015;
 - The Environmental Protection (Duty Of Care) (England) (Amendment) Regulations 2003;
 - The Hazardous Waste (England And Wales) (Amendment) Regulations 2009;
 - The List Of Wastes (England) (Amendment) Regulations 2005;
 - The Packaging (Essential Requirements) (Amendment) Regulations 2013;
 - The Producer Responsibility Obligations (Packaging Waste) (Amendment) Regulations 2014;
 - The Waste Batteries And Accumulators Regulations 2009;
 - The Waste Electrical And Electronic Equipment (WEEE) Regulations 2013;
 - The Waste (England And Wales) (Amendment) Regulations 2014; and
 - The Waste Management (England And Wales) (Amendment) Regulations 2006.
- ## Planning Policy
- ### National Planning Policy and Guidance:
- National Planning Policy Framework (2019);
 - Planning Practice Guidance ('Design': 2014; and 'Waste': 2015);
 - Government Review of Waste Policy (2011);
 - Waste Management Plan for England (2013); and
 - National Planning Policy for Waste (2014).
- ### Regional Planning Policy and Guidance:
- The London Plan (2016);
 - The Draft New London Plan (2017);
 - The Greater London Authority's Sustainable Design and Construction, Supplementary Planning Guidance (2014);
 - The Business Waste Management Strategy (2011); and
 - The Municipal Waste Management Strategy (2011).
- 1
- ES Addendum Volume 2
- The Goodsyard

Local Planning Policy and Guidance

- Bishopsgate Goods Yard Interim Planning Guidance (2009);
- London Borough of Hackney Planning Policy and Guidance;
 - North London Waste Authority, North London Joint Waste Strategy (2009);
 - North London Waste Authority, North London Waste Plan, Proposed Submission Version (2011);
 - North London Waste Authority, North London Waste Prevention Plan (2014);
 - LBH Core Strategy (2010);
 - LBH Revised Scheme Management Local Plan, Publication Version (2013);
 - South Shoreditch Supplementary Planning Document (2006);
- London Borough of Tower Hamlets Planning Policy and Guidance
 - The new Local Plan (2016);
 - Tower Hamlets Local Plan 2031 – Regulation 19 Consultation October 2017);
 - LBTH Core Strategy (2010);
 - LBTH Managing Development Document (MDD) (2013): and
 - LBTH Waste Storage and Collection Systems Supplementary Information (2017).

Technical Standards and Guidance

- British Standards Institute, (2005); BS 5906:2005 Waste Management in Buildings, Code of Practice
- Department for Communities and Local Government (DCLG), (2015); The Building Regulations 2010 – Approved Document H: Drainage and Waste Disposal, 2015 Edition;
- BSI, (2004); BS EN 840 Mobile Waste Containers;
- BSI, 1987; BS 476-21, Fire tests on building materials and structures: Part 21;
- BSI, 1987; BS 476-22, Fire tests on building materials and structures: Part 22; and
- BSI, (2005); Regulatory Reform (Fire Safety) Order, (2005).

6.4 CONSULTATION

6.4.1 In January 2014 a Scoping Opinion was issued jointly by the LBTH (Ref: PA/14/107) and LBH (Ref: 2014/0249) on the Proposed Development (see **ES Addendum Volume 4 - Appendix A Scoping**). A review of the Scoping Opinion was provided in April 2019 subject to the Revised Scheme. **Table 6.1** outlines the comments received in the 2014 Scoping Opinion and the 2019 Scoping Opinion Review and where they have been addressed within the documentation.

Table 6.1 LBTH Scoping Opinion Comments and Response

Topic / Section	Summary of Comment	Location within the ES Addendum where comments are addressed
Waste and Recycling	<i>Paragraph 4.37 of 2014 Scoping Opinion:</i> “The ES should identify who is responsible for the Site Waste Management Plan.”	Construction, Waste and Recycling
	<i>Paragraph 4.38 of 2014 Scoping Opinion:</i> “The ES chapter should identify the current capacity at waste disposal sites, and identify whether there is sufficient capacity for the development and cumulatively.”	Waste and Recycling
	<i>Paragraph 4.39 of 2014 Scoping Opinion, updated in 2019 Scoping Opinion Review:</i> “When estimating total waste arisings regard is to be given to the types and volumes of demolition, excavation and construction wastes likely to be generated. For each waste types the ES should clarify how the wastes are to be managed, for example re-used, recycled, landfilled and whether such activities are to be undertaken on-site or off-site.”	Waste and Recycling
	<i>Paragraph 4.41 of 2014 Scoping Opinion:</i> “The mode of waste transfer should be identified and where this is by road, the number of vehicle movements should be taken into account in the traffic impact assessment.”	Construction
	<i>2019 Scoping Opinion Review:</i> “...the baseline environment including existing levels of waste generated at the site will be examined...”	Waste and Recycling (see Para 6.6.3)

6.5 ASSESSMENT METHODOLOGY

6.5.1 The methodology used to identify baseline conditions, and assess the potential for likely significant effects pertaining to waste and recycling due to the Revised Scheme, has involved the following stages.

Determination of the baseline condition

6.5.2 The first step in the assessment process was the identification of the baseline conditions in the context of the site; as detailed above the site is located within LBH and LBTH. LBH is located within the NLWA, and although context has been provided for the reader about LBH, the assessment of likely significant effects on the local waste management infrastructure has been assessed against the NLWA (when considering LBH part of the site) and LBTH, a unitary authority. Paragraphs 6.5.8 – 6.5.11 outline how the baseline condition has been identified;

Identification of the sensitivity of receptors within the context of waste and recycling

6.5.3 Following the identification of the baseline conditions the sensitive receptors were identified. Paragraph 6.5.12 outlines how receptors have been identified, and their ‘sensitivity’ assigned (i.e. how sensitive they are in changes from the baseline condition);

Change in baseline conditions (magnitude of impact)

6.5.4 Once the baseline conditions and sensitive receptors were identified, the change in the conditions from the baseline conditions was determined. With regards to waste and recycling, this involved identifying the volume and composition of waste arising during the construction programme, and once the Revised Scheme is completed and occupied. Paragraphs 6.5.13 – 6.5.18 outline how these values were obtained. It should be highlighted that the OWM Strategy, prepared as part of this application, located within **ES Addendum Volume 4: Appendix B Waste**, outlines the full methodology for identifying how the volume and composition of waste during the operation of the Revised Scheme were determined. The OWM Strategy also presents the mitigation measures embedded into the design of the Revised Scheme, which are accounted for within the initial assessment of likely significant effects;

Embedded Mitigation

6.5.5 As discussed above, the OWM Strategy presents the mitigation measures embedded into the design of the Revised Scheme. These measures are accounted for within the initial assessment of likely significant effects, which are determined as outlined below (paragraph 6.5.6).

Assessment of likely significant effects

6.5.6 Paragraphs 6.5.9 – 6.5.39 present how the likely significant effects upon potentially sensitive receptors pertaining to waste and recycling have been identified.

Additional mitigation measures and assessment of residual significant effects

6.5.7 Following the initial assessment of effects including embedded mitigation measures, any suitable and appropriate additional mitigation measures required to reduce the likely effect have been identified and presented, followed by the assessment of any residual significant effects that may result from the Revised Scheme in regards to waste and recycling, following incorporation of additional mitigation measures.

Determination of Baseline

6.5.8 This waste and recycling assessment has been set against the existing conditions at the site, borough (LBTH) and district (NLWA, with regards to LBH portion of the site) level.

6.5.9 In order to provide further context to the baseline waste condition, context has been provided at Site, borough (LBH/LBTH), district (NLWA), regional (London), and national (England) scale. The baseline data review has been undertaken via a review of available online data; data sources have been provided as footnotes.

6.5.10 The determination of the baseline condition at the site level involved identifying the current waste generation on site (including waste volumes and composition), in order to be able to compare the change in waste arising and composition on site as a result of the construction works associated with the Revised Scheme, and the operation of the Revised Scheme.

6.5.11 In order to determine the existing capacity of the local waste management infrastructure (LBTH and LBH), information was gathered relating to anticipated waste arisings, waste apportionment targets, and existing and future capacity of waste sites within the local infrastructure.

Identification of the Sensitivity of Receptors

6.5.12 Receptors that are potentially sensitive to changes in waste and recycling as a result of the Revised Scheme have been identified following the assessment of baseline conditions. Using professional 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 Revised Scheme. **Table 6.2** outlines the classification of receptor sensitivity in relation to waste generation and management.

Table 6.2 Sensitive Receptors

Sensitivity	Receptor Description
High	Construction site workers – workers present and working on the site during the demolition, excavation, and construction phase (i.e. direct dermal contact, handling of waste and inhalation etc.).
	Future on-site users - residents, staff, internal management, customers, commercial tenants, etc. (i.e. direct dermal contact and inhalations etc.). Includes reference to potential occupiers of the Revised Scheme whilst construction works are underway on other phases (i.e. inhalation / dispersal and noise / nuisance).
	Local waste management infrastructure – when a Borough has a minimal range of facilities available, 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 and can only manage limited types of waste.
Medium	Sensitive neighbouring receptors – proximal location (i.e. within 200m) to the Revised Scheme during demolition, excavation, and construction phases and once the Revised Scheme is complete and operational. Includes reference to potential occupiers of the Revised Scheme whilst construction works are underway on other phases (i.e. 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 (i.e. recycling and composting) in addition to final disposal. Those that are available have only a moderate amount of remaining capacity for addressing waste arisings and can manage a moderate amount of different waste streams. An increase in vehicular movement is likely to impact upon air quality and human health at peak times.
Low	Local waste management infrastructure – when a Borough has a wide range of facilities available within the Borough, providing a waste management system with several management routes (i.e. recycling, composting, energy recovery, etc.) in addition to final disposal. Facilities have a large amount of remaining capacity for addressing waste arisings and can manage a wide range of waste streams.
Very Low	Local waste management infrastructure – when a Borough has a wide range of facilities available within the Borough, including more advanced technologies such as anaerobic digestion (AD) and can manage a wide range of waste streams.

Change in the Baseline Conditions (Magnitude of Impact)

6.5.13 In order to assess potential effects due to waste and recycling, the magnitude of impact due to the Revised Scheme has been determined. The magnitude of impact describes the scale of change from the current baseline conditions due to the Revised Scheme in relation to waste and recycling. The magnitude of change has been based on the composition of waste. It should be noted that the following sensitive receptors will not be impacted by the volume of waste generated as a result of the Revised Scheme: future on-site users; sensitive neighbouring receptors; and construction site workers. This is due to embedded mitigation measures (see the OWM Strategy located within **ES Addendum Volume 4: Appendix B Waste**) and because all handling, storage and waste management will be in line with applicable legislation, guidance and practice requirements. However, there is the potential for these receptors to be impacted as a result of the composition of waste, and have thus been assessed with respect to the composition of waste only.

6.5.14 The volume of waste should only have an effect on the local waste management infrastructure. With regards to the Revised Scheme, LBTH will collect the residential waste only, with non-residential waste collected by private waste

contractors. The final end destination of the waste will be determined by the capacity of waste management facilities. However, as the final destination of waste arisings is unknown, the assessment will consider the impact upon the NLWA and LBTH's waste management infrastructure, in accordance with the apportionment targets set in the current London Plan.

6.5.15 Each factor is separately defined as having a 'high', 'medium', 'low' or 'very low' magnitude of impact with regards to waste composition and waste volume, as set out in Table 6.3. With regards to the sensitive receptor of the local waste management infrastructure, an overall magnitude of impact will be determined when considering both composition and volume of waste, and an 'average' magnitude of impact will be determined for this sensitive receptor. For example, if the volume of waste is considered to have a high magnitude of impact, but waste composition is considered to have a low magnitude of impact, the overall magnitude of impact will be medium. In the event that an average magnitude of impact cannot be determined in this way (i.e. volume of waste is deemed to have a low magnitude of impact and waste composition is considered to have a medium magnitude of impact), the higher magnitude of impact will be defaulted to, in order to provide a worst-case approach to the assessment.

6.5.16 As stated above, once determined, the magnitude of impact with regards to waste composition will be applied to future on-site users, construction site workers, and sensitive neighbouring receptors. With regards to local waste management infrastructure, this will be assessed based on both overall magnitude of impact with waste composition and waste volume.

6.5.17 **Table 6.3** outlines the key factors used to assess the magnitude of impact due to the Revised Scheme in relation to waste composition.

Table 6.3 Methodology for Determining Magnitude of Impact in relation to Waste Composition

Magnitude of Impact	Description of Magnitude: WASTE COMPOSITION	
	Adverse	Beneficial
High	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.
	These criteria have the potential to have a substantial negative/positive effect upon potentially sensitive receptors from baseline conditions.	
Medium	Includes some materials requiring specific (but not necessarily highly specialised) consideration in regards to safe management and disposal. For example: Waste Electrical and Electric Equipment (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). of waste is such that the majority can be recycled with minimal/no pre-treatment.	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.
	These criteria have the potential to have a noticeable negative/positive effect upon potentially sensitive receptors from baseline conditions.	
Low	Inert and/or non-hazardous waste streams typically generated by household and commercial activities such as 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.
	These criteria have the potential to have a barely perceptible negative/positive effect upon potentially sensitive receptors from baseline conditions.	

Magnitude of Impact	Description of Magnitude: WASTE COMPOSITION	
	Adverse	Beneficial
Very Low	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	

- 6.5.18
- With regards to the sensitive receptor of the local waste management infrastructure, waste volume will also be used to identify the overall magnitude of impact (along with waste composition, as discussed above):
- High magnitude of impact would be applied to the sensitive receptor of the local waste management infrastructure should the local authority (LBTH/LBH) have no waste management infrastructure in place (i.e. there is no mention of waste management facilities and capacity within local policy, and no plan with regards to the future management of waste within LBTH/LBH has been formulated);
 - Medium magnitude of impact would be applied to the sensitive receptor of the local waste management infrastructure should LBTH/LBH not have the capacity to manage waste generated by the Revised Scheme itself, and has to outsource its waste to areas outside of the GLA;
 - Low magnitude of impact would be applied to the sensitive receptor of the local waste management infrastructure should LBTH/LBH, along with other Boroughs within the GLA with which LBTH/LBH have an agreement with or is part of a waste authority, have the capacity to manage the waste generated by the Revised Scheme; and
 - Very low magnitude of impact would be applied to the sensitive receptor of the local waste management infrastructure should the waste be able to be managed within the Borough only (i.e. the waste management facilities within the Borough have the capacity to manage the waste generated by the Revised Scheme).

Prediction Methodology

Significance Criteria

- 6.5.19
- As described in **ES Addendum Volume 2, Chapter 3: EIA Methodology**, the assessment of likely significant effects due to waste and recycling will be determined within the context of identified potentially sensitive receptors. There is no published or formalised technical guidance available for the assessment of waste related impacts. As such, professional judgement and experience has been relied upon in assessing potential waste related impacts due to the Revised Scheme.

Scale and Nature of Effects

- 6.5.20
- In order to determine the scale of potential effects, the magnitude of impact and receptor sensitivity are assessed qualitatively as a function of each other. It is important to note that whilst recommended mitigation measures do have the potential to alter the magnitude of impact due to the Revised Scheme, they do not alter the sensitivity of any potential receptors.
- 6.5.21
- Effects that are major and moderate in scale are considered significant, whilst those which are minor and negligible in scale are not considered significant.

Table 6.4 Matrix of Effects

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

- 6.5.22
- Effects upon potentially sensitive receptors can be adverse, beneficial or negligible in nature.
- 6.5.23
- Further to the above descriptions, potential effects can be both 'direct' and 'indirect' in nature and 'temporary' or 'permanent' in duration; temporary impacts can be further defined as short-term (i.e. <5 years), medium-term (i.e. 5-10 years) or long term (i.e. > 10 years). Effects relating to the demolition and construction phase are typically temporary in nature, due to activities ceasing at the end of the demolition and construction phase. With regards to the Revised Scheme the effects resulting from the construction of the Revised Scheme are deemed to be long-term temporary effects, as the Revised Scheme construction activities will be carried out over a period of 13 years.

Prediction Methodology for Demolition and Construction Waste Effects

- 6.5.24
- Various types and quantities of waste are anticipated to be generated during the demolition and construction phase of the Revised Scheme, referred to as construction, demolition and excavation (CD&E) waste. Specific CD&E waste compositions and quantities expected to be produced during this phase has been based on information provided by SLW (Avison Young), as presented within **Chapter 5: The Revised Scheme and Construction Overview** of this ES Addendum.
- 6.5.25
- With regards to the assessment process, quantities of CD&E waste expected to be produced by the Revised Scheme have been compared against studies and survey results regarding typical national levels of CD&E waste generation in England, as outlined within the Baseline Assessment section of this ES Addendum chapter.
- 6.5.26
- In order to compare this waste, the waste arising from the demolition, excavation, and construction phase of the Revised Scheme has been converted into tonnes from cubic metres (m³). A standard conversion factor of 0.87 tonnes per m³ has been used to convert the volume of construction and demolition waste volumes to weight in tonnes and a conversion factor of 1.25 tonnes per m³ has been used to convert volume of excavation waste to weight in tonnes.

Prediction Methodology for Determining Operational Waste Effects

- 6.5.27
- With regards to the assessment process, quantities of waste expected to be produced during the operational phase of the Revised Scheme (i.e. local authority collected waste (LACW) and commercial and industrial (C&I) waste) have been compared against existing site waste generation, from which the change in waste arisings from the baseline conditions (i.e. magnitude of change) has been compared and assessed against typical local/district, regional and national levels, identified as part of the Baseline Assessment.
- 6.5.28
- The volume of C&I and household (HH) waste (in litres (L)) has been converted into weight (i.e. tonnes) using a conversion factor of 1m³ of waste (where 1m³ equals to 1,000L) equates to 0.21 tonnes.
- 6.5.29
- Whilst the Revised Scheme is in outline form with only Plots 2 and 7 provided in detail, a large amount of information is available for these elements (i.e. fixed parameters the maximum and minimum amount of development proposed for each land use and development plot). Consequently, the same calculation methods for determining waste arisings have been applied to both the detailed and outline components. It is expected that storage requirements calculated for the outline components will be sufficient to accommodate waste arisings generated by the Revised Scheme under a full occupancy scenario. However, as these elements will be submitted in outline form, they will be finessed at the Reserved Matters stage and, consequently, further details regarding specific waste composition and estimated quantities for these elements will be provided through addendums to this ES Addendum at a later stage, if required, as more detailed information is provided. Therefore, the assessment does not consider likely significant effects of the detailed and outline components separately. Instead, differentiation between residential and commercial waste is discussed, with likely significant effects considered for both streams combined.
- 6.5.30
- Methodology used to calculate waste anticipated to arise from the operation of the Revised Scheme is presented within the OWM Strategy, located in **ES Addendum Volume 4: Appendix B Waste**. A simplified narrative has been presented in the following paragraphs, and therefore the OWM Strategy should be read in conjunction with this chapter.

Residential Uses

- 6.5.31
- Both minimum and maximum parameters have been considered for the outline components. However, for the purpose of the waste and recycling assessment maximum parameters have been used for the residential land uses of the operational phase of the outline components, so as to provide a worst-case approach. This approach also allows for greater flexibility within the Revised Scheme to accommodate any changes in design sensitivity between maximum and minimum parameters.
- 6.5.32
- As the residential uses fall within the buildings located within LBTH part of the site only, guidance presented within the Tower Hamlets Local Plan 2031 (October 2017) was used to calculate waste arising from the residential units, assuming full occupancy (see **Table 6.5** below).

Table 6.5 LBTH Calculation for Residential Waste Volumes

	Minimum capacity per week (L)			
No. Bedrooms	Residual Waste	Recyclable Waste	Food waste	Total
1	70	60	23	153
2	120	90	23	233
3	165	120	23	308
4	215	160	23	398

- 6.5.33 As discussed above, full details of the methodology used to calculate waste anticipated to arise from the operation of the Revised Scheme is presented within the OWM Strategy, located in **ES Addendum Volume 4: Appendix B Waste – Appendix 6**.
- Non-Residential Use Classes*
- 6.5.34 For the outline elements of the Revised Scheme, all flexible retail proposed has been assessed as A3 use class, as this use class generates the largest quantity of waste and thus provides a worst-case scenario with regards to waste volumes, and subsequent waste storage requirements.
- 6.5.35 Despite the above presented a worst-case assessment scenario, the likelihood of all flexible retail being brought forward as A3 uses is miniscule, and therefore, illustrative parameters have been used when calculating waste volume and storage requirements as opposed to maximum parameters; The use of the maximum parameters in the calculation of waste volumes as well as the assessment of 100% flexible retail space as A3 use class, would provide for an unrealistic worst-case scenario in this instance. This unrealistic worst-case assessment would result in a significant over predicted of waste volumes and thus over-provision of waste storage requirements, and would therefore invalidate the waste strategy. Thus, illustrative parameters have been used for the outline plots in order to provide a more realistic worst-case estimate of waste storage requirements.
- 6.5.36 After comparing guidance provided by both Boroughs for commercial waste generation, LBTH provide the most conservative methodology for calculating waste arisings generated by non-residential use classes, when compared to that provided by LBTH. As such, LBTH methodology has been used, where provided, to calculate non-residential waste quantities. BS 5906:2005 guidance, which broadly corresponds with guidance provided by LBTH, has been used where LBTH guidance has not been provided.
- 6.5.37 A 50:50 split between recyclable waste and residual (i.e. general) waste has been applied to the retail, hotel, leisure and office use classes.
- 6.5.38 However, for the restaurant/café facilities, food waste has also been calculated separately based on the following percentages; 50% recyclable waste, 30% organic food waste and 20% residual waste.
- 6.5.39 **Table 6.6** below provides a summary of the calculation methodologies used when calculating non-residential waste arising from the Revised Scheme, and the assumptions made. Full details of the methodology used to calculate waste anticipated to arise from the operation of the Revised Scheme is presented within the OWM Strategy, located in **ES Addendum Volume 4: Appendix B Waste**. The OWM Strategy breaks down the waste arisings anticipated for each use class on a plot-by-plot basis, should the Local Planning Authorities (LBTH and LBH) wish to review the waste volumes and storage requirements on a borough by borough basis.

Table 6.6 Non-Residential Calculation Methodologies

Non-Residential Use Classes Proposed	Assumptions / Notes	Calculation Methodology	Waste Stream Split
A1-A5 Retail	For outline plots: Calculated as use class A3 (Restaurant), to provide a worst-case	75L per cover, with one cover per 3m ² net internal area (NIA)	50:50 split between recyclable and residual waste
	For detailed plots: Split 50:50 between retail and restaurant use classes, to provide a reasonable worst-case assumption	50% total area: 75L per cover, with one cover per 3m ² net internal area (NIA) 50% total area: 10 litres (L) waste per Sales Floor Area (SFA), with SFA being two-thirds of the NIA	For detailed plots: 50% recyclable waste, 30% organic food waste and 20% residual waste For outline plots: 50:50 split between mixed dry recyclables and residual waste
A1, A1+, A3 Retail/Restaurant	For detailed plots: Split 50:50 between retail and restaurant use classes, to provide a reasonable worst-case assumption	50% total area: 75L per cover, with one cover per 3m ² net internal area (NIA) 50% total area: 10 litres (L) waste per Sales Floor Area (SFA), with SFA being two-thirds of the NIA	For detailed plots: 50% recyclable waste, 30% organic food waste and 20% residual waste For outline plots: 50:50 split between recyclable and residual waste
A3 Restaurant		75L per cover, with one cover per 3m ² net internal area (NIA)	50:50 split between mixed dry recyclable and residual waste
B1 Office		2,600L per 1000m ² .	50:50 split between recyclable and residual waste
C1 Hotel Standard		250L per bedroom	50:50 split between recyclable and residual waste
C1 Hotel Premium		350L per bedroom	50:50 split between recyclable and residual waste
D1 Non-residential Institutions (e.g. clinics, health centre, creches)		5L per m ² floor area	50:50 split between recyclable and residual waste
D2 Assembly and Leisure		5L per m ² floor area	50:50 split between recyclable and residual waste
Sui Generis		5L per m ² floor area	50:50 split between recyclable and residual waste

Limitations and Assumptions

- 6.5.40 As information regarding demolition and construction is necessarily broad at this stage, no discrepancy has been made between the outline and detailed components of the Revised Scheme. It is considered that activities relating to demolition and construction works will be similar across both the outline and detailed components of the Revised Scheme; therefore, both are considered alongside each other in relation to demolition and construction.

6.6 BASELINE ASSESSMENT AND IDENTIFICATION OF KEY RECEPTORS

Current Site Waste Arisings and Management

- 6.6.1

The site is approximately 4.4 ha in area and is centred at Ordnance Survey (OS) National Grid Reference (NGR) TQ336822. The site has been in a derelict state since a fire in December 1964 and demolition of buildings on-site in 2004. In 2010 the Shoreditch High Street Rail Station opened in the centre of the site, serving the London Overground between Highbury & Islington and several stations south of the River Thames.
- 6.6.2

The site is bounded by transportation infrastructure in the form of road and rail. The site is bounded by the A1209 Bethnal Green Road and Sclater Street to the north, Brick Lane to the east and the A10 Shoreditch High Street to the west. The Great Eastern Main Line and West Anglia Main Line railways from Liverpool Street station form most of the southern boundary of the site, with the A1202 Commercial Street to the southwest. Wheeler Street / Braithwaite Street run north/south through the centre of the site. Aside from the Shoreditch High Street Rail Station building and associated elevated London Overground rail line, there are currently no other permanent buildings on the site. As of December 2011, there are several temporary ‘recycled metal shipping containers’ used as a pop-up retail mall known as the ‘Boxpark’ as well as ‘Power-League’ football pitches.
- 6.6.3

It has been noted that the Scoping Opinion review comments provided in April 2019 stated that “...*the baseline environment including existing levels of waste generated at the site will be examined...*”. The site is currently anticipated to produce minimal quantities of waste; Shoreditch High Street Rail Station will generate small quantities of waste, predominantly from station-users and staff, and the temporary retail mall will also generate low quantities of waste. Regardless, for the purposes of this assessment the site will be assumed to be vacant, as this provides for a worst case assessment (i.e. change in waste arisings from the existing site (if assumed to be vacant and generate no waste) compared to the Revised Scheme will be greater - there will be a larger magnitude of change and thus the potential for greater effects).

Current Local/District Waste Arisings and Management

Demolition, Construction and Excavation Waste

- 6.6.4

The current London Plan comments on the high re-use and recycling rates of construction, excavation and demolition (CE&D) waste in London (estimated at 82% in 2008). In support, Policy 5.16 of the London Plan 2016 sets a target of 95% for recycling and re-use of CE&D waste by 2020 (note: this is consistent with Policy S17 of the Draft London Plan 2017).
- 6.6.5

Due to the high existing recycling rates and high future recycling targets within the construction industry, the London Plan does not apply apportionment targets for this industry on a borough by borough basis.

North London Waste Authority/ London Borough of Hackney

North London Waste Authority

- 6.6.6

As previously noted above, LBH forms one of the seven constituent Boroughs of the NLWA, which is responsible for the collection and management of municipal waste generated within the authority boundary. As such, LBH is obliged to deliver all municipal waste generated within the Borough to NLWA designated facilities. Therefore, the baseline conditions focus on current management practices within NLWA as opposed to LBTH.
- 6.6.7

Table 6.7 details the total volume of Local Authority Collected Waste (LACW) waste arising currently collected and managed by the NLWA between 2014 and 2018. This Table identifies that the waste managed within the NLWA over the past four years has in general remained the same (847 ktonnes in 2014/15 compared to 834 ktonnes in 2017/18). However, the waste sent to landfill has generally been in decline (108 ktonnes in 2014/15 compared to 78 ktonnes in 2017/18).

Table 6.7 NLWA Waste Arisings and Management

Waste Management Method	Waste Arisings (thousand tonnes)			
	2014/15	2015/16	2016/17	2017/18
Waste Sent to Landfill				
Landfill	108	105	68	78
Waste Diverted from Landfill				
Incineration (with EWF)	476	491	517	508
Recycled/composted	259	252	249	237
Other	2	3	12	8
Total	847	853	849	834

- 6.6.8

To meet the self-sufficient targets for waste (as outlined by the current London Plan¹), each London Borough has been assigned a volume of waste that it needs to manage; this is known as the apportionment target. The seven Boroughs of the NLWA have pooled their individual apportionment targets to make a collective total. This collective total has led to the NLWA having an apportionment target of 1,211 ktonnes for 2021 which is an increase on waste managed in 2017/18. This increase is because some boroughs have been set apportionment targets which take into account excess capacity to manage waste, either due to existing capacity, or new waste management facilities. For example, the London Plan identifies Cricklewood/Brent Cross as a suitable location within the NLWA for a major waste facility.
- 6.6.9

The total waste projections for the Boroughs of the NLWA total 1,727 ktonnes within the current London Plan. The NLWA has therefore been assigned the management of less waste than that which is projected to be generated.
- 6.6.10

A draft version of the new London Plan² outlines updated waste apportionment figures. The total waste apportionment target when pooling those of the individual NLWA Boroughs, is 1,307 ktonnes, with a projected waste generation of 1,797 ktonnes. These figures are slightly increased when compared against the current London Plan. As the Draft London Plan is not yet final and adopted, the figures outlined within the current London Plan will be used for this assessment, however the revised figures have been noted as part of the assessment.
- 6.6.11

The NLWA have built a number of sites in order to manage waste produced within the NLWA, examples of these sites are as follows:
 - A Waste and Recycling Centre located at Hornsey Street in Islington, this purpose-built centre replaced an older waste transfer station located at Ashburton Grove. This new Centre has waste compactors which reduce waste volume, thereby increasing transport efficiency; and
 - An Energy Recovery Facility (ERF) located within Edmonton, which will replace the existing Energy from Waste (EfW) facility at the Edmonton EcoPark. This replacement facility will generate over 50 megawatts of electricity. Construction of the the Edmonton facility began earlier this year (in 2019) and will be fully operational in 2025, when the Proposed Development is not yet operational. The facility will receive waste from the NLWA. The ERF will have a capacity of 700 ktonnes of waste each year, which will facilitate the management of waste for more than half of the waste apportionment target for the NLWA
- 6.6.12

Within the North London Waste Plan³, sites have been identified within LBH for Waste Management. Policy 2: Locations for new waste management facilities identified Millfield LSIS as an area suitable for waste management, applications for waste management development at this site will be permitted subject to other policies in the North London Waste plan, The London Plan and Local plans and related guidance. Two further sites within LBH have been identified in the London Legacy Development Corporation (LLDC) Local Plan, Bartrip Street and Chapman Road (Palace Close).
- 6.6.13

The North London Waste Plan Proposed Submission version (October 2016) identifies that the maximum existing annual capacity at licensed operational waste management facilities within the NLWA was approximately 4,421 ktonnes in 2018, is predicted to be approximately 3,945 ktonnes in 2026 and approximately 3,826 ktonnes in 2029.

¹ GLA (2016) The London Plan, The Spatial Development Strategy for London Consolidated with Alterations Since 2011

² GLA (2017) The Draft London Plan, The Spatial Development Strategy for Greater London Draft for Public Consultation.

³ North London Waste Plan (2019), Proposed Submission (Regulation 19) January 2019.

6.6.14 Based on the above, it is considered that the NLWA has built a number of sites for the management of waste arising from its constituent boroughs, and it has also identified a number of news sites within its boroughs for the future management of waste, in line with its pooled apportionment targets. It is therefore considered that the NLWA will have sufficient capacity to manage the apportioned waste targets as per the London Plan, once the Revised Scheme is operational.

London Borough of Hackney

6.6.15 As discussed above, the NLWA is responsible for the collection and management of municipal waste generated the LBH. As such, the NLWA and the LBTH have been assessed as the sensitive receptors. Notwithstanding, the following paragraphs discuss the LBH separately to the NLWA, to provide context to the reader of the local waste management infrastructure on a Borough scale.

6.6.16 **Table 6.8** outlines LBH's future waste apportionment targets as set out in the current London Plan.

Table 6.8 LBH Waste Apportionment Targets for Household Waste (HH) And C&I Waste

Waste apportionment targets in ktonnes (thousand tonnes)								
2021			2026			2031		
HH	C&I	TOTAL	HH	C&I	TOTAL	HH	C&I	TOTAL
68	97	166	84	115	199	86	116	202

6.6.17 The updated waste apportionment figures, presented within The Draft London Plan⁴, presents LBH's apportionments of household and commercial & industrial waste having a total of 110 ktonnes in 2021 (significantly different to the 166 ktonnes apportioned as per the current London Plan (**Table 6.8**)) to 118 ktonnes in 2041. The Draft London Plan outlines that LBH will be responsible of 2.4% of London's total waste. These figures are lower than originally thought but as this version is not final, the figures outlined within the current London Plan will be used for this assessment.

6.6.18 The predicted future LBH Waste Arisings as detailed within the current London Plan are shown within **Table 6.9**.

Table 6.9 LBH Predicted Waste Arisings for Household Waste (HH) and C&I Waste

LBH Predicted Waste Arisings in ktonnes (thousand tonnes)								
2021			2026			2031		
HH	C&I	TOTAL	HH	C&I	TOTAL	HH	C&I	TOTAL
93	82	175	97	82	179	100	83	183

6.6.19 **Table 6.9** identifies that by 2021 LBH will generate 5.1% more waste than that which is apportioned to them. Whereas projections suggest that in 2026 where LBH will generate 11.1% less than the apportionment amount of waste and by 2031 LBTH are predicted to generate 9.5% less than that which is apportioned to them. These percentages are compliant with the London Plan. This is because the apportioned target is greater that the anticipated future waste projections.

6.6.20 With regards to LBH waste management facilities, LBH has two existing safeguarded waste management sites: Millfields Waste Transfer Station; and Downs Road Service Station (Braydon Motors). These existing sites have licensed capacities of 50,000 tonnes and 2,449 tonnes respectively. Additional sites have been identified within the LBH< as discussed above.

London Borough of Tower Hamlets

6.6.21 LBTH is a Unitary Authority (UA) 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** provides an overview of the current levels of municipal waste arisings and management routes within LBTH.

6.6.22 **Table 6.10** identifies that the total waste managed in LBTH has remained fairly constant from 2014/15 (110 ktonnes) to 2017/18 (113 ktonnes). This Table further outlines that minimal waste is sent to landfill facilities, (less than 1% of the total waste managed), with the majority of waste sent for incineration.

⁴ GLA (2017) The Draft London Plan, The Spatial Development Strategy for Greater London Draft for Public Consultation.

6.6.23 LBTH operates as a single waste disposal authority with a target to manage 484,000 tonnes per year of municipal, commercial and industrial waste by 2020.

Table 6.10 LBTH Waste Arisings and Management

Waste Management Method	Waste Arisings (thousand tonnes)			
	2014/15	2015/16	2016/17	2017/18
Waste Sent to Landfill				
Landfill	1 (1%)	1 (1%)	0.3 (<1%)	0.025 (<1%)
Waste Diverted from Landfill				
Incineration (with EWF)	81 (75%)	80 (74%)	82 (74%)	85 (77%)
Recycled/composted	23 (22%)	24 (22%)	25 (23%)	23 (21%)
Other	2 (2%)	3 (3%)	2 (2%)	0.2 (<1%)
Total	110 (100%)	114 (100%)	116 (100%)	113 (100%)

6.6.24 **Table 6.11** of this ES chapter identifies LBTH waste apportionment targets as set out in the London Plan.

Table 6.11 LBTH Waste Apportionment Targets for Household (HH (i.e. MSW)) and C&I Waste (thousand tonnes)

LBTH Waste apportionment targets in ktonnes (thousand tonnes)								
2021			2026			2031		
HH	C&I	TOTAL	HH	C&I	TOTAL	HH	C&I	TOTAL
104	148	252	127	175	302	131	176	307

6.6.25 The draft London Plans (2017) has updated figures for LBTH apportionment, which are reduced when compared to those outlined within **Table 6.11** above. LBTH will be responsible of 195 ktonnes of Municipal Solid Waste and C&I waste in 2021, this figure will rise to 207 ktonnes in 2041. **Table 6.12** identifies that by LBTH will have sufficient capacity for projected future waste arisings.

Table 6.12 LBTH Predicted Waste Arisings for Household Waste (HH) and C&I Waste.

LBTH Predicted waste arisings in ktonnes (thousand tonnes)								
2021			2026			2031		
HH	C&I	TOTAL	HH	C&I	TOTAL	HH	C&I	TOTAL
79	169	248	83	169	252	86	172	261

- 6.6.26 The projected waste arisings of household and commercial and industrial waste for LBTH outlined within the Draft London Plan (2017) are higher at 260 ktonnes) in 2021 and 273 ktonnes in 2041. The new London plan outlies that LBTH will be accountable of 2.4% share of London's total waste managed by borough.
- 6.6.27 In order to achieve these targets, LBTH have identified six licensed waste management facilities which are required to be safeguarded in accordance with the London Plan and LBTH Core Strategy⁵:
- Clifford Devlin Ltd (0.37ha);
 - Fish Island Mid (0.025ha);
 - Ailsa Street (part of a larger sites) (0.89ha);
 - Northumberland Wharf (0.62ha);
 - Fish Island South (part of a larger site) (0.41ha); and
 - McGrath (2.68ha).
- 6.6.28 The above locations provide 4.99 hectares (ha) of land towards meeting LBTH's waste apportionment target, which requires a range of between approximately 3.6 and 7.3ha.
- 6.6.29 The projected maximum licensed capacity of processing and treatment sites within LBTH is 2,183 ktonnes, this is based on extrapolation of treatment and processing facilities, excluding a reallocation of transfer capacity. Based on this information it can be concluded that LBTH has the capacity to handle all waste requirements in the future, including additional waste arisings produced as a result of Area Action Plan development.
- 6.6.30 Looking to the future, and in addition to the safeguarding of the aforementioned licensed waste management facilities within the borough, LBTH Core Strategy plan has a number of methods in order to plan and provide for the total waste generated in the borough in line with the apportionment targets set out in the London Plan, this will be done by:
- Safeguarding all existing sites used for waste management (unless a suitable or alternative site can be found that is more sustainable);
 - Identifying four areas of search that are suitable to accommodate a waste management facility and working with partners to deliver the waste strategy and site and placemaking DPD.
 - Fish island;
 - Poplar Riverside;
 - Bromley by Bow; and
 - Blackwall.
 - Working with the Olympic Delivery Authority to connect any energy-generating waste facility with the Olympic Energy Centre in Fish Island; and
 - Developing an interconnected network of waste management facilities that can respond to changing technologies, demands and have the scope to generate energy.
- 6.6.31 LBTH have identified the Ailsa Street site as a suitable location for waste management, as such it has been safeguarded within LBTH Managing Development Document. The site covers an area of 5.76ha and has recently been permitted for planning permission for the redevelopment of the site for a mixed use, residential led scheme (PA/19/00189/S), although the permission has been granted, the application site excludes the safeguarded waste site.
- 6.6.32 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 LBTH, the Borough is moving away from their historical reliance on landfill and is instead focussing on the principles of the waste hierarchy.
- 6.6.33 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 LBTH. New waste treatment technologies will be favoured over landfill with regards to the management of residual waste within the Borough such as waste to energy technology.
- 6.6.34 Based on the above, it is considered that LBTH, has identified sufficient capacity to manage the apportioned waste targets as per the London Plan.

Current Regional Waste Arisings and Management

- 6.6.35 **Table 6.13** provides an overview of the current regional levels of waste generation and management in London for Local Authority Collected Waste:

Table 6.13 Waste Arisings and Management within London

Waste Management Method	Waste Arisings			
	2014/15	2015/16	2016/17	2017/18
Waste from Landfill				
Landfill	754 (20%)	750 (21%)	463 (12%)	347 (9%)
Waste diverted from Landfill				
Incineration (with EWF)	1679 (45%)	1707 (46%)	1965 (53%)	2019 (56%)
Recycled/composted	1106 (31%)	1096 (29%)	1116 (31%)	1091 (31%)
Other	121 (4%)	130 (4%)	144 (4%)	144 (4%)
Total	3661 (100%)	3704 (100%)	3715 (100%)	3630 (100%)

- 6.6.36 As shown in **Table 6.13**, waste managed within London on a regional scale has gradually started to move from management via landfill to other waste management methods (i.e. EfW). This is in accordance with a drive to achieve zero waste sent to landfill in London by 2031. In 2014/15 20% of all waste generated in London was landfilled with 80% diverted from landfill via other management routes. In comparison, during 2017/18 only 9% of all waste was sent to landfill, therefore 91% of waste diverted from landfill; an increase in diversion of 11%. It is expected that this trend will continue as legislative targets drive movement away from landfill and push for increased use of other management methods. However, it should be noted that landfill is still likely to play a large role in near-future waste management practice on a regional scale through indirect disposal (i.e. residues generated by other waste treatment processes, for example, fine incinerator bottom ash (IBA) generated by thermal treatment processes).
- 6.6.37 It is estimated that London currently manages 46% (7 million tonnes) of its own waste and imports a further 2.6 million tonnes of waste each year. However, around 30% of waste goes into landfill sites that are located largely outside London.

Current National Waste Arisings and Management

- 6.6.38 **Table 6.14** outlines the current national levels of waste generation and management in England for LACW.
- 6.6.39 As shown in **Table 6.14**, and similar to waste management on a regional scale, national waste management has also previously relied heavily on landfill with a gradual move towards other management methods in recent years. Between 2014/15 and 2017/18 the percentage of waste sent to landfill experienced a reduction of approximately 49%, with waste diverted to other management methods. Given the current drive away from landfill reliance and movement towards other methods of waste management, this trend is also expected to continue into the future. However, as with regional waste management, landfill is still expected to play an integral role in the near-future on a national scale through indirect disposal.
- 6.6.40 In 2012 C&I waste within London amounts to 32% of all waste generated⁶. C&I waste generation is extremely difficult to estimate owing to data limitations and data gaps. Based on UK statistics on Waste 2019 Defra survey, full estimates are not available for 2017 therefore 2016 figures will be used. In 2016 an estimated 41,000 ktonnes of C&I waste was generated in the UK with 34 million tonnes of this deriving from England. Construction, demolition and excavation waste (CD&E) generated approximately 61% of total UK waste in 2016 reaching 131.2 million tonnes, with 120.3 million tonnes of that generated within England.

⁵ LBTH (2010) Core Strategy, Development Plan Document 2025.

⁶ DEFRA Local Authority Waste Management Statistics 2012. See glossary for definition of 'household waste' (definition taken from Mayor's Municipal Waste Management Strategy, Mayor of London, November 2011)

Table 6.14 National waste arisings for England 2014-2018

Waste Management Method	Waste Arisings (thousand tonnes)			
	2014/15	2015/16	2016/17	2017/18
Waste Sent to Landfill				
Landfill	6,361 (22%)	5,132 (20%)	4,136 (15%)	3,212 (12%)
Waste Diverted from Landfill				
Incineration (with EWF)	7,772 (26%)	9,066 (35%)	9,945 (38%)	10,619 (42%)
Recycled/composted	11,067 (38%)	11,064 (42%)	11,252 (43%)	10,860 (43%)
Other	589 (2%)	667 (3%)	760 (3%)	718 (3%)
Total	28,816 (100%)	26,123 (100%)	26,318 (100%)	25,625 (100%)

Summary of Baseline Conditions

6.6.41 With regards to the assessment of impacts due to the Revised Scheme, it is anticipated that any waste generated due to on-site activities will be managed using existing facilities located within LBTH and NLWA. Therefore, all potentially sensitive receptors will also be located at the borough scale.

Identified Potentially Sensitive Receptors

6.6.42 Based on this assessment of baseline conditions, the following sensitive receptors have been identified as likely to be affected by the Revised Scheme:

- Construction site workers - **high sensitivity** due to proximity to on-site activities during the demolition and construction phase and generation of CD&E waste;
- Future on-site users - **high sensitivity** due to proximity to waste generation and impacts associated with improper management (includes occupiers of the Revised Scheme during the demolition and construction phase due to phasing of the respective plots;
- Sensitive neighbouring receptors - **medium sensitivity** due to distance from the Revised Scheme; and
- Local waste management infrastructure - **low sensitivity** – LBTH and NLWA have sufficient capacity to manage waste apportionment targets, and have identified a number of future strategies for the management of waste arising from the boroughs. In addition, a number of new sites have been built / safeguarded for future use (e.g. the EFW facility located within Edmonton).

6.7 IDENTIFICATION AND DESCRIPTION OF CHANGES LIKELY TO GENERATE EFFECT

6.7.1 To avoid repetition, please refer to the Magnitude of Impact section (paragraphs 6.5.13 to 6.5.18) within the Assessment Methodology subheading of this ES Addendum chapter, which outlines the changes likely to generate an effect (e.g. increase in waste from the Revised Scheme potentially placing strain on the local waste management infrastructure, should existing capacity within the waste management infrastructure be limited).

6.8 ASSESSMENT OF LIKELY SIGNIFICANT EFFECT

Construction Phase

Embedded Mitigation Measures

- 6.8.1 Whilst the Site Waste Management Plan (SWMP) Regulations (2008) were revoked as of the 1 December 2013, producing a SWMP for new developments is considered best practice. Therefore, the Applicant will instruct the production of a SWMP for the demolition and construction of the Revised Scheme, which will form part of the overall Construction Environmental Management Plan (CEMP) see **ES Addendum, Volume 2, Chapter 5: The Revised Scheme and Construction Overview** for further details. In summary, the CEMP will include roles and responsibilities, detail on control measures and activities to be undertaken to minimise environmental impact, and monitoring and record-keeping requirements. A commitment will be made to periodically review the CEMP and undertake regular environmental audits of its implementation during the construction phase of the Revised Scheme.
- 6.8.2 The specific content of the SWMP will be provided at a later date, however, it is anticipated that it will include details of the forecast and actual tonnage of each waste stream that will be generated on site and their recycling/disposal route. It will be a condition of contract for the contractors to discuss and agree waste recovery rates to be targeted with the Applicant. A monitoring report will then be generated on a monthly basis which will include details of the progress made in diverting waste materials from landfill, against these pre-agreed targets.
- 6.8.3 Where it is necessary to transport waste to and from the site, transportation will comply with the Duty of Care requirements, including: ensuring waste is transported by registered carriers, disposal to appropriately licensed sites and maintenance of appropriate waste transfer documentation.
- 6.8.4 The SWMP will be prepared and agreed with LBH and LBTH prior to the commencement of any on-site works. An appropriate person (i.e. the Principal Contractor) will be responsible for producing the SWMP, implementing and updating the SWMP throughout the development process, in agreement with LBH and LBTH.
- 6.8.5 In accordance with the Waste Management Plan for England 2013, a principal aim during demolition and construction will be to reduce the amount of waste generated as a result of activities on-site. This approach complies with the waste hierarchy and will feed directly into the SWMP; waste reduction will be achieved in a number of ways including, but not limited to, the following:
- agreements with material suppliers to reduce the amount of packaging or to participate in a packaging take-back scheme;
 - implementation of a 'just-in-time' material delivery system to avoid materials being stockpiled, which increases the risk of their damage and disposal as waste;
 - attention to material quantity requirements to avoid over-ordering and generation of waste materials;
 - re-use of materials wherever feasible, e.g. re-use of excavated soil for landscaping. Concrete will be taken off-site for crushing and re-use;
 - segregation of waste at source where practical; and
 - re-use and recycling of materials off-site where re-use on-site is not practical (e.g. through use of an off-site waste segregation facility and re-sale for direct re-use or re-processing).
- 6.8.6 As part of the SWMP, the Principal Contractor will provide proof that all site waste has been deposited or transferred to the correct place and by appropriately licensed contractors (i.e. an audit trail). Consignment notes will be used to document waste production and movement within the confines of the Revised Scheme site and to external facilities. These notes will detail the type of waste, waste volume, waste classification, contractor and ultimate disposal route. Records will be updated regularly ensuring that all waste transferred or disposed of has been correctly processed with evidence of signed waste transfer notes that will be kept on-site for inspection whenever requested.
- Waste Management Measures On-site*
- 6.8.7 In order to reduce potential risks throughout the demolition and construction phase, the following waste management measures will be implemented on-site:
- damping down of surfaces during spells of dry weather and brushing/water spraying of heavily used hard surfaces/access points across the site as required;
 - off-site prefabrication, where practical, including the use of prefabricated structural elements, cladding units, toilets, mechanical and electrical risers and packaged plant rooms;
 - burning of waste or unwanted materials will not be permitted on-site;
 - all hazardous materials including chemicals, cleaning agents, solvents and solvent containing products to be properly sealed in sealed containers at the end of each day prior to storage in appropriately protected and bunded storage areas;

- all demolition and construction workers will be required to use full Personal Protective Equipment (PPE) whilst performing activities on-site;
- any waste effluent will be tested and where necessary, disposed of at the correctly licensed facility by a licensed specialist contractor/s;
- materials requiring removal from the site will be achieved using licensed carriers and records will be kept detailing where waste will be transferred to; and
- pre-assembly and pre-fabrication of construction materials will be prioritised wherever practicable to minimise on-site generation of waste and packaging and reduce the number of delivery and collection vehicles to and from the site.

6.8.8 Excavated material will be crushed and used for back-fill and piling mat material. Where it is not possible to re-use excavated material on-site, it will be taken off-site for re-use purposes within other projects or processing/treatment; disposal of excavated material will be undertaken once all other re-use/recycling opportunities have been exhausted. It is anticipated that where waste generated by demolition and construction activities is to be removed off-site, this will be undertaken by road vehicles (see **Volume 2, Chapter 9: Traffic and Transport** of this ES Addendum for further details).

6.8.9 It will be a condition of contract for the contractors to discuss and agree waste recovery rates to be targeted with the Applicant. A monitoring report will then be generated on a monthly basis which will include details of the progress made in diverting waste materials from landfill, against these pre-agreed targets.

Identification of Potential Contamination

6.8.10 Should any potentially contaminated materials be identified during the demolition and construction phase, 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 LBH and 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). Any asbestos containing materials 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 2012.

6.8.11 All surface drainage, groundwater seepage and any minor 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 LBH and LBTH and Thames Water Utilities Limited (TWUL). All liquids and soils of a potentially hazardous nature (e.g. diesel fuels, oils and solvents) will be stored on surfaced areas with suitable bunding, to the satisfaction of the Environment Agency. 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 and other legislation, to the satisfaction of the Environment Agency, LBH or LBTH.

Anticipated Effects

6.8.12 The following paragraphs detail potential effects pertaining to waste and recycling due to the Revised Scheme during the demolition and construction phase following incorporation of embedded mitigation measures.

6.8.13 It is currently anticipated that demolition and construction works will commence in 2021 and end in 2034, taking place over eight phases, which are listed below in terms of anticipated sequence (however, this is subject to change):

- Phase 1 - Building 2;
- Phase 2 - Plot 7 Retail Units in Arches;
- Phase 3 - Building 5, 6 & 10B;
- Phase 4 - Building 8A, 8B, 8C and 11;
- Phase 5 - Building 10C;
- Phase 6 - Building 1;
- Phase 7 - Building 4, 10A; and
- Phase 8 - Building 3.

6.8.14 The considerable length of time involved with this phase of the Revised Scheme adds to the difficulty in assessing likely environmental effects arising from demolition and construction works in relation to waste and recycling.

6.8.15 Estimates have been made with regards to waste arisings during this stage of the Revised Scheme, as presented within **Chapter 5: The Revised Scheme and Construction Overview** of this ES Addendum, and within **Tables 6.15 – 6.17** of this ES chapter. Further detail regarding demolition and construction activities can be found within **Chapter 5: The Revised Scheme and Construction Overview** of this ES Addendum.

Demolition Waste

6.8.16 Demolition material generated will be re-used during construction, wherever practicable. Any material identified as being contaminated with asbestos or other such hazardous material will be disposed of, off-site at an appropriately licensed facility by a specialist contractor. **Table 6.15** outlines the indicative demolition quantities anticipated to be generated by the Revised Scheme.

Table 6.15 Demolition and Excavation Quantities.

Waste Stream	Indicative Volume (m3)
Ground Excavation	26,082
Brickwork	9,846
Total	35,928

6.8.17 Waste arising from site clearance, primary infrastructure and earthworks (i.e. excavation) is expected to comprise vegetation, topsoil, rubble, tarmac from former hard standings, gravel and clay material. Material excavated during ground works will be crushed and tested, any suitable materials will be used as back-fill and piling material.

6.8.18 The majority of the 9,846 m³ of brickwork will be retained for re-use on site.

6.8.19 Any clean excavated material that cannot be reused on-site will be removed by licensed waste carriers and sent for reuse at another development site or sent for disposal at appropriately licensed facilities (these are expected to be inert waste landfill sites).

6.8.20 Any contaminated material that will require removal from the site will be collected by suitable waste carriers and sent for disposal at appropriately licensed hazardous waste facilities.

Excavation Waste

6.8.21 The Revised Scheme has been designed with detailed consideration given to the below ground constraints and hence the amount of excavation and substructure works that can take place. As a result, excavation to the site is limited to:

- The construction of the 8 track box through Phase 1
- Foundation excavation and pilings arising
- Basement structure to for Plots 1 and 2
- Removal of the fill on top of the existing arches in Phase 2
- Substructure construction for all plots.

6.8.22 The bulk quantities for excavation are shown below in **Table 6.16**.

Table 6.16 Estimated Volumes of Excavation Material

Development Plot and Phase	Waste Stream	Indicative Volume (m ³)
Phase 1 Plot 2	8 track box, Basement and foundation excavation, piling arising	1,860
Phase 2 Plot 7 Retail Units in Arches	Removal of spoil from the top of the arches and structure strengthening	11,845
Phase 3 Plots 5, 6 & 10B	Foundation excavation and piling arising	1,314
Phase 4 Plot 8	Foundation excavation and piling arising	251
Phase 5 Building 10C	Foundation excavation and piling arising	332
Phase 6 Plot 1	Basement & Foundation excavation and piling arising	7,005
Phase 7 Plots 4 & 10A	Foundation excavation and piling arising	1,161
Phase 8 Building 3	Foundation excavation and piling arising	2,314
	Total	26,082

Construction Waste

- 6.8.23 Following demolition and excavation activities, construction of the Revised Scheme will involve the use of additional materials that also present the potential for waste to be generated on-site. Approximately 374,222 m³ material will be used in the construction of the Revised Scheme.
- 6.8.24 Temporary storage of materials, packaging and over-ordering are anticipated to be the main sources of waste generation by construction activities. **Table 6.17** outlines the estimated volume of construction waste anticipated to be generated by the Revised Scheme.
- 6.8.25 Following demolition and excavation activities, construction of the Revised Scheme will involve the use of additional materials that also present the potential for waste to be generated on-site. Temporary storage of materials, packaging and over-ordering are anticipated to be the main sources of waste generation by construction activities.
- 6.8.26 **Table 6.17** outlines the estimated volume of construction waste anticipated to be generated by the Revised Scheme.

Table 6.17 Anticipated Waste Volumes of the Construction Materials Used

Material	Waste Quantity
Block work	37,650
Plasterboard including Track	850
Flooring	640
Fixtures & Fittings	500
Ductwork	6,100
General	16,060
Total	61,800

Magnitude of Impact – Waste Volume

- 6.8.27 Where possible waste arising from demolition, excavation, and construction activities will be re-used on-site or on other sites within close proximity to that of the Revised Scheme. However, in order to provide an assessment based on a worst-case scenario, the total waste arising from demolition, excavation, and construction activities will be assessed against baseline conditions.
- 6.8.28 In total, approximately 97,728 m³ of waste is anticipated to be generated during the demolition, excavation, and construction phase of the Revised Scheme. Applying standard conversion factors (as discussed within the Methodology section), this equates to approximately 94,935 tonnes of waste generated over the 13-year construction programme, which equates to approximately 7,303 tonnes per annum.
- 6.8.29 The volume of waste anticipated to be generated during the demolition, excavation, and construction phase is typical of a development of this scale and nature. Embedded mitigation and waste management measures, including the anticipated implementation of a SWMP, will result in the majority of waste generated during this phase being re-used either on-site or off-site. Although the majority of demolition, excavation, and construction waste will be re-used on-site, due to the locational constraints of the site i.e. inner-city location and proximity to sensitive receptors i.e. densely populated area, it may not be possible to re-use all demolition, excavation, and construction waste on-site. In order to mitigate this, any waste not re-used on-site will be processed off-site at an appropriate licenced demolition, excavation, and construction waste facility with capacity to handle the material within their permitted limits. These measures will help work towards the London wide target of re-using 95% of all demolition, excavation, and construction waste by 2020 (and beyond, noting that the construction programme is due to commence in 2021).
- 6.8.30 Prefabrication of materials and ‘just-in-time delivery’ methods will also act to reduce the volume of waste generated by demolition, excavation, and construction activities. Although there is no demolition, excavation, or construction waste currently arising on-site, it is considered that the volume of waste anticipated to arise during the demolition, excavation, and construction phase is consistent with the volume of demolition, excavation, and construction was arising across London.
- 6.8.31 Typically, it is considered that as once the demolition, excavation, and construction period finishes another commences within London and therefore additional waste arisings are managed within the existing waste management infrastructure and framework in line with commercial agreements. This is therefore considered to represent a low magnitude of impact.

Magnitude of Impact – Waste Composition

- 6.8.32 In terms of waste composition, it is expected that the majority of waste materials generated by demolition, excavation, and construction activities will be of an inert/non-hazardous composition (i.e. bricks, cement, etc.); this composition is considered typical for demolition, excavation, and construction waste. In the unlikely event that any hazardous materials are discovered, hazardous materials will be appropriately sealed, protected and stored in bunded areas. Waste will be segregated into colour coded containers where space permits this, or removed from the site to a licensed recycling facility/transfer station for processing. Further to this, should any contaminated materials be identified during the demolition, excavation, and construction phase work on-site will temporarily cease, materials will be assessed and an appropriate strategy for treatment and management of the material will be implemented.
- 6.8.33 Therefore, following the implementation of the described mitigation measures, the magnitude of change with regards to waste composition due to the Revised Scheme is considered to be very low with regards to demolition, excavation, and construction site workers and sensitive neighbouring receptors.

Effects on Construction Site Workers

- 6.8.34 With the high sensitivity of the construction site workers, and the very low magnitude of change with respect to waste composition results in an effect which is minor in scale and adverse in nature. However, the incorporation of the embedded mitigation measures reduce this effect to negligible, and not significant.

Effects on Sensitive Neighbouring Receptors

- 6.8.35 The medium sensitivity of these receptors and the very low magnitude of change with respect to waste composition results in an effect which is negligible, and not significant.

Effects on Local Waste Management Infrastructure

- 6.8.36 The low sensitivity of this receptor and the low magnitude of change with respect to waste composition and waste volume (combination of the very low magnitude of impact regarding waste composition and the low magnitude of impact regarding waste volume) results in an effect which is negligible, and not significant.

Potential Impacts Once the Revised Scheme is Complete and Occupied

Embedded Mitigation Measures

- 6.8.37 All measures embedded into the design of the Revised Scheme, and its’ operation, relating to the production, storage and servicing of waste and recycling are discussed within the OWM Strategy presented within **ES Addendum Volume 4 Appendix B Waste**. To avoid repetition, these measures have not been reiterated here, and this ES chapter should be read in conjunction with the OWM Strategy.

Magnitude of Impact – Waste Volume

- 6.8.38 In total:
- 715,500L of waste will be generated per week;
 - 102,000L of the waste will be from residential uses;
 - 613,500L will be from non-residential uses; and
 - 7,803 tonnes of waste will be generated per year.

These volumes have been calculated as per **Tables 6.5 and 6.6**.

- 6.8.39 The magnitude of impact in relation to waste volume is low.

Magnitude of Impact – Waste Composition

- 6.8.40 It is expected that the majority of waste generated during the operation of the Revised Scheme will comprise of inert and non-hazardous waste streams; this is typical of the use classes comprising the Revised Scheme (refer to the OWM Strategy presented within **ES Addendum Volume 4 Appendix B Waste – Appendix 6**).
- 6.8.41 Separate storage will also be provided for any unique waste (i.e. WEEE, hazardous, etc.) that may be generated by activities associated with maintenance and fitout works.
- 6.8.42 Consequently, it is expected that there will be a very low magnitude of change with regards to waste composition compared to baseline conditions. This magnitude of change will be applied to all relevant sensitive receptors in the operational phase.

	<i>Future Residents and Users of the site</i>
6.8.43	With the high sensitivity of the future on-site users, and the very low magnitude of change with respect to waste composition results in an effect which is minor in scale and adverse in nature. However, the incorporation of the embedded mitigation measures reduce this effect to negligible, and not significant.
	<i>Effects on Sensitive Neighbouring Receptors</i>
6.8.44	The medium sensitivity of these receptors and the very low magnitude of change with respect to waste composition results in an effect which is negligible, and not significant.
	<i>Effects on Local Waste Management Infrastructure</i>
6.8.45	The low sensitivity of this receptor and the low magnitude of change with respect to waste composition and waste volume (combination of the very low magnitude of impact regarding waste composition and the low magnitude of impact regarding waste volume) results in an effect which is negligible, and not significant.
	Anticipated Effects of Applying the Development Parameter
6.8.46	As discussed above, the maximum parameters with regards to the residential uses and the illustrative parameters with regards to the non-residential uses have been used in the assessment of effects resulting from the operation of the Revised Scheme. All effects have been identified as negligible, following the incorporation of embedded mitigation measures into the design of the Revised Scheme. Applying the minimum parameters, or applying the maximum parameters to the non-residential uses would not change the scale, nature and significance of effect identified during the above assessment of effects.

6.9 SCOPE FOR ADDITIONAL MITIGATION MEASURES

6.9.1 No mitigation measures additional to those embedded into the Revised Scheme are required.

6.10 RESIDUAL EFFECTS

6.10.1 **Table 6.18** provides a summary of the residual effects resulting from the Revised Scheme after effective implementation of the embedded and additional mitigation measures proposed above.

Table 6.18 Significant Residual Effects

Phase	Resource or Receptor Affected	Residual Effect
Construction	Construction Site Workers	Temporary negligible effect
	Sensitive Neighbouring Receptors	Temporary negligible effect
	Local Waste Management Infrastructure	Temporary negligible effect
Operation	Future Residents and Users of the site	Permanent negligible effect
	Sensitive Neighbouring Receptors	Permanent negligible effect
	Local Waste Management Infrastructure	Permanent negligible effect

6.11 CUMULATIVE EFFECTS

6.11.1 The cumulative schemes as presented within **ES Addendum Volume 2, Chapter 3: EIA Methodology Table 3.9** and agreed with the GLA, LBH and LBTH have been reviewed in relation to potential effects pertaining to waste resulting from the Revised Scheme in combination with the cumulative schemes.

6.11.2 A review of the schemes has identified that the likely end-uses of the cumulative schemes are similar to those of the Revised Scheme (i.e. mixed-use schemes of residential and commercial land uses), and as such the composition of all waste arisings generated by the developments would be of largely inert and non-hazardous origin (i.e. similar to that of the Revised Scheme).

6.11.3 To assess the cumulative impact of the demolition, excavation, and construction and operational phases of the cumulative schemes, the identified schemes have been reviewed and an ‘average development’ size has been calculated. This average development is of a smaller scale that that of the Revised Scheme, as assessed within this ES Addendum chapter.

6.11.4 Weekly waste arisings for the ‘average development’ were calculated using the methodology outlined in BS 5906:2005, as many of the cumulative schemes are located across different London Boroughs, and thus LBTH and LBH guidance would not be applicable to all.

Construction Phase Cumulative Effects

6.11.5 Demolition, excavation, and construction of the considered cumulative schemes (as appropriate, some schemes comprise refurbishment and thus limited demolition and excavation activities are involved) are likely to result in the generation of demolition, excavation, and construction waste, similar in composition to that of the Revised Scheme.

6.11.6 Therefore, the implementation of standard Best Practice embedded mitigation measures assumed to be embedded into the cumulative schemes, as per the Revised Scheme, result in cumulative effects on demolition and construction workers and sensitive neighbours similar in scale and nature to those resulting from the Revised Scheme; effects would not be worsened.

6.11.7 It is highly unlikely that demolition, excavation, and construction of all of the cumulative schemes would be undertaken simultaneously with the Revised Scheme (particularly considering the period associated with the construction programme for the Revised Scheme). In addition, employment of mitigation measures on-site, and an expectation that each of the cumulative scheme will produce an SWMP (in accordance with best practice), results in the probability that all waste materials produced during this phase will be effectively and appropriately managed. As such, it is anticipated that the majority of waste material generated by demolition, excavation, and construction works would be segregated for recycling and re-use purposes and diverted from landfill.

6.11.8 Due to uncertainty regarding the specific demolition, excavation, 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, excavation, and construction phases. Due to the multi-borough locations of the cumulative schemes, the cumulative effects of the volumes of waste in combination with the Revised Scheme cannot be appropriately quantified; some schemes are located within the London Borough of Islington and the City of London, as well as LBTH and LBH. Thus, the sensitive receptors to these effects differs from that considered for the Revised Scheme (i.e. the Local Authority responsible for the management of waste is not the same).

6.11.9 However, considering only LBTH and LBH schemes, the volumes of waste generated would increase the pressure on the local waste management infrastructure, and as such may exceed the waste that can be managed within the respective boroughs. As such, the effect may be worsened. The duration of this effect would depend upon the specific demolition, excavation, and construction programmes of each considered scheme. However, demolition, excavation, and construction works are temporary in nature (i.e. activities cease at the end of the demolition, excavation, and construction phase).

Operation of the Revised Scheme Cumulative Effects

6.11.10 Once all the cumulative schemes are complete and operational, waste arisings are anticipated to be produced due to activities associated with the use of each development.

6.11.11 Each cumulative scheme will need to assess waste generated during its operation, and will be required to apply management techniques that are in accordance with the Waste Hierarchy; these techniques are likely to be embedded mitigation measures, in-line with the approach adopted by the Revised Scheme.

6.11.12 Therefore, through the implementation of these mitigation measures, the effects on sensitive receptors of future on-site users and sensitive neighbours from the Revised Scheme in combination with the cumulative schemes are considered to be similar in scale to that of the Revised Scheme in isolation.

6.11.13 With regards to the local waste management infrastructure, as above, the cumulative effects are difficult to quantify. Considering only LBTH and LBH schemes, the volumes of waste generated would increase the pressure on the local waste management infrastructure, and as such may exceed the waste that can be managed within the respective boroughs. As such, the negligible effect experienced by the Revised Scheme in isolation may be worsened when considered in combination with the relevant cumulative schemes. However, due to the NLWA and LBTH future waste management strategies, it is considered that this worsened effect would not be considered significant, and the worsened effect would be of minor scale and adverse nature at worst.

6.12 QUALITATIVE COMPARISON WITH THE 2015 PROPOSED DEVELOPMENT

6.12.1

The residual effects identified within the ES Addendum chapter are as per those identified within the 2015 Amended Scheme ES assessment chapter.

6.13 SUMMARY AND CONCLUSIONS

6.13.1

This chapter has reviewed baseline conditions at the site and surrounding area, and identified that receptors sensitive to waste and recycling as a result of the construction and operation of the Revised Scheme is limited to: future residents and users of the site; sensitive neighbouring receptors; construction site workers; and the local waste management infrastructure.

6.13.2

These sensitive receptors were assessed against the composition of waste anticipated during the construction and operation of the Revised Scheme, this is with the exception of the sensitive receptors of the local waste management infrastructure, which was also assessed against the anticipated volume of waste anticipated to arise during the aforementioned phases associated with the Revised Scheme. The volume of waste anticipated to arise during the

operation of the Revised Scheme was calculated based on LBTH and BS 5906:2005 methodology. An OWM Strategy, prepared as a standalone planning deliverable (and appended to this ES Addendum in **ES Addendum Volume 4 Appendix B Waste**) presents the full calculation methodology, waste arisings and waste strategy associated with the operation of the Revised Scheme.

- 6.13.3

The SWMP, which will be secured via an appropriately worded planning condition, will include the reduction of waste on-site as a main aim, which it will achieve via a number of standard Best Practice Measures. These include implementation of a 'just-in-time' material delivery system, re-use of materials wherever feasible, and the segregation of waste where practical.
- 6.13.4

Mitigation embedded into the design of the Revised Scheme is primarily associated with the OWM Strategy, prepared in line with local, regional and national policy, guidance and legislation.
- 6.13.5

Following the implementation of embedded mitigation measures, residual effects pertaining to waste and recycling on all sensitive receptors have been identified as negligible (see **Table 6.19**). No additional mitigation measures have been identified as necessary.
- 6.13.6

The volumes of waste generated by the Revised Scheme, when considered in combination with the identified cumulative schemes, would increase the pressure on the local waste management infrastructure, and as such may exceed the waste that can be managed within the respective boroughs. As such, the negligible effect experienced by the Revised Scheme in isolation may be worsened when considered in combination with the relevant cumulative schemes, however it is not anticipated that this cumulative effect would be significant).

Table 6.19: Summary of Residual Effects

Receptor/ Affected Group	Value or Sensitivity (Significance) of Receptor	Activity or Impact	Embedded Design Mitigation	Magnitude/ Spatial Extent/ Duration/ Likelihood of Occurrence	Scale and Nature of Effect	Additional Mitigation	Residual Magnitude of Impact	Significance of Residual effect
Construction								
Construction Site Workers	High	Impact of the composition of waste (e.g. potentially contaminated material) on construction site workers	SWMP	Very Low	Negligible, not significant	None	N/A	Negligible, not significant
				Direct				
				Local				
				Temporary				
				Likely				
Sensitive Neighbouring Receptors	Medium	Impact of the composition of waste (e.g. potentially contaminated material) on sensitive neighbouring receptors	SWMP	Very Low	Negligible, not significant	None	N/A	Negligible, not significant
				Direct				
				Local				
				Temporary				
				Likely				
Local Waste Management Infrastructure	Low	Impact of the composition and volume of construction waste on the capacity of the local waste management infrastructure	SWMP	Low	Negligible, not significant	None	N/A	Negligible, not significant
				Direct				
				District				
				Permanent				
				Likely				
Operation								
Future residents and users of the site	High	Impact of the composition of waste (e.g. potentially contaminated material) on future on-site users	OWM Strategy	Very Low	Negligible, not significant	None	N/A	Negligible, not significant
				Direct				
				Local				
				Permanent				
				Likely				
Sensitive Neighbouring Receptors	Medium	Impact of the composition of waste (e.g. potentially contaminated material) on sensitive neighbouring receptors	OWM Strategy	Very Low	Negligible, not significant	None	N/A	Negligible, not significant
				Direct				
				Local				
				Permanent				
				Likely				

Receptor/ Affected Group	Value or Sensitivity (Significance) of Receptor	Activity or Impact	Embedded Design Mitigation	Magnitude/ Spatial Extent/ Duration/ Likelihood of Occurrence	Scale and Nature of Effect	Additional Mitigation	Residual Magnitude of Impact	Significance of Residual effect
Local Waste Management Infrastructure	Low	Impact of the composition and volume of operational waste on the capacity of the local waste management infrastructure	OWM Strategy	Low	Negligible, not significant	None	N/A	Negligible, not significant
				Direct				
				District				
				Permanent				
				Likely				
Cumulative Effects - Construction								
Local Waste Management Infrastructure	Low	Impact of the composition and volume of construction waste on the capacity of the local waste management infrastructure	SWMP	Low	Negligible to minor adverse, not significant	None	N/A	Negligible to minor adverse, not significant
				Direct				
				District				
				Permanent				
				Likely				
Cumulative Effects - Operation								
Local Waste Management Infrastructure	Low	Impact of the composition and volume of operational waste on the capacity of the local waste management infrastructure	OWM Strategy	Low	Negligible to minor adverse, not significant	None	N/A	Negligible to minor adverse, not significant
				Direct				
				District				
				Permanent				
				Likely				