Ham Close Regeneration

Planning Application:

Environmental Statement Volume 2: Technical Appendices

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Ham Close – Hill Residential
Environmental Impact Assessment Scoping Report, November 2021

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Ham Close – Environmental Impact Assessment (EIA) Scoping Report

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1.0 INTRODUCTION

1.1 Hill Residential (the 'applicant') is preparing to submit (in 2022) a full detailed planning application for a site at Ham Close in Ham within the London Borough of Richmond upon Thames. The development proposals comprise a mixed use scheme and are subsequently referred to in this report as the 'proposed development'.

1.2 The site, predominately comprising existing buildings, larger areas of parking and short amenity grassland, occupies approximately 4.660 hectares (ha) and is located within Ham. A site location plan is provided at Figure 1.1 (below) and Figure 1 (larger version at the end of this report).

Figure 1.1 Site location plan

1.3 This Environmental Impact Assessment (EIA) Scoping Report, prepared by Greengage Environmental Ltd, provides background information to assist Richmond Council (the local planning authority) to provide a Scoping Opinion under Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017[1] (hereafter referred to as the 'EIA Regulations').

THE EIA REGULATIONS AND NEED FOR AN ENVIRONMENTAL IMPACT ASSESSMENT

The EIA Regulations

1.4 The revised EIA Directive (2014/52/EU), adopted by the European Parliament in 2014, was transposed into UK law through the EIA Regulations[1] on 16th May 2017. These regulations replace the 2015 update to the EIA Regulations which consolidated with amendments the provisions of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011[2].

1.5 The EIA procedure set out in the EIA Regulations[1] aims to ensure that the local planning authority (LPA) and the public properly understand the likely significant environmental effects, and the scope for reducing them, before a decision on the application is made. Table 1.1 below outlines the minimum required information for the contents of an Environmental Statement (ES).

Table 1.1 Legal Minimum Requirements for the Contents of an ES

Requirement of Regulations 18(3) and Schedule 4 of the 2017 EIA Regulations for the inclusion in Environmental Statements	
Regulation 18(3)	
(a)	A description of the proposed development comprising information on the site, design, size and other relevant features of the development.
(b)	A description of the likely significant effects of the proposed development on the environment.
(c)	A description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment.
(d)	A description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the options chosen, taking into account the effects of the development on the environment.
(e)	A non-technical summary of the information referred to in sub-paragraphs (a) to (d).
(f)	Any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected.
Schedule 4	
1	A description of the development, including in particular:

Requirement of Regulations 18(3) and Schedule 4 of the 2017 EIA Regulations for the inclusion in Environmental Statements	
	(a)a description of the location of the development; (b)a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases; (c)a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; (d)an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.
2	A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.
3	A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.
4	A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.
5	A description of the likely significant effects of the development on the environment resulting from, inter alia: (a) the construction and existence of the development, including, where relevant, demolition works; (b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources; (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste; (d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters); (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

Requirement of Regulations 18(3) and Schedule 4 of the 2017 EIA Regulations for the inclusion in Environmental Statements	
	(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; (g) the technologies and the substances used. The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC(1) and Directive 2009/147/EC(2).
6	A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.
7	A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.
8	A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU(3) of the European Parliament and of the Council or Council Directive 2009/71/Euratom(4) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.
9	A non-technical summary of the information provided under paragraphs 1 to 8.
10	A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.

Need for EIA

1.6 There are two types of development that may be subject to an EIA as defined by the EIA Regulations. These are:

- Schedule 1 Developments; and
- Schedule 2 Developments.

1.7 It is mandatory for any development falling within the description of a Schedule 1 Development to be subject to an EIA. Applications for consents relating to Schedule 1 Developments must be accompanied by an ES.

1.8 It is not always mandatory for Schedule 2 Developments to be subject to an EIA. The EIA Regulations categorise development types and provide thresholds to assist with the identification of Schedule 2 Developments that may require an EIA.

1.9 Schedule 3 of the EIA Regulations describes the criteria that must be considered in determining whether a development, which falls within the size threshold applicable to Schedule 2 Development, is likely to have significant impacts and hence should be subject to an EIA. These include:

- The characteristics of the development (e.g. size, design, use of natural resources, cumulation with other existing development, quantities of pollution, waste produced, risk of major accidents including those caused by climate change, risks to human health);
- The environmental sensitivity of the location; and
- The characteristics of the potential impact (e.g. extent, magnitude, intensity, probability and duration).

1.10 Where it is determined that a proposed development requires an EIA, the application is known as an 'EIA Development'.

1.11 The proposed development does not fall under the description of a Schedule 1 Development as defined by the EIA Regulations 2017 that would automatically require a formal EIA. However, the proposed development, does fall within the description of the following sub-category of Schedule 2 and exceeds the corresponding threshold in column 2 of the table in Schedule 2 in that it includes more than 150 dwellings:

'Infrastructure projects' – urban development projects, including the construction of shopping centres and car parks, sports stadiums, leisure centres and multiplex cinemas (category 10(b) of Schedule 2)).

1.12 Given the scale of the proposals and the potential sensitive receptors discussed in section 3 of this report, it was determined that the proposed development had potential for significant environmental effects and would therefore be considered an 'EIA Development'.

THE PURPOSE OF SCOPING IN THE EIA PROCESS

1.13 This EIA Scoping Report describes how the ES for the proposed development will be undertaken. It seeks the planning authority's opinion as to the information to be provided in the ES.

1.14 The purpose of scoping is to determine the environmental topics or areas of which there are likely to be potential impacts which will need to be addressed. The geographical area and timeframe over which these potential likely impacts will need to be considered is also determined as part of the scoping process. It also sets out the methods to be used to determine the likely significant environmental effects that will arise as a result of the construction and operation of the proposed development. The scoping process also enables certain potential impacts to be scoped out as not being likely to give rise to significant environmental effects.

STRUCTURE OF THE EIA SCOPING REPORT

1.15 The remainder of this EIA Scoping Report is structured as follows:

- Section 2 provides background to the development proposals and the context of the existing site;
- Section 3 provides a summary of the existing environmental conditions of the site (including potential sensitive receptors);
- Section 4 summarises the consultations that have been or will be held, as appropriate;
- Section 5 details the general scope of the ES, overall assessment methodology, including determination of significance;
- Section 6 details the scope of the technical assessments; and
- Section 7 summarises additional material that will be submitted with the application.

2.0 DEVELOPMENT CONTEXT

SITE LOCATION AND SETTING

2.1 The site covers an area of approximately 4.660 ha and is centred on National Grid Reference TQ 0030585, OS Co-ordinates 550309, 158566.

2.2 The site comprises existing residential buildings arranged in five storey blocks, four storey deck access flats and three storey 'T' shaped blocks. The public realm consists of large areas of surface parking and amenity grassland with scattered trees. The Youth Centre and associated car park occupies a central location on the site.

2.3 The site is bound by Woodville Road to the north, Wiggins Lane and Ham Street to the east, Ham Clinic and Ashburnham Road to the south and St Richard's C of E Primary School playing fields and the children's garden pre-school to the west.

2.4 A site location plan is provided at Figure 1.1.

DESCRIPTION OF DEVELOPMENT

2.5 The development proposals comprise the demolition of the existing buildings on-site and phased mixed-use development comprising 452 residential homes (Class C3) up to six storeys a Community/Leisure Facility (Class F2) of up to four storeys in height, a "Makers Lab" (sui generis) of up to two storeys together with basement car parking and site wide landscaping.

CONSTRUCTION

2.6 The current indicative construction programme assumes commencement on site in Quarter 4 (Q4) of 2022 with completion in Q4 of 2029.

PLANNING CONTEXT

2.7 The following development policies have been identified as being of particular relevance to the site and proposed development. The policies will be discussed in further detail within the individual technical chapters of the ES where relevant.

National Policy

2.8 National Planning Policy Framework (NPPF)[3] 2021 Paragraphs/Sections:

- Paragraph 8 – overarching objectives for achieving sustainable development;

- Paragraph 11 – presumption in favour of development;
- Section 2 – Achieving sustainable development;
- Section 4 – Decision-making;
- Section 5 – Delivering a sufficient supply of homes;
- Section 6 – Building a strong, competitive economy;
- Section 8 – Promoting healthy and safe communities;
- Section 9 – Promoting sustainable transport;
- Section 12 – Achieving well-designed places; and
- Section 14 – Meeting the challenge of climate change, flooding and coastal change.

2.9 The Planning Practice Guidance (PPG)[4] provides important information for any user of the planning system, linking the Framework with necessary guidance.

Local Policy

2.10 The following documentation from Richmond Council will be referred to when preparing the ES:

- London Borough of Richmond Upon Thames Local Plan (2018)[5];
- Ham and Petersham Neighbourhood plan (2019)[6];
- Planning Obligations Supplementary Planning Document (2020)[7];
- Air Quality Supplementary Planning Document (2020)[8];
- Development Control for Noise Generating and Noise Sensitive Development Supplementary Planning Document (2018)[9]; and
- Buildings of Townhouse Merit Supplementary Planning Document (2015)[10].

3.0 THE EXISTING ENVIRONMENT

SENSITIVE RECEPTORS

3.1 When undertaking an EIA and any associated ES, it is important to determine which receptors should be considered as part of the technical assessments. Predominately desk-based assessments completed at this time have identified the following potentially sensitive environmental receptors (note that full detail of receptor sensitivities and locations will be provided within the ES).

Table 3.1 Potential Sensitive Receptors

Category	Potential Sensitive Receptors
Built Heritage, Townscape and Visual	The proposals include several buildings up to 6 storeys in height. There are 27 potentially sensitive heritage receptors within a radius of c. 500m from the site and potentially sensitive views from Richmond Park.
Archaeology	The west of the site lies within the Archaeological Priority Area (APA) of Ham Fields (DLO33496). The APA indicates that finds of Prehistoric material in the area suggest that further occupation evidence and artefacts may survive. The east area of the site falls within the APA of Ham (Reference: DLO33461) which is an early Medieval settlement mentioned in Domesday and includes Ham House and associated pleasure gardens dating from the 17th century. Evidence of Prehistoric occupation may also be present within this area.
Air Quality	Ham Close is located within an Air Quality Management Area and there are several residential and education receptors within close proximity to the site in addition to new residents from the proposed development.
Noise and Vibration	There are several residential and education receptors within close proximity to the site in addition to new residents from the proposed development that could be affected by construction noise.
Ecology	The site is located 1.3km from the boundary of Richmond Park which is designated as a National Nature Reserve, Site of Special Scientific Interest and Special Area of Conservation. Residents of the proposed development have the potential to increase recreational pressure on this European designated site with increased traffic also a consideration.
Ground Conditions and Contamination	Risks from existing contamination on site to future occupiers of the houses associated with asbestos fibres within garden/landscaped areas and low levels of heavy metals and Polycyclic Aromatic Hydrocarbons.

Socio-economic	Due to the additional population that the residential units will bring forward, there is the potential for impacts upon local healthcare facilities and local schools.
Climate	There are potential climate change impacts for human and ecological receptors: • Overheating and associated health implications; • Soft landscaping failure due to increased extreme weather events and summer temperatures; and • Water shortages for public use and for landscaping due to summer droughts.

4.0 CONSULTATION

4.1 The process of consultation is critical to the development of a comprehensive and balanced ES. It is essential to determine those aspects that require detailed assessment, and to consider comments and positions of affected stakeholders.

4.2 Consultation with statutory and non-statutory consultees assists in ensuring that all relevant environmental issues are identified, together with the likely significant environmental effects of the proposed development. This enables the EIA to operate as part of an iterative process whereby likely significant environmental issues are identified and considered as part of the design process. In this way, the design can be refined through the incorporation of mitigation measures, where possible, to limit adverse effects and enhance beneficial effects. Consultation has been and will continue to be undertaken as part of the design and EIA process, and will include (but not necessarily limited to) the following organisations:

- Richmond Council (including departments such as Housing, Environmental Health and Planning);
- Greater London Authority;
- Transport for London;
- Environment Agency;
- Thames Water;
- Natural England;
- Heritage England; and
- Important neighbouring occupiers including Community Groups operating within Ham Close and Community Groups within the local neighbourhood in addition to local businesses, educational and community facilities and residents.

4.3 A summary of key consultations undertaken as part of the EIA for each technical chapter will be provided within the ES.

5.0 SCOPE OF ES

ENVIRONMENTAL TOPICS NOT BEING ASSESSED

5.1 The purpose of scoping is to determine the environmental topics or areas of which there are likely to be potential impacts which will need to be addressed. As is set out below, following a review of existing survey and baseline studies completed at the site, and the exercise to identify potentially sensitive receptors (Table 3.1 above), a number of technical areas have been scoped out of the ES. Whilst the technical areas discussed below will not be assessed in specific technical chapters of the ES consideration will be provided in other ES Chapters or planning application documents.

Transport

5.2 The proposed development trip generation has been forecast relative to the capacity of the transport network. There 192 existing residential units on-site and 452 residential units are proposed. Based on the trip generation assessment for a net increase of 260 residential units the expected multimodal two-way vehicle trips and total daily trips are expected below the threshold requirements for assessment.

5.3 The net change in vehicle trips is less than 10% increase in the peak hours and throughout the day. In terms of annual average daily traffic (AADT), the net change would result in a 3.8% increase. This is shown in the multimodal trip generation tables in Appendix 1.

5.4 Due to the lower car parking ratio the impact on the highway network is expected to be minimal and accommodated without perceptible impact to other road users. The change in traffic flows on Petersham Road is less than 10%.

5.5 The IEMA guidance indicate that a change of less than 30% (when no specifically sensitive areas are present) may not be considered for an assessment however in this scenario a change of 10-12% is considered to be negligible.

5.6 On this basis, no likely significant Transport impacts are predicted, and it is proposed to scope out the requirement for a Transport chapter from the EIA. A Transport Assessment and Framework Travel Plan will be prepared, and will provide further detail of the transport access, parking and servicing strategy for the proposed development including sustainable transport measures which will be embedded into the design. These documents will be submitted as stand-alone reports with the application.

Water Resources and Flood Risk

Baseline

5.7 The closest 'main river' is the River Thames which is located approximately 0.7 km west of the site.

5.8 The Environment Agency's (EA) Flood Map for Planning identifies that the site is located entirely within Flood Zone 1 (low risk). Land located within Flood Zone 2 are located approximately 0.35 km west and north of the site (medium risk). Land located within Flood Zone 3 (high risk) and within an area benefitting from flood defences, is located approximately 0.35 km to the north-west.

5.9 The London Borough of Richmond Upon Thames Fluvial and Tidal Flood Risk Web Map within the Strategic Flood Risk Assessment (SFRA), identifies the potential extent of inundation and the maximum extent of the tidal breach extent for the year 2100 for the borough and this identifies that the site would not be affected by a tidal breach flood event up to the year 2100.

5.10 The EA's risk of flooding from surface water map shows that the majority of the site has a very low risk of flooding from this source. However, there are small areas of up to high risk of flooding from surface water associated with existing roads on site.

5.11 The SFRA identifies that the site is in an area of high susceptibility of groundwater flooding (75% or more) as it is an area underlain by the superficial geology of the Kempton Park Gravels Member comprising of sand and gravel, which is classified by the EA as a Secondary A Aquifer. This is defined as *"permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers".* The SFRA outlines that developments that are at an increased risk of flooding due to groundwater require further analysis of flood risk and therefore this risk will be further assessed within a stand-alone Flood Risk Assessment (FRA).

5.12 The site is further underlain by the bedrock geology of the London Clay Formation, comprising of clay and silt. The bedrock geology is classified as Unproductive Strata by the EA, which are defined as *"geological strata with low permeability that have negligible significance for water supply or river base flow".*

5.13 Based on a review of the SFRA, the site is not located within an area at risk of flooding from sewers or reservoirs.

5.14 As set out within the SFRA, a Critical Drainage Area (CDA) is defined as "geographical areas (usually a hydrological catchments) where multiple and cumulative sources of flood risk (surface water, groundwater, sewer, main river and/or tidal) have the potential of causing

flooding in one or more Local Flood Risk Zones, affecting people, property or local infrastructure".

5.15 The site is not identified in the SFRA to be located within a CDA.

5.16 According to available records there are three records of groundwater abstractions all located 1.4 km north-east of the site. The site is not located within a source protection zone of a borehole abstraction point. It is considered unlikely that there are any surface water abstractions located on site given the lack of surface water features on site.

5.17 According to the EA's Water Stressed Areas report (2021), London is located in an area which is reported to suffer from 'water stress', i.e. the availability of mains drinking water supply is limited. Whilst it is the remit of Thames Water (and other water companies) to ensure that sufficient water supply is provided for new developments, sustainable design measures will be embedded into the design to minimise the water demand of the proposed development.

Embedded Mitigation

5.18 Sustainable Drainage Systems (SuDS) will be incorporated into the design of the development to ensure that surface water runoff is controlled and that appropriate water quality treatment is applied to any runoff leaving the site.

5.19 The design of the buildings will incorporate water efficiency measures and water-saving devices to reduce the water demand of the development.

Rationale for Scoping Out

5.20 As reported above, there are three recorded groundwater abstractions located 1.4 km north-east of the site. These are located on the opposite side of the River Thames to this site and given the distance from the site, it is considered unlikely that any basements proposed at the site will inhibit water supply to these abstractions. Therefore, the impact on water resources is not considered to be significant.

5.21 There is the potential that the proposed development would cause an increase in surface water runoff during both the construction and operational phases, due to the increase in impermeable surface areas. However, during the construction phase, the control of surface water runoff will be covered within the Construction Environmental Management Plan (CEMP) that will be submitted as part of the planning application and will specify mitigation measures to ensure that the construction phase of the development will not increase surface water runoff within the site or elsewhere.

5.22 During the operational phase, a conceptual surface water drainage strategy will be prepared and included within the FRA that will form part of the application and this will ensure that surface water runoff is discharged appropriately and is compliant with target discharge rates. The London Plan states that development proposals should aim to achieve greenfield run-off rates and that drainage should be designed and implemented in ways that promote multiple benefits including water use efficiency, water quality and enhanced biodiversity, urban greening, amenity and recreation. In addition, Defra's Non-Statutory Technical Standards require major developments to aim to achieve greenfield runoff rates for all new developments.

5.23 The design principles set out in the surface water drainage strategy and its conclusions will be presented in the introductory chapters of the ES.

5.24 Although the site is located in Flood Zone 1 (low risk), the site covers an area larger than 1 hectare and therefore in accordance with the NPPF, a FRA will be prepared for the development which will include the following:

- assessment of the level of flood risk (tidal, fluvial, surface water, groundwater etc);
- details of any historical flooding events;
- demonstrate that the proposed land use is suitable and will not increase flood risk (from all sources) on or off site;
- Effects to / benefits of existing flood defences;
- Climate change effects (i.e. assess flood risk associated with climate change predictions, to ensure that the proposed development is safe for its operational lifetime);
- Access / egress arrangements;
- Mitigation measures, where necessary, embedded into the proposed development to reduce the risks associated with flooding; and
- Residual flood risk;

5.25 There is the potential for increased water demand and wastewater flows during both the construction and operational phases of the development. Consultation will be undertaken with Thames Water and, if necessary, infrastructure improvements may be required to supply the proposed development. Consultation with Thames Water and details of water efficiency measures to reduce water usage will be summarised within the introductory chapters of the ES.

5.26 A foul drainage strategy will be prepared and submitted as part of the planning application. This will include consultation with Thames Water at the outset of the project to determine whether there is capacity within the local foul sewerage network to supply the development and, if necessary, what infrastructure improvements are required.

Conclusion

5.27 The application will be supported by an FRA and conceptual surface water and foul drainage strategy as well as a CEMP and therefore impacts associated with the flood risk and drainage will be mitigated within these documents. It is therefore considered that the Water Resources, Flood Risk and Drainage chapter can be scoped out of the EIA. An assessment of the risk of contamination of controlled waters (i.e. groundwater and surface water) is discussed in the Ground Conditions and Contamination section of this Scoping Report.

Wind Microclimate

5.28 Given the height and scale of the proposed development, the landscaping proposed and the existing surrounding land uses, no significant wind effects are anticipated. This topic will therefore be scoped out of the ES.

Daylight, Sunlight and Overshadowing

5.29 Given the nature of the proposed development and the surrounding land uses, it is proposed to scope Daylight, Sunlight and Overshadowing out of the ES. The proposed buildings will be a maximum of six storeys in height and will be separated from the existing potentially sensitive residential receptors (surrounding residential housing) by Woodville Road, Ashburnham Road and Ham Village Green.

5.30 A stand alone Daylight & Sunlight Report will be prepared instead based on the BRE Guidelines and consider the additional Vertical Sky Component effects of the proposals. In addition, the Daylight/ Sunlight report will also consider the additional shading that will occur to the shared amenity space across the proposed development.

Waste

5.31 It is inevitable that waste would be generated from the construction works. Once operational, a quantity of green, domestic and commercial waste would also arise from the proposed development. However, this would be the case for any development project and the critical aspect is how this waste is managed.

5.32 Best practice measures for managing materials and waste sustainably and to the highest value will be set out in the Circular Economy Statement, Whole Life Carbon Assessment and Sustainability Statement which will be submitted with the planning application.

5.33 The applicant will be required to prepare a Site Waste Management Plan (SWMP) for demolition and construction in accordance with best practice. The implementation of a SWMP would ensure that good site management practice would lead to a minimisation of waste creation and enable the re-use or recycling of waste materials that arise from the construction works, where practicable. In addition to the SWMP, a CEMP will also be produced, setting out how waste arisings should be managed in line with the waste hierarchy.

5.34 Designing the proposed development to optimise good waste management practices, such as facilitating segregation of waste, would minimise the effects associated with operational waste disposal. An Operational Waste Management Strategy will be prepared (secured by planning condition) to ensure that once the proposed development is complete and operational, waste is handled in an appropriate manner.

5.35 In conclusion, it is considered that waste should be scoped out of the EIA because the likely waste effects are considered to be insignificant in accordance with the IEMA Guidance on Materials and Waste when considered in light of the sustainable waste management measures to be implemented.

Human Health

5.36 Human health was introduced as a consideration in EIA through the updated EIA regulations[1]. Whilst a specific human health chapter will not be included within the ES potential health impacts associated with the development will be assessed through the proposed Socio-economic, Air Quality, Noise and Vibration ES Chapters and a Health Impact Assessment will be provided as an Appendix to the Socio-economic ES Chapter.

5.37 Where relevant, mitigation measures outlined within those technical chapters will be embedded into the design of the proposed development or incorporated into a CEMP.

Risk

5.38 Risk Assessment was introduced in the updated EIA regulations[1] to determine the vulnerability of the proposed development to major accidents and/or disasters. This was included due to the broad range of development types included within the EIA Regulations such as power stations where the need to assess vulnerability is far greater. On the basis of a site review, risk assessment has been scoped out as the relevant risks will be covered

in areas such as the FRA report and through application of the CDM Regulations to the design process. As above, mitigation measures designed to avoid potential risks will be incorporated into a CEMP for the application.

ES TECHNICAL CHAPTERS

5.39 Following the review of the potential sensitive receptors (Table 3.1) the following scope of technical assessments is proposed:

- Built Heritage, Townscape and Visual;
- Archaeology;
- Air Quality;
- Noise and Vibration;
- Ground Conditions and Contamination;
- Ecology;
- Climate Change; and
- Socio-economic.

5.40 Detailed scope for the assessments described above is provided in section 6.

GENERAL ES METHODOLOGY

Guidance Documents

5.41 The ES will be undertaken in accordance with the EIA Regulations and with reference to the following currently available good practice guidance:

- EIA Planning Practice Guidance[11];
- Preparation of Environmental Statements for Planning Projects That Require Environmental Assessment - A Good Practice Guide[12];
- Guidelines for Environmental Impact Assessment[13];
- Environmental Impact Assessment: A Guide to Procedures[14]; and
- The Note on Environmental Impact Assessment Directive for Local Planning Authorities[15].

Cumulative Impacts

5.42 The EIA Regulations[1] require that, in assessing the likely significant effects of a particular development, consideration is given to the likely significant cumulative effects that may arise in conjunction with other scheme proposals in the vicinity. Cumulative effects are those effects of a development that may interact in an additive or subtractive manner with the effects of other reasonably foreseeable schemes that are not currently in existence but are likely to be by the time the proposed development is implemented.

5.43 Schedule 4 (5) paragraph (e) of the EIA Regulations states that a description of the likely significant environmental effects of the development on the environment should cover:

'(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;'

5.44 Cumulative effects can be categorised into two types:

- Type 1 Effects – the combined effects of individual effects resultant from the proposed development upon a set of defined sensitive receptors, for example noise, dust and visual effects; and
- Type 2 Effects – the combined effects arising from the proposed development together with reasonably foreseeable schemes, which individually might be insignificant, but when considered together, could create a significant cumulative impact.

5.45 Potential Type 1 effects for the proposed development will be assessed by the construction works qualitatively, taking into account the findings of the assessment above, together with the programme of construction works for the proposed development.

5.46 A set of specific criteria were established in order to determine the 'other' schemes to be included within the Type 2 cumulative assessment. The criteria are:

- Subject to b) and c) below, we will assess the cumulative impacts of schemes within a 2.5km radius of the site for which an application has been lodged at the date the applicant submits the planning application. Relevant schemes will be agreed with the local authority, where appropriate;
- We will assess the cumulative impacts of schemes in respect of which adequate details of relevant construction and operational timescale and phases are known at the date ES is submitted, sufficient to enable a useful, informed assessment to be reasonably carried out; and

- In each case, we will assess relevant schemes within a radius of the site dependent upon the Zone of Influence for each environmental aspect of the proposed scheme and the cumulative scheme.

5.47 Various criteria have been adopted for establishing the scope of the cumulative assessment of impacts from more than one development. The scope of the assessment has been guided by the screening criteria listed in Table 5.1. In screening cumulative impacts to be included within the cumulative impact assessment, other developments under consideration must, when taken in isolation, generate an impact (positive or negative) of at least minor significance for a particular issue and, in addition meet all the following criteria in Table 5.1 below.

Table 5.1 Criteria for Inclusion of Developments within Cumulative Impact Assessment

Screening Criteria
To be considered within the cumulative impact assessment other development schemes must meet the following criteria: • Generate their own residual impacts of at least minor significance; • Be likely to be constructed or operate over similar time periods; • Be spatially linked to the proposed development (for example using the same local road network as the site); and • Be either consented or be the subject of applications with the relevant statutory authority in the area or be the subject of another statutory procedure.

5.48 Each of the schemes under assessment will be reviewed to determine potential cumulative impacts. Where possible, a quantitative assessment of the individual environmental impacts from the proposed development in accumulation with other developments will be undertaken and the outcome will be discussed in the technical component chapters of the ES.

5.49 The following cumulative schemes have been identified:

- 1-1C King Street, 2-4 Water Lane, The Embankment and River Wall (21/2758/FUL);
- Old Station Forecourt Railway Approach, Twickenham (19/3616/FUL);
- St Johns And Amyand House, Strafford Road, Twickenham (18/4266/FUL);
- Ryde House 391 Richmond Road, Twickenham (16/2777/FUL);
- Lockcorp House, 75 Norcutt Road, Twickenham (17/1033/FUL); and

- Land At Junction Of A316 And Langhorn Drive And Richmond College Site (Including Craneford Way East Playing Fields And Marsh Farm Lane), Egerton Road, Twickenham (15/3038/OUT).

Means of Assessment

5.50 For each of the environmental topic areas assessed as part of the preparation of the ES, an assessment will be made in relation to the relative significance of the likely environmental effects identified. These will be carried out with reference to definitive standards and legislation, where available. Where it not possible to quantify effects, qualitative assessments will be carried out, based on available knowledge and professional judgement.

5.51 Baseline conditions, including the sensitivity and importance of those environmental aspects likely to be significantly affected by the proposed development, are determined to provide a context for the analysis. The baseline condition establishes a benchmark for impact prediction. Any change from the baseline informs the magnitude of the potential impact and its significance.

5.52 For the environmental elements under detailed consideration within the ES, the current (Q3/4 2021 or Q1 2022) baseline conditions will be established using a combination of desk-top studies (drawing on published databases, maps, and reports, survey techniques and monitoring) and surveys, where relevant. The approach to be taken to establish the condition of particular environmental baselines will be agreed through consultation with relevant consultees. The specific methods employed to record the baseline conditions will be detailed within the corresponding chapters of the ES.

Impact Prediction and Significance Criteria

5.53 Schedule 4 of the EIA Regulations refers to describing:

'likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development...'

5.54 The significance of predicted effects will be determined with reference to assessment criteria for each environmental topic considered.

5.55 The significance of effects is assessed, taking into consideration a range of criteria, including:

- Performance against environmental quality standards;

- Relationships with international, national and local planning policy;
- Sensitivity of the receptor;
- Reversibility and duration (short, medium, long-term) of the impact;
- Nature of the impact (direct/indirect, positive/negative);
- Permanence of effect (temporary or permanent);
- Extent of influence and magnitude of the impact; and
- Inter-relationship between impacts.

5.56 The effects that will be considered to be significant prior to and following mitigation will be identified in the ES. The significance of residual impacts following mitigation reflects judgements as to the importance or sensitivity of the identified receptor(s) and the nature and magnitude of the predicted changes. For example, a large adverse impact on a feature or site of low importance will be of lesser significance than the same impact on a feature or site of high importance.

5.57 In order to provide a consistent approach in reporting the outcomes of the various studies undertaken as part of the preparation of the ES, the following terms will be used throughout the ES to define the significance of impacts (which may be positive or negative), where they are predicted to occur:

- **Major Positive** or **Negative Impact** - where the development is likely to have a significant effect on the environment;
- **Moderate Positive** or **Negative Impact** - where the development would cause a moderate effect;
- **Minor Positive** or **Negative Impact** - where the development would cause a minor effect; and
- **Negligible**– where there is no discernible effect on the environment.

5.58 Where significant environmental effects are identified, mitigation measures will be set out and the significance of the residual effect (with the mitigation measures implemented) will be stated within the ES. The significance of residual effects will also be determined in line with the assessment criteria established for each environmental topic and using the terminology provided above.

5.59 The duration of effects resulting from the proposed development is one of the factors to be considered in determining their significance. In order to distinguish between permanent and temporary, permanent effects are defined as those that result from irreversible change to the environmental baseline or which persist for the foreseeable future.

5.60 The significance of residual effects following mitigation will reflect judgements as to the importance or sensitivity of the affected receptors and the nature and magnitude of the predicted changes. Impacts that are considered significant prior to and following mitigation will be identified in the ES, as shown at Table 5.2 below.

Table 5.2 Classification of Duration of Impacts

Significance	Definition
Temporary	The period over which the impact is experienced lasts for the period of construction or less
Permanent	Impacts that are experienced without reduction or removal over time
Short-term	Less than 5 years (but longer than the full period of construction)
Medium-term	5–10 years
Long-term	The impact remains for a substantial time, for the duration of the operation of the development

5.61 The following terms will be used to define the nature of impacts (note that specific definitions of the following terms will be provided in the detailed assessment methodologies for each ES chapter):

- **Direct** – effects as a result of the development construction or operation activities;
- **Indirect** - Impacts on the environment, which are not a direct result of the project, often produced away from or as a result of a complex pathway. Sometimes referred to as second or third level impacts, or secondary impacts;
- **Cumulative** - Impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project;
- **Primary** – Impacts that result upon a receptor as a direct environmental change or disturbance to a specific element; and
- **Secondary** – The result of primary impacts on the first receptor having a knock-on impact upon secondary receptors.

5.62 Where the above criteria are not used, the criteria that will be used will be stated within the methodology section of the technical chapters, giving reasons for their use.

5.63 The ES will also distinguish the geographical extent of impacts; the following definitions will be adopted (bold and capitalise each word) as per Table 5.3.

Table 5.3 Classification of Different Geographical Extents

Significance	Definition
Local	The site and its immediate surroundings
Borough	The wider area of Richmond upon Thames
Regional	The region (i.e. London)
National	United Kingdom
International	Europe and beyond

Assumptions and Limitations

5.64 Certain assumptions will be made during the preparation of the ES, which are set out below. Assumptions and limitations specific to individual environmental aspects will be set out and discussed in the relevant chapters of the ES. It is assumed that:

- Information provided by third parties, including publicly available information and databases, is correct at the time of receipt; and
- Commencement and completion of the various phases of the development will be as outlined in the indicative phasing plan.

ES Structure

5.65 The proposed structure of the ES is set out below:

- Volume 1: Main Text and Figures;
- Volume 2: Technical Appendices;
- Volume 3: Built Heritage, Townscape and Visual; and
- Volume 4: Non-Technical Summary (NTS).

ES Volume 1: Main Text and Figures

5.66 The technical chapters will be collated into one document that will present the full text of the ES and will be illustrated throughout by a series of figures.

5.67 Each ES technical chapter will generally include:

- An introduction and brief summary of the topic under consideration in the chapter;
- The policy and legislative context relevant to the topic;

- Details of the impact assessment methodology employed and the scope of the assessment, with any limitations highlighted;
- Details of the relevant study area;
- The significance criteria employed to evaluate the magnitude of potential impacts;
- A description of the relevant baseline conditions accompanied by details of the method employed to record those conditions, and details of previous work undertaken;
- Impact prediction, both positive and negative, during the construction and operational phases of the proposed development. The data required to identify and assess the main effects which the development is likely to have. Any uncertainties will be described and, where assumptions have been used in the prediction of impacts, these will be fully highlighted and accompanied with an indication of the certainty that can be applied to those assumptions;
- The mitigation measures that will be implemented to avoid, reduce or compensate and if possible remedy, in respect of any negative impacts predicted, supported by predictions of the effectiveness of these measures. Where significant potential negative impacts cannot be avoided, reduced, or compensated, this is recorded; and
- A conclusion.

ES Volume 2: Technical Appendices

5.68 This will include the full text (or appropriate section) of any reports referenced within the ES technical chapters, such as the Technical Reports undertaken as part of the assessment and other relevant documents.

ES Volume 3: Built Heritage, Townscape and Visual Assessment

5.69 The Built Heritage, Townscape and Visual Assessment will be provided in A3 format in a separate volume of the ES so that the visualisations can be read alongside the assessment.

5.70 The assessment will include:

- An introduction and brief summary of the topic under consideration in the chapter;
- The policy and legislative context relevant to the topic;
- Details of the impact assessment methodology employed and the scope of the assessment, with any limitations highlighted;
- Details of the relevant study area;

- The significance criteria employed to evaluate the magnitude of potential impacts;
- A description of the relevant baseline conditions accompanied by details of the method employed to record those conditions, and details of previous work undertaken;
- Impact prediction, both positive and negative, during the construction and operational phases of the proposed development. The data required to identify and assess the main effects which the development is likely to have. Any uncertainties will be described and, where assumptions have been used in the prediction of impacts, these will be fully highlighted and accompanied with an indication of the certainty that can be applied to those assumptions;
- The mitigation measures that will be implemented to avoid, reduce or compensate and if possible remedy, in respect of any negative impacts predicted, supported by predictions of the effectiveness of these measures. Where significant potential negative impacts cannot be avoided, reduced, or compensated, this is recorded; and
- A conclusion.

ES Volume 4: NTS

5.71 This document will provide a summary of the ES. The NTS will be presented using non-technical language to assist the reader to understand the site context, the proposed development, the environmental issues arising, and the mitigation measures to be implemented.

PROFESSIONAL TEAM

Competent Assessors

5.72 Table 5.4 sets out a summary of the competent experts' and their relevant experience, along with qualifications and experience of all the technical consultants who will contribute to the preparation of the ES. The ES will be written and co-ordinated by Greengage with contributions from the technical consultants described below.

Table 5.4 ES Competent Experts' Relevant Qualifications and Experience

Name and Company Name	Technical Area	Qualifications	Relevant Experience
Mitch Cooke Greengage Environmental	EIA Coordination, Socio-Economic,	BSc MSc	Over 30 years' experience in the environment sector. Leads a multidisciplinary team and is expert in managing complex development projects. EIA schemes include Brentford

	Climate Change & Ecology		Community Stadium, Clapham Park, and Stratford Central.
James Bumphrey Greengage Environmental	EIA Coordination & Ecology	BSc (Hons) MSc	Over 8 years' experience, managing EIA and ecology projects. Developments include Clapham Park, North London Business Park, Estate Way and Goldsworth Road.
Henry Ryde Savills	Built Heritage, Townscape & Visual Impact	BA (Hons) MSc	10 years' experience within the sector, including the preparation of ES chapters and HTVIA that set out the impact of proposed schemes which have the potential to impact associated receptors. Developments include: Eight Gardens, Watford Junction (Watford BC), Church Street (Westminster CC) and The Perfume Factory (LB Ealing).
Sylvia Synodinou Savills	Built Heritage, Townscape & Visual Impact	BA(Hons), DipArch, MA UD	Sylvia has more than 6 years' experience in producing ES chapters in the technical area of townscape, visual impact and heritage. Developments include: Colosseum retail park, Clockhouse and Murphy Site.
Nick Davey Entran	Air Quality	BSc PhD	PhD in air quality impact assessment and 23 years' experience of carrying out such assessments for a range of developments and leading technical air quality teams. Nick has worked on many high-profile projects across London, the UK and internationally.
Stuart Berry Entran	Noise and Vibration	BSc (Hons) MSc IOA Member	11 years' experience in providing noise and acoustics services for planning applications including the preparation of Noise and Vibration ES Chapters.
Rob Bourn Orion	Archaeology	BA MA MCIfA	Over 30 years of professional experience, with 24 years of experience in planning and development sectors which has involved leading various projects relating to heritage issues.
Catherine Cooke Tetratech	Ground Conditions & Contamination	BSc MSc CEnv	Chartered with over 20 years' experience assessing, managing and mitigating contaminated land to bring brownfield land back into beneficial use.

6.0 SCOPE OF TECHNICAL ASSESSMENTS

6.1 The following section sets out the scope of assessment for each technical Chapter of the ES.

BUILT HERITAGE, TOWNSCAPE AND VISUAL

Introduction

6.2 The Heritage, Townscape and Visual Impact Assessment (HTVIA) will identify the likely significant effects of the Proposed Development on built heritage, townscape and visual receptors and will be undertaken by Savills Heritage & Townscape.

6.3 The HTVIA will be produced as a standalone volume of the ES.

6.4 The assessment as a whole will be informed by Accurate Visual Representations (AVRs), also known as verified views. The AVRs are a tool to inform the assessment of impact to heritage, townscape and visual receptors.

6.5 The assessment will be based on Savills's methodology, which is informed by policy and guidance at a national, regional and local level with regards to heritage, urban design, townscape and visual impact, including the following:

- Department of the Environment, Preparation of Environmental Statements for Planning Projects that Require Environmental Assessment, Good Practice Guide 1995;
- EU Directive 85/387/EEC as amended by Directives 97/11/EC, 2003/35/EC, 2011/92/EU, and 2014/52/EU;
- Town and Country Planning (Environmental Impact Assessments) Regulations, 2017/571;
- The Landscape Institute and Institute of Environmental Management and Assessment, Guidance for Landscape and Visual Impact Assessment (GLVIA) Third Edition, 2013;
- Ministry of Housing, Communities & Local Government (MHCLG), National Planning Policy Framework, published February 2019; updated June 2019;
- Ministry of Housing, Communities & Local Government (MHCLG), Planning Practice Guidance, on-line Resource, 2016, latest updated in October 2019;
- Planning (Listed Buildings and Conservation Areas) Act, 1990;
- Historic England, Advice Note 2 – Managing Significance in Decision-Taking in the Historic Environment (March 2015);

- Historic England, Advice Note 3 (2nd Ed.) – The Setting of Heritage Assets (December 2017);
- Historic England, Advice Note 4 – Tall Buildings (December 2015 and also its Second Edition: Consultation Draft of March 2020);
- Greater London Authority (GLA), The London Plan, Spatial Development Strategy for Greater London, March 2021;
- Greater London Authority (GLA), London View Management Framework SPG (LVMF), 2012;
- London Borough of Richmond Local Plan, adopted July 2018;
- London Borough of Richmond Draft Local Plan 2024, for consultation
- London Borough of Richmond, Supplementary Planning Document, Design Quality, Adopted February 2006;
- London Borough of Richmond, Supplementary Planning Document, Building of Townscape Merit, Adopted May 2015;
- London Borough of Richmond, Supplementary Planning Document, Public Space Design Guide, Adopted January 2006;
- London Borough of Richmond conservation areas appraisals and statements;
- London Borough of Richmond full List of locally listed buildings.

Baseline Conditions

6.6 Baseline information will be gathered through a combination of desk studies, consultation and site visits. In order to determine the built heritage assets which may be sensitive to the proposed development a broad range of documentary and cartographic sources and historic environment datasets will be examined in order to determine the likely nature, extent, preservation and significance of any known or possible heritage assets that may be present within or adjacent to the site. Site visits will be carried out to confirm the topography and existing land use, identify any built heritage assets and assess factors which may have affected the survival or condition of any known or potential assets. The site visit will also aid to determine the townscape resource, character, condition, and to identify visual receptors. A desk study will also be carried out to understand the character and context of the site in relation to national, regional and local policy and guidance.

6.7 The site is not located in a conservation area and does not contain any statutory or non-statutory listed buildings. The site does lie within two Local Views, Richmond Hill view (The

Richmond, Petersham and Ham Open Spaces Act (1902); and Richmond Park view from King Henry VIII's Mound). It is also noted that the site lies within 300m of two conservation areas, the closest being Ham House Conservation Area (CA23) located approximately 240m to the north-east of the site.

6.8 The site is located in an area predominantly characterised by low to medium-rise residential developments primarily dating from the mid-20th century, with some 18th and 19th century buildings dispersed, particularly to the east.

6.9 The site comprises 14 residential blocks of up to five storeys in height. The existing buildings on-site are of low architectural and urban design quality and do not contribute to the local townscape quality. Due to the overall low height of the buildings currently occupying the site, they are not particularly visible from streets that do not directly face the site or from the wider surrounding area.

6.10 The area around the site is characterised by the large number of mature trees, though the site itself does not have many mature trees of high quality within it, particularly around the existing blocks.

Potential Effects

6.11 The proposed development has the potential to result in the following effects:

- Changes to the character, context and quality of the site and the local townscape;
- Changes to townscape views; and
- Changes to the settings of above-ground built heritage assets.

6.12 A townscape and visual impact assessment will consider the potential for the proposed development to affect the townscape character of the site, the character and quality of townscape in the vicinity of the site and its visual amenity from visual receptors, through the assessment of likely changes as seen in the AVRs.

6.13 The townscape assessment will consider the proposed development within its urban context, including the buildings and relationships between them, the different types of urban open spaces, including green spaces and the relationship between buildings and open spaces.

6.14 The visual impact assessment will consider the impact of the proposed development upon visual receptors. The assessment relates to how people will be affected by changes in views and visual amenity at different places, including publicly accessible locations.

6.15 The potentially sensitive heritage receptors to be considered are those located within a radius of c. 500m from the site and will include heritage assets that contribute to the amenity of the townscape, the townscape around the site, and visual receptors (i.e.

members of the public in the local and wider area, assessed through the views they would experience of the proposed development). Some of the visual assessments are carried out for long views well beyond the 500m radius, as necessary and depending on local guidance on views.

6.16 The heritage receptors to be considered include: Ham House Conservation Area and Ham Common Conservation Area, Grade II listed Newman House, Grade II Boundary Wall to Beaufort House, Grade II Beaufort House, Grade II Beaufort Cottages, Grade II* Manor House, Grade II Stables to Manor House, Grade II Selby House, Grade II Ensleigh Lodge, Grade II The Little House, Grade II Gordon House, Grade II Langham House, Grade II* 1-18 Langham Ham Close, Grade II Avenue Cottage, Grade II Avenue Lodge Cottage, Grade II Orford Hall St Michaels Convent, Grade II The Cottage, Grade II Hardwick House, Grade II South Lodge, Grade II Stafford Cottages, Grade II The New Inn Public House, Grade II* Sudbrook Lodge, Grade II Cottage to Sudbrook Lodge, Grade II* Registered Park and Garden Ham House. Relevant locally listed buildings in close proximity to the site will be also considered. It is proposed that where any designated and non-designated heritage assets are located within Ham House or Ham Common Conservation Area, they are not individually assessed, but are instead included for review as part of the conservation area.

6.17 A map and list of proposed viewpoints for assessment of effects on visual receptors is provided in Appendix 2 at the back of this report. The final set of views will be agreed with the Council.

Assessment Methodology

Demolition and Construction

6.18 The demolition and construction of the proposed development will be assessed in accordance with the same method as for the completed and operational proposed development, set out below. The demolition and construction effects of proposed development are likely to vary according to their temporary nature and some activities may have more perceptible effects than others, including construction machinery. The assessments offered in the HTVIA will be based on a worst-case scenario when demolition or construction activities are at their peak. The effects will be applicable to heritage, townscape and visual receptors.

Operation

6.19 The proposed development will bring about change in the character, massing and height of the site. It is therefore expected that the proposed development will have effects, including likely significant effects, on the surrounding heritage, townscape and visual receptors. These

effects will be analysed in full in the built heritage, townscape and visual assessment. The assessment methodology will be informed by policy and guidance at a national, regional and local level with regards to EIA, heritage, urban design, townscape and visual impact.

6.20 Heritage effects will depend principally on the level of visibility of the proposed development from within the setting of receptors, including conservation areas, listed and locally listed buildings. It is expected that, owing to its location, the proposed development will be visible from the setting of, or in conjunction with, a range of heritage receptors.

6.21 The assessment will consider the effects on close, medium and long-distance views (as agreed with the Council) across the surrounding townscape, on townscape character areas, as well as effects on the heritage assets within the study area. The effects will be assessed through the study of AVRs, to be produced by a visualisation specialist. The AVRs will be either verified 'wireline' or photo-realistically 'rendered' views, depicting the proposed development on a photograph of the existing condition. These assessments will be undertaken for 'operational' effects only, i.e. when the proposed development is completed and in use. Where cumulative schemes are identified, a further image showing the proposed development alongside the cumulative developments will be included. The approach to cumulative assessment will be to focus on the additional effects of the proposed development on top of the cumulative baseline.

Effect Prediction and Assessment of Effect Significance

6.22 The methodology used to undertake the assessment is based on the best practice set out in the relevant policy and guidance, including the GLVIA3 (3rd Edition)[16]. An assessment of the effect of the proposed development on townscape and visual receptors will be made on the basis of quantitative and qualitative information collated as part of the assessment. It includes:

- Identification and description of townscape character areas, including consideration of their sensitivity. Reference will be made to any assessments carried out by the Richmond Council, including appraisals and management guidelines for conservation areas etc. The study area for the character areas will extend to 500m from the site;
- Consideration of the design of the proposed development in detail, including its performance in terms of mitigation and enhancement; and
- Assessment of the effects of the proposed development during its demolition and construction, and operational phases, by way of considering: the sensitivity of the receptor, which will be assessed as very high (only applicable to heritage receptors), high, moderate, low or negligible, depending on the importance, value and quality of the receptor, and the visual amenity of the viewer; and the magnitude of the change

resulting from proposed development, which will be assessed as large, medium, small, or negligible, depending on the change to the townscape or view. These two measures are combined to establish the scale of the effect on a receptor, whether major, moderate, minor or negligible/no change.

- The nature of the effect, on balance, is then assessed. The nature of the effect may be assessed as beneficial, adverse, or neutral. Once the scale and the nature of the effect are confirmed, the next step is to establish whether the effect is significant. According to the methodology used, only major and moderate effects are considered significant effects.

6.23 Where other cumulative developments in the wider area would interact with the proposed development to an extent that may change the effect identified for the proposed development in isolation, a cumulative assessment will be undertaken to determine the potential for likely significant cumulative effects.

Mitigation

6.24 The iterative design process, including consultation with the local authority and other stakeholders, for a project such as the proposed development is inherently one whereby visual impact and heritage considerations are taken into account at each stage. It is envisaged that mitigation is embedded in the designs and that it is unlikely that any further or 'supplementary mitigation' will be needed.

ARCHAEOLOGY

Known Baseline

6.25 The west of the site lies within the Archaeological Priority Area (APA) of Ham Fields (Reference: DLO33496). The APA indicates that finds of Prehistoric material in the area suggest that further occupation evidence and artefacts may survive. The east area of the site falls within the APA of Ham (Reference: DLO33461) which is an early Medieval settlement mentioned in Domesday and includes Ham House and associated pleasure gardens dating from the 17th century. Evidence of Prehistoric occupation may also be present within this area.

6.26 The gardens and pleasure grounds attached to the 17th century Ham House lie c.350m to the north east of the study site and the avenues which connect the house and gardens to Petersham Road lie c.200m to the east of the study site. This area is now a Registered Park and Garden (Reference: DLO32857).

Prehistoric

6.27 A watching brief undertaken directly to the south of the study site boundary at Sheridan Road noted alluvial clay overlain by redeposited clay from which a Prehistoric flint was recovered. Excavations at Forbes House further to the south at around the same time also recovered worked flint from the brickearth deposits. Iron Age pottery is noted as a findspot c.220m to the south of the site. A pointed arrowhead was found in market gardens near Ham Church c.120m to the west and a number of flint implements have been retrieved from Ham fields further to the west. Finds of Mesolithic microliths, flakes and blades have been recorded to the north. A very large number of Prehistoric flints and pottery sherds have been found at Ham Lands, including tranchet axes, knives and scrapers and pottery from surface and gravel pits.

6.28 In light of the above, the site is considered to have moderate potential for Prehistoric finds or features.

Roman

6.29 The site lay away from the routes of known major Roman roads. However evidence for Roman rural settlement has been detected at St John Hospital, Twickenham on the north side of the river to the north of the site. Several phases of activity were identified between 250-400 AD, represented by features which included pits, postholes and ditches all containing numerous fragments of Roman pottery.

6.30 There is no evidence of in-situ Roman period features within the study area which indicates a low potential for the presence of significant archaeology of this period within the site.

Saxon/ early Medieval

6.31 There are no Saxon or Early Medieval entries in the Historic Environment Records (HER) data for the study site. This indicates a low potential for the presence of finds or features of this date within the site.

Medieval

6.32 Petersham is a settlement recorded in Domesday. In 1086 it had a recorded population of 17 households, 15 villagers and 2 smallholders and was part of the land of Chertsey Abbey. It consisted of five ploughlands, one lords plough team and four men's plough team as well as meadows a fisher and a church (Opendomesday.org).

Post-Medieval

6.33 The site is also considered to have potential for Post-Medieval remains. Ham Close Estate was constructed in the 1960's on land occupied by post-war housing. Prior to the 19th century it lay in open fields to the west of settlement at Ham which centred on the High Street. Small structures are indicated in an area in the far west of the study site during the 19th century. Although it is likely that construction activities on the site from the 1940's onwards have removed any earlier features that may have been present, remnants of this Post-Medieval activity may be found in higher strata within the site.

Potential Impacts

6.34 The location and nature of the proposed development suggests the there is potential for significant demolition and construction effects to archaeology which may arise from physical impacts to potential below-ground non-designated archaeological remains. Such effects may arise from the foundations of new buildings, landscape works, changes to hydrological conditions and requirements such as trenches for new utilities and services on both sites.

6.35 Based on the results of a Historic Environment Desk Based Assessment (DBA), no designated archaeological assets have been identified with settings sensitive to significant impact by the proposed development. As such, operational effects to archaeology will be scoped out of the EIA.

Assessment Methodology

6.36 An assessment will be undertaken of the likely significant effects of the proposed development on the environment with respect to archaeology.

6.37 The assessment will consider construction and operational effects, although the impact primarily takes place at the start of construction and is a permanent impact.

6.38 In order to assess potential significant effects on archaeology a DBA report will be produced.

6.39 The study area for each site will be 1km from the edge of the site boundary. There are no strict parameters for the setting of study areas. This has been defined based on professional judgement, experience of potential significant effects likely to arise from the proposed development and information regarding below ground potential.

6.40 The baseline analysis will consider the following resources:

- Greater London Historic Environment Record, including Historic Landscape Characterisation, for the proposed sites and for a 1km search radius;

- Map regression based on Ordnance Survey maps and tithe/enclosure maps and apportionments held at the local studies library;
- National Heritage List for England;
- Historic England Archive;
- Pastscape;
- Environment Agency Lidar Data;
- Online Aerial Imagery;
- Site inspection;
- Geophysical survey.

6.41 The results of the DBA will be submitted and discussed with the Archaeological Advisor to Richmond Council in relation to the need / timing of intrusive evaluation, as required.

6.42 The assessment of likely significant effects on archaeology will be conducted in line with the latest and most comprehensive guidance provided. These documents do not provide a prescriptive approach to assessment but identify principles and good practice that have been applied in the methodology for this assessment:

- Scheduled Monuments – Identifying, protecting, conserving and investigating nationally important archaeological sites under the Ancient Monuments and Archaeological Areas Act 1979 (DCMS 2010)[17];
- Scheduled Monuments & nationally important but non-scheduled monuments (DCMS 2013)[18];
- Design Manual for Roads and Bridges Volume 11; Section 3; Part 2 'Cultural Heritage' (DMRB) (Highways Agency 2019)[19];
- Historic Environment Good Practice Advice in Planning Note Managing Significance in Decision-Taking in the Historic Environment (Historic England 2015)[20];
- Standards and Guidance for Historic Environment Desk-based Assessments (Institute for Archaeologists 2014) (updated in January 2017)[21];
- Management of Recording Projects in the Historic Environment: MORPHE (Historic England 2015)[22]; and
- Code of Conduct (Chartered Institute for Archaeologists [CIfA] [revised edition] 2014)[23].

6.43 The results of the DBA will be used to assess the demolition and construction effects of the proposed development on archaeological and heritage features against clearly defined

criteria. The magnitude of change for heritage assets potentially affected by the proposed development will be assessed in accordance with best practice.

6.44 The significance of an archaeological asset is assessed in terms of national, regional or local statutory or non-statutory protection and grading of the asset. For non-designated archaeological assets determination of significance will use the Secretary of State's non-statutory criteria and professional judgement. Using this approach, the criteria for establishing the significance of a heritage asset is described in Table 6.1 below:

Table 6.1 Determining the Significance of a Heritage Asset

Heritage Significance	Description
International	Archaeological sites or monuments of international importance, including World Heritage Sites.
National	Ancient monuments scheduled under the Ancient Monuments and Archaeological Areas Act 1979, or archaeological sites and remains of comparable quality, assessed with reference to the Secretary of State's non-statutory criteria
Regional/ County	Archaeological sites and remains which, while not of national importance, score well against most of the Secretary of State's criteria
Local	Archaeological sites that score less well against the Secretary of State's criteria.
None	Areas in which investigative techniques have produced negligible or only minimal evidence for archaeological remains, or where previous large-scale disturbance or removal of deposits can be demonstrated.

6.45 The magnitude of the impact is a product of the extent of development impact on an asset. Effects are rated as High, Medium, Low and Negligible/Neutral. Effects can be direct or indirect, adverse or beneficial. The criteria for assessing the magnitude of impact are set out in Table 6.2 below:

Table 6.2 Magnitude of Impact

Magnitude	Direct Impacts	Indirect Impacts
High Adverse	Complete removal of an archaeological site.	Radical transformation of the setting of an archaeological monument.
Medium Adverse	Removal of a major part of an archaeological site and loss of research potential.	Partial transformation of the setting of an archaeological site e.g. the introduction of significant noise or vibration levels to an archaeological monument leading to

		changes to amenity use, accessibility or appreciation of an archaeological site.
Low Adverse	Removal of an archaeological site where a minor part of its total area is removed but the site retains a significant future research potential.	Minor harm to the setting of an archaeological monument.
Negligible/ Neutral	Negligible impact from changes in use, amenity or access.	Negligible perceptible change to the setting of an archaeological site.
Low Beneficial	Land use change resulting in improved conditions for the protection of archaeological remains.	Decrease in visual or noise intrusion on the setting of a building, archaeological site or monument.
Medium Beneficial	Land use change resulting in improved conditions for the protection of archaeological remains plus interpretation measures (heritage trails, etc.)	Significant reduction or removal of visual or noise intrusion on the setting of an archaeological site or monument. Improvement of the wider landscape setting of an archaeological site or monument. Improvement of the cultural heritage amenity, access or use of an archaeological site or monument
High Beneficial	Alteration to a built heritage asset or Conservation Area resulting in significant beneficial impact.	Significant enhancement to the setting of an archaeological site, its cultural heritage amenity and access or use.

6.46 The significance of the impact of the proposed development on archaeological and heritage assets is determined by the significance of the asset and the magnitude of impact to the asset. Table 6.3 below presents a matrix that demonstrates how the significance of impact will be established:

Table 6.3 Matrix for Determining the Significance of Effects

		Magnitude of Impact			
		High	**Medium**	**Low**	**Negligible**
Heritage significance/ importance of asset	**International Importance**	Substantial/ Major	Major	Major	Negligible
	National Importance	Major	Major/ Moderate	Moderate	Negligible
	Regional/County Importance	Major/ Moderate	Moderate/ Minor	Minor	Negligible

	Local Importance	Minor	Minor	Negligible	Negligible
	Negligible Importance	Negligible	Negligible	Negligible	Negligible

Note: 'Substantial', 'Major' and 'Moderate' levels of effect are 'significant' for the purpose of the Archaeology ES Chapter and 'Minor' and 'Negligible' are not significant.

Mitigation

6.47 If required, a programme of archaeological investigation will be undertaken to record archaeological remains that may be present within the site that would be impacted by the proposed development. The need and scope for this work will be agreed with the Greater London Archaeology Advisory Service (GLAAS).

AIR QUALITY

Known Baseline

6.48 The London Borough of Richmond upon Thames has declared one borough wide Air Quality Management Area (AQMA), due to exceedances of the Air Quality Strategy (AQS) objective levels for annual mean NO_2 and annual and 24 hour mean PM_{10}. Ham Close is located within this AQMA.

6.49 The main pollution sources in the vicinity of Ham Close are vehicles travelling on the local road network.

Potential Impacts

6.50 The proposed development may result in the following potential impacts:

- Generation of dust and PM_{10} during the construction phase and the potential to cause a nuisance.
- Impact on local air quality arising from the emissions of pollutants from the exhausts of road vehicles during the construction phase; and
- Impacts on local air quality arising from the emissions of pollutants from the exhausts of road vehicles and any energy generating plant (if included in the proposals) during the operational phase.

Mitigation

6.51 Mitigation measures during the construction phase will be recommended in-line with the Institute of Air Quality Management (IAQM) guidance[24], to be incorporated into the Dust Management Plan (DMP) or CEMP for the proposed development.

6.52 Mitigation measures during the operational phase will be identified, if required, based on the results of the modelling assessment.

Assessment Methodology

6.53 The air quality assessment will be undertaken using detailed dispersion modelling (ADMS Roads) for road traffic emissions. The assessment will take account of all relevant national and local policies and relevant Defra technical guidance relating to air quality.

6.54 The road traffic assessment will focus on NO_2 and fine particulate matter (PM_{10} and $PM_{2.5}$) and a comparison of predicted concentrations with the statutory air quality standards and objectives. The significance of predicted impacts will be determined in accordance with the Environmental Protection UK (EPUK) and IAQM Planning Guidance.

6.55 The extent of the assessment of the traffic related air quality impacts will be determined by the extent of the Transport Assessment as agreed with the relevant bodies.

6.56 The ADMS Roads modelling will be verified against existing monitoring data for the area (where relevant data exists). It is not intended at this stage to carry out additional air quality monitoring.

6.57 An Air Quality Neutral Assessment will also be undertaken in accordance with the requirements of the London Plan.

6.58 Construction related impacts will also be examined. This will involve a review of the proposed works and related traffic data during the various phases of the development to identify any potentially adverse effects at nearby sensitive receptors. The construction assessment will be carried out in-line with IAQM guidance.

NOISE AND VIBRATION

Known Baseline

6.59 An assessment of the potential effects of the proposed development with respect to noise and vibration will be undertaken. This will include construction phase (temporary) and operational phase (permanent) effects.

6.60 The current ambient noise environment is understood to be dominated by road traffic on the surrounding road network.

6.61 Baseline noise levels will be obtained by unattended noise surveys, which will be undertaken during daytime and night-time periods and in accordance with the principles of BS 7445:2003.

Potential Impacts

6.62 The following key impacts will be addressed:

- Changes in noise levels at existing sensitive receptors as a result of changes in local traffic flows;
- Noise generated by the proposed development during construction activities; and
- Suitability of the proposed site uses in relation to the noise environment.

6.63 Existing residential receptors on the surrounding road links may be subject to impacts from construction noise levels and likely increase in road traffic flows.

6.64 Noise impacts from road traffic at proposed residential receptors will be assessed to ensure suitable noise levels can be attained.

Assessment Methodology

6.65 Existing background noise levels will need to be established by measurement in order to assess the effects of the proposed development. This will be carried out at locations representative of the proposed development, over both the day and night-time periods.

6.66 Ambient noise conditions will be considered using a combination of unattended measurements and computer noise modelling. Noise parameters, such as $L_{Aeq,T}$, $L_{A90,T}$, $L_{A10,T}$ and $L_{Amax,F}$ will be monitored and the relevant values obtained for the standard measurement periods.

6.67 The results from the noise monitoring will be used as a basis to assess the likely impact on the proposed development.

6.68 Likely impacts from the construction phase will be calculated based on noise levels pertaining to typical construction activities and the likely distances between these activities and the nearby existing residential receptors. Construction noise levels will be considered against the target construction noise criterion of 75 dB $L_{Aeq,16hr}$, provided within BS 5228.

6.69 The likelihood of impacts from construction vibration will be considered against typical distances at which vibration from construction activities may be perceptible.

6.70 Ambient noise levels will be calculated across the site by use of a computer noise model, which will be calibrated against the obtained ambient noise data. The proposed development will be modelled in order to understand the propagation across the proposed residential dwellings.

6.71 The calculated ambient noise levels will be assessed in accordance with the guidance provided by BS 8233 and other relevant standards. Maximum noise levels overlooking road sources will be considered using the measured noise data and assessed against the guideline value provided by the World Health Organisation (WHO) Guidelines for Community Noise.

6.72 The change in road traffic noise levels on the surrounding road network will be assessed based on the baseline and proposed 18-hour AAWT road traffic data. The noise change, in dB, will calculated using the procedure set out in Calculation of Road Traffic Noise (CRTN) and the magnitude of impact assessed using the methodology provided in Volume 11 of the Design Manual for Roads and Bridges (DMRB).

6.73 The potential cumulative effects of the proposed development when considered in combination with any nearby schemes with planning permission will be assessed.

6.74 Legislation and guidance documents to be used in the assessment will include:

- BS 8233:2014: Sound Insulation and Noise Reduction for Buildings - Code of Practice[25];
- BS 5288-1:2009+A1:2014, Code of Practice for noise & vibration control on construction & open sites[26];
- WHO- Guidelines for Community Noise 2000, and subsequent WHO guidance[27];
- CRTN and DMRB [28]; and
- The IEMA Guidelines for Environmental Noise Impact Assessment (2014)[29].

Mitigation

6.75 Best Practicable Means (BPM) measures will be employed during construction phases to control the likely impacts from construction related noise through the CEMP submitted for the application.

6.76 Internal ambient noise levels will be controlled with suitable glazing and ventilation choices. The level of mitigation required will be identified for the proposed dwellings by computer noise modelling. External ambient noise levels at amenity areas will be mitigated as far as practicable, in accordance with BS 8233.

GROUND CONDITIONS AND CONTAMINATION

Known Baseline

6.77 The review of the current known baseline within this section of the report has been informed by the following works undertaken by Enzygo Ltd.:

- Desk study and ground investigation comprising 18no. window sample boreholes drilled to a maximum depth of 4.45m. Subsequent monitoring of groundwater and landgas was undertaken.
- Investigative works to drill 6no. deep boreholes (two to 25m depth and four to 10m), primarily to inform foundation design.

6.78 Geology is reported to comprise Made Ground ranging from 0.4 to 1.2m thickness with anthropogenic inclusions of demolition rubble (brick, concrete etc). This was underlain by the natural geology of the Kempton Park Gravels ranging between 3.8 to 6m thicknesses and underlying this the London Clay (Unproductive Strata aquifer classification) encountered to the maximum depth of the investigation (thickness >20m).

6.79 Groundwater was encountered as seepages between 2.2mbgl and 4.3mbgl within the Kempton Park Gravels and representative of the Secondary A Aquifer. However, the site is reportedly at risk from groundwater flooding.

6.80 No significant landgas was measured and was assessed as Characteristic Situation 1 (no gas protection measures required to buildings).

6.81 Potential sources of contamination have been reviewed. The site currently comprises residential apartment blocks with communal landscaped areas, parking, access roads and garages. An electrical substation is present but is of modern construction with no observed leakage of oils. There are, therefore, not considered to be any significant sources of contamination associated with the current use.

6.82 The site's history includes farmland until circa 1940 when it was developed for residential housing. Some bomb damage is evident during maps post WWII. The current residential layout is evident from the 1980's. Although no significant sources of contamination have been identified on site, there is likely to be Made Ground incorporating demolition rubble from previous buildings on site and this was proven during the ground investigation by Enzygo.

6.83 Asbestos fibres were encountered in some Made Ground samples plus some slightly elevated heavy metals and Polycyclic Aromatic Hydrocarbons (PAHs) when compared to a residential end use with private gardens.

Potential Impacts

6.84 Construction related impacts will be primarily focussed on the control of environmental emissions during disturbance of the ground. In particular, the direct contact by groundworkers with potentially contaminated Made Ground and the release of dusts and asbestos fibres which may migrate off-site to surrounding residents.

6.85 Overall, the impact from the proposed future residential development to ground quality on site is considered to be negligible as the intended use is highly unlikely to introduce new sources of contamination. Risks from existing contamination on site to future occupiers of the houses are considered likely to be limited overall but the potential for asbestos fibres within garden/landscaped areas and low levels of heavy metals and PAHs may present an increased risk from any contact with the Made Ground recorded across the site.

Assessment Methodology

6.86 The potential for ground contamination on site will be assessed in accordance with the Environmental Agency's Land Contamination Risk Management (LCRM). The LCRM provides a technical framework for structured decision making about land contamination and builds on previous work carried out under the Contaminated Land Research Programme of the former Department of the Environment. LCRM has adopted and refined the well-recognised methodology and terminology that has been used in contaminated land risk assessment for a number of years. LCRM defines the 3 essential elements to any risk:

- A contaminant source – a substance that is in, on or under land and has the potential to cause harm or to cause pollution of controlled waters.
- A receptor – in general terms, something that could be adversely affected by a contaminant, such as people, an ecological system, property or a water body.
- A pathway – a route or means by which a receptor can be either exposed to, or affected by, a contaminant.
- Each of these elements can exist independently, but they create a risk only where they are linked together, so that a particular contaminant affects a particular receptor through a particular pathway. This kind of linked combination of contaminant-pathway-receptor is described as a Contaminant Linkage.
- Local policies and plans regarding contamination will also be reviewed.

6.87 The Unexploded Ordnance (UXO) risk to the site will also be confirmed by an explosive ordnance expert. This assessment will be a desk based review of historic bomb records and be incorporated into the Geotechnical Reports for the application.

Mitigation

6.88 A CEMP will be required to design and control release of environmental emissions during the works including dusts, mud, surface water, groundwater, to avoid the mobilisation and release of contaminants and nuisance emissions to nearby people and the environment.

6.89 It is anticipated that some mitigation will be required to protect future residential site occupants from coming into contact with the Made Ground underlying the site. This is likely to require an import of clean soils to create garden/landscaped areas to provide a clean cap of material to segregate site users from the Made Ground. If gross asbestos is encountered during earth works, or other unexpected contamination uncovered, a strategy will be in place to address this contamination following consultation with a contaminated land expert. Remediation of this impacted area may then be required including, potentially, licensed removal of asbestos. Any surplus clean soils generated through the construction works that are proposed to be re-used on site will be controlled through implementation of a Materials Management Plan (MMP).

ECOLOGY

Known Baseline

6.90 The Ecology ES Chapter will assess the impact of the proposed development on sensitive ecological features of the site. The chapter will set out relevant ecological mitigation, compensation and enhancement measures, and consider the residual effects following the implementation of these.

6.91 The site largely comprises buildings and hardstanding surrounded by short amenity grassland and scattered trees. The site is of limited value for the majority of ecological receptors with potential presence on site limited to:

- Roosting bats; and
- Nesting birds.

6.92 The site is located 1.3km from the boundary of Richmond Park which is designated as a National Nature Reserve, Site of Special Scientific Interest and Special Area of Conservation. Residents of the proposed development have the potential to increase recreational pressure on this European designated site with increased traffic also a consideration.

Mitigation

6.93 Mitigation would likely be limited to any required for roosting bats or nesting birds. Opportunities for enhancing the ecological value of the site will be explored through measures such as biodiverse roofs, trellis based green walls, street trees, bird and bat boxes, and invertebrate features.

Assessment Methodology

6.94 An ecological site walkover will be undertaken to confirm the current (2021) ecological baseline on the site. This site walkover will be supported by further Phase 2 surveys as required.

6.95 A qualitative and quantitative ecological impact assessment (EcIA) will be undertaken of the proposals, following the principles set out in the CIEEM publication *Guidelines for Ecological Impact Assessment* (updated in January 2019), and will include consideration and assessment of potential for impacts arising from the proposals on ecological receptors, including loss or damage to habitats (permanent or temporary), effects on protected, or other notable species of nature conservation value, potential for indirect impacts such as disturbance and any cumulative impacts. Mitigation measures to be implemented will be set out, along with details of proposed ecological enhancement measures, and any residual effects on ecological receptors (should any exist following mitigation) considered and detailed within the final assessment.

6.96 The EcIA will be supported by a Biodiversity Impact Assessment (BIA) utilising Defra's 3.0 metric. Proposals will seek to exceed the 10% net gain target set out in emerging legislation.

SOCIO-ECONOMIC

Known Baseline

6.97 The site is located within the London Borough of Richmond upon Thames and is situated in Ham, Petersham and Richmond Riverside Ward.

6.98 The median age is 38 in Richmond upon Thames and the greatest proportion of residents are aged 30-44 years, equating to 26.4% of the population, followed by those aged 45-59 years, equating to 19.5% of the population[30]. Within Ham, Petersham and Richmond Riverside ward, the median age is slightly higher at 40 years.

6.99 Within Ham, Petersham and Riverside ward 94.1% of residents are White, 7.4% are Asian/ Asian British, 3.8% are mixed/ multiple ethnic groups and 2.1% have Black/African/Caribbean/Black British ethnicity[31].

6.100 According to the 2011 Census, 52.6% of residents in Ham, Petersham and Richmond Riverside ward are in 'Very Good Health' and 32.6% of residents are in 'Good Health'[32]. This is slightly lower than in Richmond upon Thames where 57.3% of residents are in 'Very Good Health' and 30.5% are in 'Good Health'. Only 0.9% of the ward's population are in 'Very Bad Health' which is similar to the Richmond upon Thames average (0.9%).

6.101 The employment and unemployment figures from the ONS for 2020-2021 show that 78.0% of residents in Richmond upon Thames are economically active, compared to 79.5% in London and 78.7% in Great Britain.

6.102 The west of the site, including all existing residential buildings, is located in Richmond upon Thames 017B neighbourhood. According to the Indices of Multiple Deprivation (2019)[33], the west of the site is within the 30% most deprived neighbourhoods in the country. The west of the site also ranks within the 20% most deprived neighbourhoods in the country under the Income Deprivation Domain and Employment Deprivation Domain.

Potential Impacts

6.103 The proposed development is expected to generate a range of socio-economic effects during the demolition, construction and operational phases. The assessment will consider the following potential effects:

- Effects of the proposed development on employment provision (during construction and operation) and spending by new local residents (during operation);
- Delivery of new housing and affordability;
- Generation of demand for childcare services, primary schools and secondary schools;
- Generation of demand for primary healthcare facilities including GP surgeries and dentists;
- Effects on the provision of community services and open space; and
- Effects on crime at the site level.

Assessment Methodology

6.104 The baseline conditions for the site will first be established through undertaking a policy review and a desktop review. The desk top review will provide information on current socio-economic conditions using relevant local, regional and national data, including population demographics, levels of deprivation and local social infrastructure, such as schools and GP surgeries.

6.105 The socio-economic analysis will include assessment of how the new uses of the site (e.g. increased residential population) will impact on the existing conditions of the area, including child yield, school space provision and economic impacts, including direct and indirect employment generation and additional local spend.

6.106 The assessment will present the quantitative and qualitative evaluations of the social and economic effects of the proposed development and where appropriate will identify the relevant mitigation measures that will be applied during both the construction and operational phases of the proposed development to reduce any potential negative impacts.

Likely Form of Mitigation

6.107 Due to the additional population that the residential units will bring forward, there is the potential for impacts upon local healthcare facilities and local schools. If the socio-economic assessment demonstrates that there will be an impact that cannot be covered through local Community Infrastructure Levy (CIL) payments, mitigation will likely take the form of a Section 106 financial contribution.

CLIMATE CHANGE

Baseline Conditions

6.108 The United Kingdom's Climate Impact Programme (UKCIP) highlights the key climate projections over the next 80+ years and these can be summarised as follows:

- Summers will become hotter and drier;
- Winters will become milder and wetter;
- Soils will become drier on average;
- Snowfall and the number of very cold days will decrease;
- Sea levels will rise; and
- Storms, heavy and extreme rainfall and heatwaves will become more frequent.

6.109 The assessment will establish the climatic data surrounding current seasonal temperatures and precipitation from the Met Office. This data will be used to analyse the current climate and compare these findings, in relation to the proposed development, to the high emission (RCP 8.5) climate change projections identified in the UK Climate Change Projections 2018 (UKCP18)[34]. Baseline climate change data will be obtained for the 2030s, 2060s and 2090s.

Potential Effects

6.110 The proposed development will need to be resilient to future climate change. During construction, due to the timescales and nature of the proposed development, the impacts of climate change on the construction of infrastructure and pedestrian comfort of construction workers are predicted to be not significant.

6.111 If climate change resilience is not embedded into operational processes and the design of the proposed development, there will be potential impacts on human receptors and the proposed development.

6.112 During operation, potential climate change impacts may relate to:

- Overheating and associated health implications;
- Soft landscaping failure due to increased extreme weather events and summer temperatures; and
- Water shortages for public use and for landscaping due to summer droughts.

6.113 The proposed development is likely to release additional greenhouse gases through:

- Construction (including construction transport, the embodied carbon of materials and waste); and
- Operation (including energy emissions and transport).

6.114 Based on the *IEMA Greenhouse Gas Assessment* criteria, all of these impacts have the potential to be significant (and negative) at the local level.

Approach and Methodology

6.115 The assessment will follow guidance within the:

- IEMA EIA Guide to Climate Change Resilience and Adaptation (2020)[35]; and
- IEMA EIA Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (2017)[36].

6.116 The assessment will include:

- An assessment of the climate change resilience of the proposed development;
- An assessment of the greenhouse gas impacts of the proposed development; and
- A summary of the in-combination climate impacts of the proposed development.

6.117 The greenhouse gas emissions of the proposed development will be quantified based on the Energy Statement and Whole Life Carbon Assessment.

6.118 Mitigation measures to increase climate change resilience will be embedded into the design of the proposed development. Mitigation to reduce greenhouse gas emissions from the proposed development during construction and operation will be embedded into the design and construction management procedures. The Climate Change ES Chapter will outline these measures.

7.0 ADDITIONAL MATERIAL SUBMITTED

7.1 In addition to the ES chapters, several topics will be covered by a number of technical appendices and stand-alone supporting documents, which may include, but are not limited to the following:

- Design and Access Statement;
- Planning Statement;
- Statement of Community Involvement;
- Affordable Housing & Viability Statement ;
- Transport Assessment, including Travel Plan;
- Framework Construction Management Statement;
- Delivery and Servicing Plan;
- Energy Statement;
- Sustainability Statement;
- BREEAM Pre-assessment;
- Whole Life Carbon Assessment;
- Circular Economy Statement;
- Tree Survey Report including;
- Preliminary Ecological Appraisal;
- Archaeological Desk Based Assessment;
- Odour Assessment Report & Scheme;
- Health Impact Assessment;
- Daylight/Sunlight Assessment;
- Fire Statement / Strategy;
- Flooding Risk Assessment, SUDS and Drainage Report; and
- Desk Study and Preliminary Site Assessment Report.

FIGURE 1 SITE LOCATION PLAN

APPENDIX 1 MULTIMODAL TRIP GENERATION TABLES

APPENDIX 2 BHTVIA SCOPING NOTE

REFERENCES

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27 World Health Organisation (1999) WHO Guidelines for Community Noise.
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32 ONS (2013) Health and provision of unpaid Care (KS301EW), https://www.nomisweb.co.uk/
33 Ministry of Housing, Communities and Local Government (2019) Indices of Multiple Deprivation: 2015 and 2019, http://dclgapps.communities.gov.uk/imd/iod_index.html#
34 UKCIP (2018) Climate Change Projections
35 IEMA (2020) EIA Guide to Climate Change Resilience and Adaptation
36 IEMA (2017) EIA Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance