1 Undershaft

EIA Scoping Report

Prepared for:

Aroland Holdings Ltd.

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Introduction

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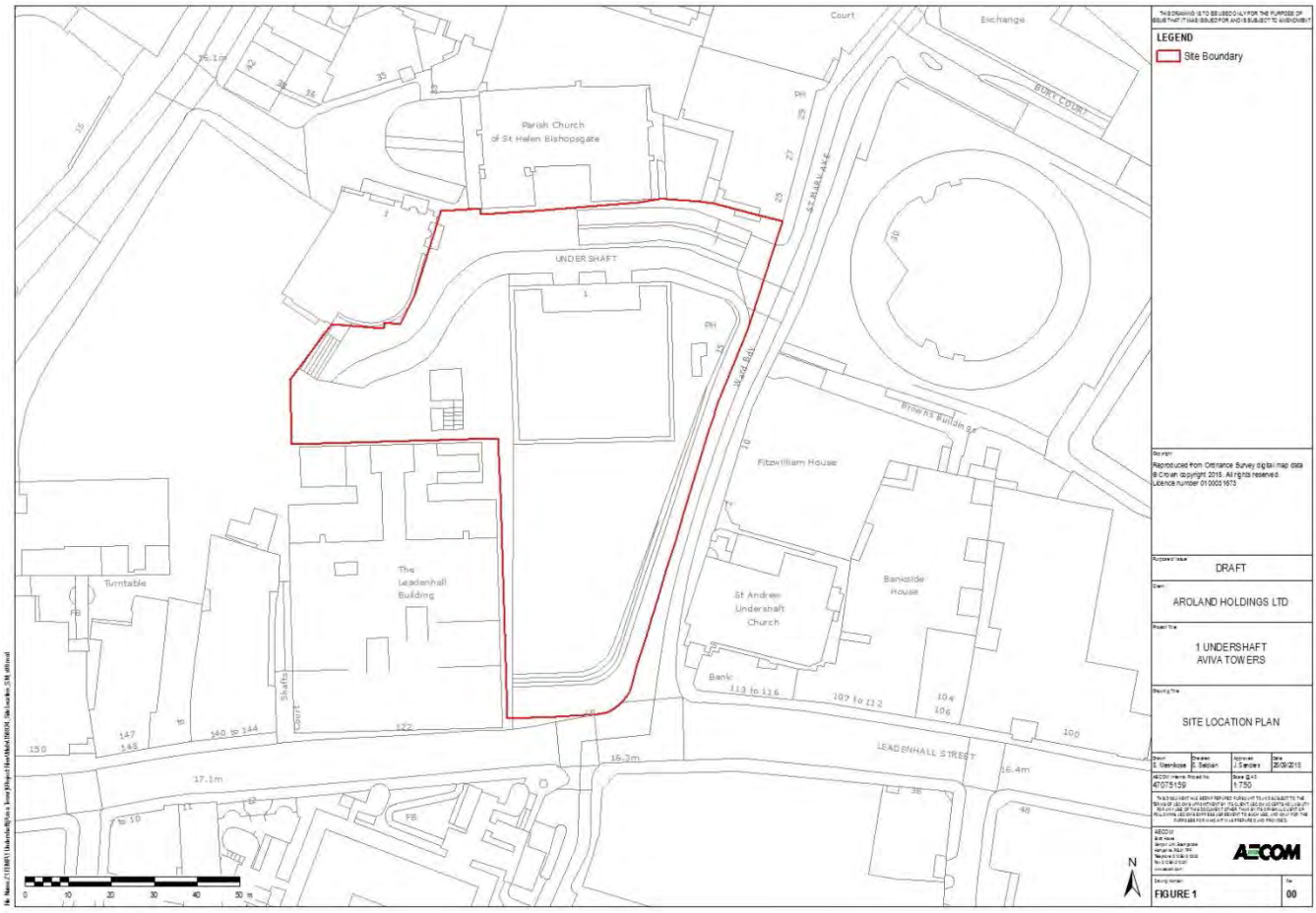
Introduction

Site Location and Context

Aroland Holdings Ltd. (hereafter referred to as the Applicant) is seeking detailed planning permission for the construction of an office led mixed use development at the junction of Undershaft and St Mary Axe (the 'site'), to be known as '1 Undershaft'. The redline boundary is shown below in Figure 1.

Figure 1: Site boundary

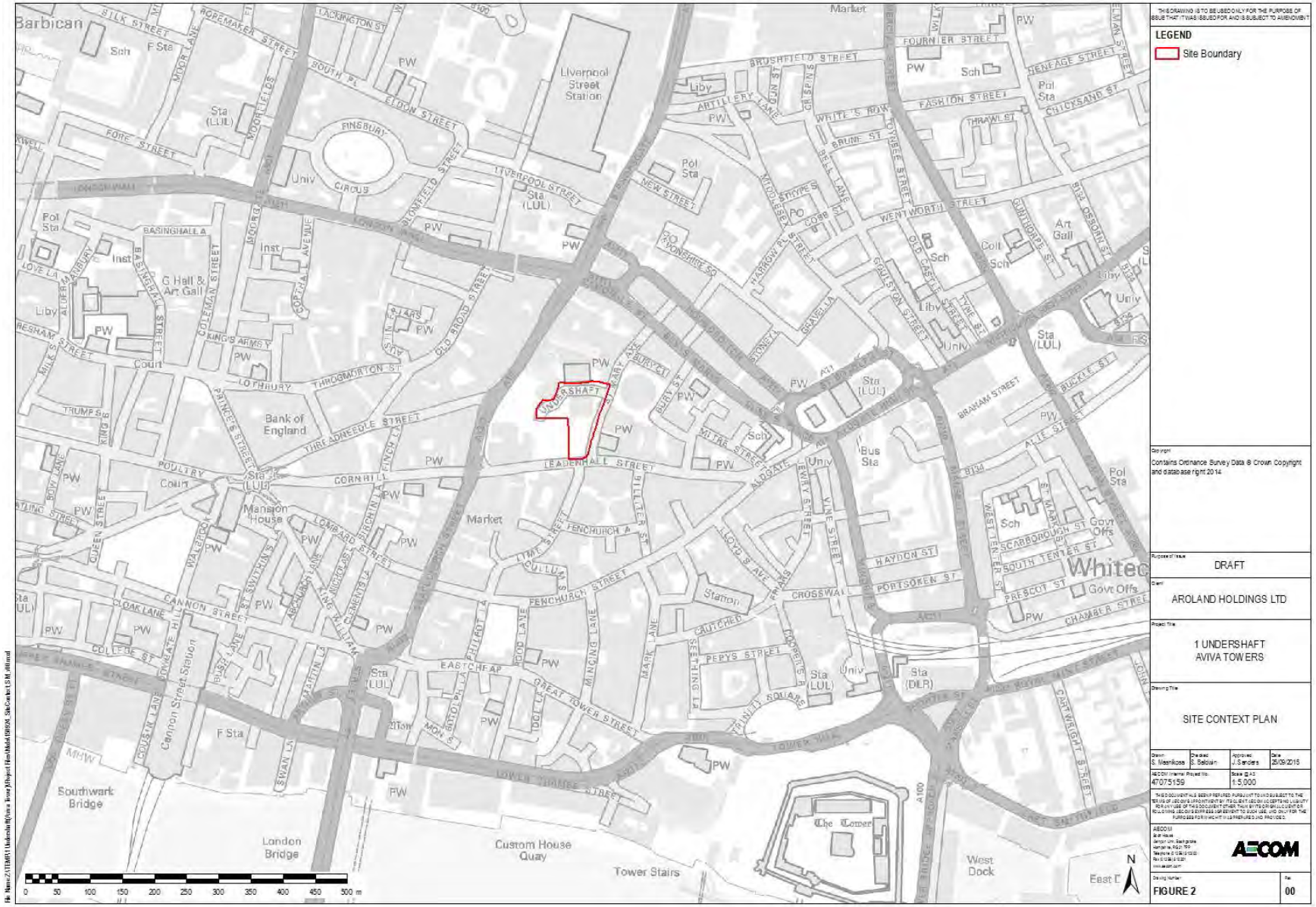


The site is approximately 0.66 hectares (ha) and is located within the City of London (CoL). The site is centred at National Grid Reference TQ 330812 and is bounded by Undershaft to the north and west; St Mary Axe to the east; and The Leadenhall Building and Leadenhall Street to the south. The site location and surrounding context is shown in Figure 2.

Given the likely scale of redevelopment, the location of the site and the potential for environmental effects, the Applicant has chosen to submit an Environmental Statement (ES) alongside the planning application. AECOM has been commissioned to undertake the Environmental Impact Assessment (EIA) on behalf of the Applicant in line with the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (amended 2015) and other relevant EIA guidance.

It should be noted that the most up to date base mapping has been used to prepare the figures for this EIA Scoping Report.

Figure 2: Site context



The Purpose of Scoping in the EIA Process

EIA Scoping forms one of the first stages of the EIA process. It refers to the activity of identifying the environmental 'topics' that should be considered within the EIA. In addition, EIA Scoping allows for the early identification of the receptors that may be affected or impacted by a new development. Through consideration of environmental 'topics' and potential receptors (both existing and introduced as a result of a new development), EIA Scoping initiates the process of defining the potential for significant effects, which in turn results in the identification of the issues to be addressed in the EIA.

Regulation 13 of the 2011 EIA Regulations allows for an Applicant to ask the Local Planning Authority, in this case the CoL (who in turn seek the opinion of other relevant Statutory Consultees), to state in writing their opinion as to the scope of the EIA. This report constitutes a request for a Scoping Opinion under Regulation 13 of the 2011 EIA Regulations.

Structure of the Scoping Report

The remainder of the Scoping Report presents the following:

- An overview of the existing site and potential sensitive receptors;
- An overview of the Proposed Development;
- Key legislative and planning policy documents;
- A preliminary list of EIA consultees;
- The environmental 'topics' to be addressed within the EIA;
- The environmental topics to be 'scoped out' of the ES;
- The proposed structure of the ES; and
- Summary and conclusions to the EIA Scoping Report.

The Existing Site and Sensitive Receptors

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Overview of the Existing Site and the Proposed Development

Site Description and Context

The site, which occupies an area of 0.66 ha, is located in the CoL and is bounded by Undershaft to the north and west; St Mary Axe to the east; and The Leadenhall Building and Leadenhall Street to the south.

The site context is characterised by buildings of various heights, styles and periods. Of particular note are the cluster of small buildings on Great St Helen's, including St Helen's church (listed Grade I), St Andrew Undershaft (listed Grade I), 122 Leadenhall (the Leadenhall Building), Richard Rogers Lloyds of London building in Leadenhall Street (listed Grade I), 30 St. Mary Axe, Leadenhall Market and a number of Grade II listed buildings on Bishopsgate, Leadenhall Street and Threadneedle Street.

The site is not in a conservation area. However, the St Helen's Place Conservation Area is adjacent to the north of the site. The Bank Conservation Area is close by to the west and the Leadenhall Market Conservation Area is to the south. The London View Management Framework (LVMF) Supplementary Planning Guidance (March 2012) includes two protected vistas to St Paul's Cathedral which impact the site and the wider City Fringe Area. The Proposed Development will also impact on a number of assessment points in the LVMF.

The application site has excellent transport links with a Public Transport Accessibility Level (PTAL) 6b. It is located within less than ten minutes walking distance of Liverpool Street Mainline and London Underground Limited (LUL) Stations (with connection to the Central Line, Metropolitan Line, Circle Line and Hammersmith and City Line), Fenchurch Street Mainline Station, Aldgate LUL Station and Bank LUL Station. Numerous bus services operate from nearby Bishopsgate and Liverpool Street Station.

The site is located within Flood Zone 1 (land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%)) and hence it has a low probability of flooding.

The entire CoL has been designated an Air Quality Management Area (AQMA) due to exceedances of the national Air Quality Strategy objectives for nitrogen dioxide (NO_2) (hourly and annual mean) and for particulate matter (PM_{10}) (24-hour objective value).

Potential Environmental Sensitivities / Sensitive Receptors

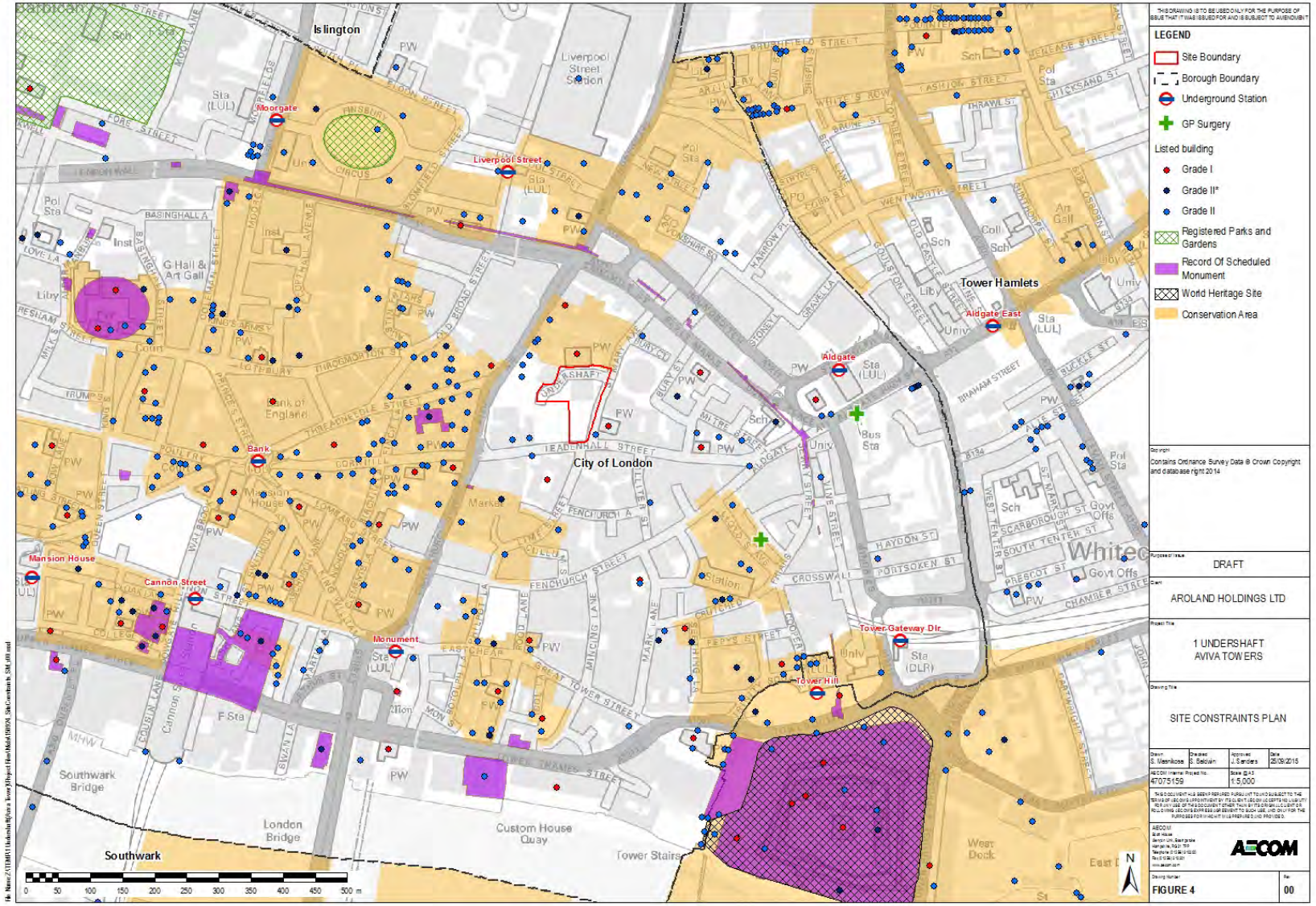
When undertaking an EIA it is important to understand which receptors will be considered as part of the assessment. Initial studies and consultations have revealed the following potential sensitive receptors to the Proposed Development (as shown in Figure 3):

- Key short, medium and long-distance views (as identified within the London View Management Framework (2012));
- Tower of London World Heritage Site and St Paul's Cathedral (listed Grade I);
- Scheduled Monuments including: Merchant Taylor's Hall, Roman Walls in the basements of 90 Gracechurch Street and Goring Street, and Roman Wall, Bastions and City Gate of Aldgate from 17 Bevis Mark to India Street;
- Listed buildings within a 200m radius of the site, including:
    - Grade I listed buildings: Church of St Andrew Undershaft, Church of St Peter, Westminster Bank, Guild Church of St Ethelburga the virgin, the Church of St Helen and the Lloydsof London Building;
    - Grade II* listed buildings: City of London Club, 51-53 Threadneedle Street EC2, Merchant Taylor's Hall andLeadenhall Market.
    - Grade II listed buildings: 13-17 Old Broad Street EC2, 123 Old Broad Street EC2, 54 and 55 Cornhill EC2, 65 Cornhill EC2, 7 and 9 Bishopsgate EC2, 2 White Lion Court EC3, Gateway to yard of Church of St Peter, Midland Bank, 32 Threadneedle Street EC2, Gateway and Railways to forecourt of number 40, 41 Threadneedle Street EC2, 28 and 29, Threadneedle Street EC2, Gates at rear of number 40 leading to pathway at rear of City of London Club, 43 – 47 Threadneedle Street EC2, Police Public Callbox, corner of Old Broad Street and Adams Court, 147 and 148 Leadenhall Street, Royal Bank of Scotland, 46 Bishopsgate EC2, 66 and 67

Cornhill EC3, 40 Threadneedle Street – EC2, 34 Threadneedle Street EC2, Lloyd's Building, 139 – 144 Leadenhall Street EC3, Iron gates and railings to entrance of Church of St Andrews Undershaft, 40 St Mary Axe EC3, British Linen Bank, 48 Bishopsgate EC2, Australia and New Zealand Banking Group, 18 Old Broad Street EC2, Number 50 and attached grilles, Lloyds Bank, 26 Throgmorton Street EC2, Gates leading to number 40 from Adams Court, 52 – 68 Bishopsgate EC2;

- Adjacent residential and commercial properties;
- Pedestrians, cyclists and road users within proximity of the site;
- Public transport including Liverpool Street, Fenchurch Street, Bank, Moorgate and Aldgate LUL stations and the local bus network.
- Surrounding arterial road network including the A1211, A1213 and the A10 Bishopsgate;
- Local Schools, including; Sir John Cass's Foundation Primary School, English Martyrs Roman Catholic Primary School and East End Community School;
- Surrounding residential properties along Undershaft, Great St Helens, Leadenhall Street, St Mary Axe and the wider area;
- On-site receptors including commercial outlets;
- Local businesses along Undershaft, Great St Helens, Leadenhall Street, St Mary Axe and in the surrounding area;
- Other identified local services, including for example doctors surgeries, dentist surgeries, libraries, child care facilities, citizen advice bureaus, local amenities/shops and convenience stores;
- Subsurface utilities and services; and
- Potential buried heritage assets beneath the site.

Figure 3: Map showing site constraints



The Proposed Development

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The Proposed Development

Planning History

Table 1 outlines the panning history for the existing site.

Table 1: Planning history of site

Decision Date	App Ref	Details	Status
16/6/15	15/00388/FULLR3	Temporary installation of a sculpture, 'Greener Grass' by Ceal Floyer, for a temporary period of up to one year, to be taken down on or before 5th June 2016	Approved
3/2/15	14/01159/ADVT	Installation and display of: 6 non illuminated hoarding advertisements measuring 2.2 metres high, 12 metres wide displayed at a height of 0.1 metres above ground level.	Approved
7/11/13	13/00769/FULL	The landscaping of the existing open space at 1 Undershaft comprising hard and soft landscaping and associated ancillary works.	Approved
7/6/13	13/00452/FULLR3	Temporary installation of a sculpture - 'String Quintet' by Shirazeh Houshiary - for a temporary period of up to 1 year, to be taken down on or before 10 June 2014.	Approved
31/5/12	12/00335/FULLR3	Temporary installation of a sculpture - Untitled piece by Dan Graham, for a temporary period of up to a year, to be taken down on or before 8th June 2013.	Approved
15/3/12	11/01005/FULL	Temporary change of use of part of basement level two from office (B1) use to welfare facilities (sui generis) for a limited period of three years in association with the construction of the 122 Leadenhall Street development	Approved
5/1/12	11/00856/FULL	Installation of a freestanding flagpole.	Approved
9/6/11	11/00269/FULLR3	Temporary installation of a sculpture, Sky Mirror by Anish Kapoor, to be taken down on or before 2nd July 2012	Approved
12/7/07	07/00436/FULL	Construction of temporary garden for the duration of the construction works at 122 Leadenhall Street	Approved
18/1/07	06/00991/FULL	Removal of two rising arm security barriers and installation of six rising security bollards at office entrance. Installation of two rising arm security barriers and two rising security bollards on car park ramps.	Approved
22/6/06	06/00303/FULL	Installation of external bollards to north elevation.	Approved
09/3/06	05/01097/FULL	Installation of a flag pole.	Approved
16/6/05	05/00288/FULL	Installation of benches and planters on piazza.	Approved
11/9/03	4359CY	Deletion of Condition 8 of Planning Permission 4359A dated 7.3.63	Approved
3/8/01	4359CX	Change of use of part basement 2 and 3 from ancillary restaurant and office use (B1) to restaurant and fitness centre (A3/D2).	Approved
3/8/01	4359CW	Installation of new entrance for basement restaurant and fitness centre. New vents and planters.	Approved
20/4/00	4359CS	Application of solar film on part of ground floor glazing on south elevation	Approved
27/8/99	4359CR	Installation of exhaust for standby generator	Approved

16/11/84	4359BL	Change of use of restaurant for use of staff within the building to restaurant for use of staff within the building and certain approved firms outside the building for a limited period at basement level, 1 Undershaft.	Approved
26/1/82	4359BD	Enclosure of open podium floor & change of use to office space at St. Helen's 1/3 Undershaft	Approved
29/10/70	4359AL	4 Illuminated signs at Commercial Union Headquarters Building 1 Undershaft.	Refused

The Proposed Development

The Proposed Development involves the demolition of the existing tower building located on site and the construction of a 73 storey office building (including plant) providing 61 floors of office space and approximately 1,800 m^2 Net Internal Area (NIA) of retail space provided at lower ground.

The target height for the building is circa 309.6 m AOD subject to further consultations with the relevant bodies, including the Civil Aviation Authority.

A publically accessible viewing gallery is proposed at the top of the building.

The building is raised to enable the public realm to extend across the site and under the building. The enhanced public realm will encompass a lower level at Basement 1, where retail space is provided. The public access to the viewing gallery is also located at this lower level, within a dedicated entrance lobby.

The Proposed Development will consist of 4 basement levels to a depth of -4.6m AOD and will be considered to be 'parking free' with no provision for car or motor cycle parking spaces, apart from approximately 6 disabled car parking spaces provided at Basement level 3. Cycle parking spaces and associated amenities will be provided at basement level 2 to meet London Plan standards.

The building is serviced from Undershaft with two vehicle lifts to the north west that serve the loading bay at Basement level 3 from ground level.

The entrance to the building will be from the public realm, off St Mary Axe.

The Proposed Development provides the following indicative floorspace in Net Internal Area (NIA):

- Office – approx. 90,000–95,000m^2;
- Retail – approx. 1,800m^2;
- High level restaurant (public);
- High level public viewing gallery at the top of the building; and
- Public realm at ground and basement 1 in the region of 5,000 m^2.

Key Legislative and Planning Policy Documents

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Key Legislative and Planning Policy Documents

EIA Statutory Requirements and Guidance

The ES will be prepared in accordance with legislative requirements and current guidance for EIA, covered by 'statutory requirements'. In particular, the ES will be prepared with due consideration to:

- The Town and Country Planning (Environmental Impact Assessment) Regulations 2011 (amended 2015);
- Preparation of Environmental Statements for Planning Projects that require Environmental Assessment: Good Practice Guide, Department of the Environment (DoE) 1995;
- Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Impact Assessment, 2004; and
- Office of the Deputy Prime Minister (ODPM) Environmental Impact Assessment – A Guide to Procedures, 2000.

Consideration will also be given to the new Environmental Impact Assessment (EIA) Directive (2014/52/EU) although this is currently awaiting formal adoption in the United Kingdom (England and Wales).

Planning Policy Context

Each of the technical chapters contained within the ES will include reference to relevant national, regional and local planning policy, a summary of which is given below.

National Planning Policy

The ES will have regard to the National Planning Policy Framework (NPPF) (2012), which replaces the previous suite of national Planning Policy Statements and Planning Policy Guidance documents.

The policies contained within the NPFF articulate the Government's vision of sustainable development, which should be interpreted and applied locally to meet local aspirations.

It will also take into account the National Planning Practice Guidance (NPPG).

Regional Planning Policy

- London Plan (2015);
- London View Management Framework Supplementary Planning Guidance (SPG) (2012);
- Sustainable Design and Construction SPG (2014);
- Housing SPG (2012);
- Shaping Neighbourhoods: Play and Informal Recreation SPG (2012);
- Accessible London: Achieving an Inclusive Environment SPG (2004);
- Shaping Neighbourhoods: Character and Context (2014); and
- Regional Flood Risk Appraisal for the London Plan (2009).

Local Planning Policy

- City of London Plan (2015);
- City of London, Protected Views Supplementary Planning Documents (2012);
- Tower of London World Heritage Site Management Plan; and
- Historic England:
    - Good Practice Advice in Planning Note: The Setting of Heritage Assets (2015);
    - Guidance on Tall Buildings (2007); and
    - Seeing the History in the View (2011).

EIA Consultation

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EIA Consultation

The process of consultation is important to the development of a comprehensive and balanced ES. Views of the interested parties serve to focus the environmental studies and to identify specific issues that require further investigation.

Consultees involved in the process of scoping the assessments of environmental effects will include, but are not limited to:

- City of London Corporation (CoL);
- Westminster City Council (WCC);
- London Borough of Southwark (LBS);
- London Borough of Tower Hamlets (LBTH);
- London Borough of Hackney (LBH);
- London Borough of Islington (LBI);
- London Borough of Camden (LBC);
- Greater London Authority (GLA);
- Environment Agency (EA);
- Transport for London (TfL);
- Historic England (HE);
- Historic Royal Palaces (HRP);
- The Royal Parks (TRP);
- The Chapter of St Paul's Cathedral;
- Natural England (NE);
- Thames Water Utilities Limited (TWUL);
- London City Airport (LCY);
- Civil Aviation Authority (CAA);
- London Heathrow Airport (LHR); and
- Neighbourhood/residents associations.

A public exhibition will also be held allowing local residents and stakeholders to comment on the design proposals for the Proposed Development.

Consultation is an ongoing process and will be fed back into the design of the Proposed Development. A summary of the key consultation responses received from consultees which are relevant to the EIA process will be included within the ES.

Environmental topics to be addressed within the EIA

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Environmental Topics to be addressed within the EIA

Introduction

The EIA and associated technical studies will reflect current guidelines and relevant legislation and will be carried out in accordance with statutory guidance, including the requirements for the contents of an ES. For the EIA to be an effective decision-making tool, the ES needs to focus on the main or *likely significant environmental effects*, within a range of topics. These issues have been identified through a review of existing information, baseline studies and preliminary review of the emerging Proposed Development.

The EIA will consider the potential significant effects associated with the following environmental 'topics':

- Socio-economics;
- Transportation and Access;
- Air Quality;
- Noise and Vibration;
- Ground Conditions;
- Water Resources, Drainage and Flood Risk;
- Wind Microclimate;
- Daylight, Sunlight, Overshadowing and Solar Glare;
- Electronic Interference;
- Archaeology; and
- Townscape, Heritage and Visual Impact Assessment.

The following sub-sections of this Scoping Report provide details on each of the above environmental 'topics', specifically, the works proposed to fulfil the requirements of the EIA process. In addition to the above, the following chapters will be provided as part of the ES:

- Introduction to the Environmental Statement;
- EIA Methodology (see below for further details);
- Alternatives and Design Evolution (including the 'Do Nothing Scenario', 'Alternative Sites' and 'Alternative Designs');
- The Proposed Development (including information on utilities and infrastructure, ecological enhancement, energy and sustainability);
- Demolition and Construction;
- Effect Interactions and Cumulative Effects; and
- Residual Effects and Conclusions.

Methodology

This section outlines the methodology to be used throughout the ES.

The EIA will address the direct effects of the Proposed Development in addition to the indirect, cumulative, short, medium and long term, permanent, temporary, beneficial and adverse likely significant effects arising from the Proposed Development. The main mitigation measures envisaged in order to avoid, reduce or remedy significant adverse effects will be described. The concluding chapters will provide a summary of the cumulative and residual effects of the Proposed Development.

Existing Site vs. the Proposed Development

The methodology will define the scenarios against which the environmental effects will be assessed. This will include the following scenarios:

- The baseline as it is today (i.e. the existing site);
- The Proposed Development; and
- The Proposed Development in addition to a number of schemes identified in order to assess cumulative effects.

A Non-Technical Summary (NTS) will be produced as a separate document in accordance with the EIA Regulations. In addition, a compilation of technical data and associated information required to support the content of the ES, will be included within a Technical Appendices document.

Approach to the Baseline

We are proposing to treat the baseline as existing, though with one minor variation; we intend to exclude the existing partially constructed building on the 'Pinnacle' site, constructed under planning permission (06/01123/FULEIA). This Implemented Scheme has been legally implemented with demolition of all previous buildings on the site, excavation, piling and construction of the basements and 9 storeys of the concrete core, undertaken between 2008 and 2012. No further work has been undertaken since 2012. In addition on July 27th 2015 an application for the deconstruction of this building (PA 15/00221/FULL) was approved.

Taking this into consideration it is proposed that for the purposes of the EIA that the adjacent site is considered to be an 'empty site' as due to the uncertainty of the site's immediate future this will present the worst case scenario for assessment and therefore the most robust approach.

Cumulative Effect Assessment

In accordance with the EIA Regulations, the EIA will give consideration to 'cumulative effects'. By definition these are effects that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the Proposed Development. For the cumulative assessment, two types of effect will be considered:

- The combined effect of individual impacts, for example noise, airborne dust or traffic on a single receptor (effect interactions); and
- The combined effects of nearby consented or under construction development schemes, which may, on an individual basis be insignificant but, cumulatively, have a likely significant effect.

Schemes that will be considered within the cumulative assessment comprise:

- Those with planning permission (or with a resolution to grant consent) and those under construction;
- Located within an approximate 1km radius of the site; and
- Result in an increase of more than 10,000m^2 GEA in floor area (unless smaller schemes are considered to have significant effects despite a lower floorspace).

Table 2 sets out the provisional list of schemes to be considered within the cumulative effect assessment. The locations of these cumulative schemes are illustrated on Figure 4.

As described above the consented scheme for the Pinnacle (06/01123/FULEIA) has been implemented though construction ceased on site in 2012, and there is a recent planning permission for the deconstruction of the existing core and sections of floorplates and Installation of new piling and transfer structures.

In addition to this there is also an application for a new proposed scheme on the same site; 22 Bishopsgate. For this reason we do not feel that the consented 'Pinnacle' scheme can be considered to be 'reasonably foreseeable' and therefore we propose to consider the submitted application '22 Bishopsgate' within the main cumulative assessment in its stead.

Whilst considering that the application for 22 Bishopsgate may not be decided prior to the planning submission of 1 Undershaft we propose to also consider the consented Pinnacle scheme qualitatively (using professional judgement) in conjunction with the other agreed cumulative schemes. This will be presented in a separate section within the cumulative assessment.

Table 2 – Cumulative Schemes to be included within ES Volume I

Address	*Application number*	*Description*	*Status (as of September 2015)*
River Plate House	12/00811/FULMAJ	Demolition of the existing building with partial retention of the facade to South Place in connection with construction of a 9 storey development. Redevelopment of the site behind the partially retained facade to South Place and erection of a new 9 storey office building (ground floor plus 8 storeys) (Class B1(a)) with alternative use of part ground and part lower ground for either retail (Class A1/A2/A3/A4) or Class D2 (gymnasium) or Class B1(a) (offices), roof top and basement mechanical and electrical (M & E) plant, together with servicing facilities, one disabled car parking space and cycle parking and other associated ancillary works. (Total floorspace: 23,928 m^2).	Consented
Bloomberg Place	11/00935/FULEIA	Construction of two new buildings comprising floorspace within Classes B1 (office) and A1 (retail) of the use Classes Order; the reconstruction of the remains of the Temple of Mithras and new display space; the provision of a new entrance to Bank Station; the creation of new open space accessible to the public and pedestrian routes; three basement levels; and the provision of ancillary servicing and other incidental works (Total GEA: 110,510 m^2).	Under Construction
Blossom Street	PA/10/02764	A mixed-use development of the former Nicholls and Clarke site, comprising: buildings between 4 and 8 storeys in height of 48.40m AOD (plus plant) to incorporate approximately 14,000m2 of new B1 accommodation; approximately 4050m^2 of B1 accommodation in restored and converted buildings, approximately 2000 m^2 of A1 Retail and A3 Restaurant Uses; approximately 800m2 of A4 Public House use; together with the re-creation of the historic public space known as Blossom Place, with adjoining amenity space, and improvements to the public realm along Shoreditch High Street including provision of access to Blossom Place, highway works to consolidate existing vehicle lay-bys on Shoreditch High Street and Blossom Street and provision of managed off-street servicing and parking facilities.	Consented

Address	*Application number*	*Description*	*Status (as of September 2015)*
Principal Place	2011/0698	Full planning permission for the demolition of the rear of 233 Shoreditch High Street, perimeter walls, viaduct structure across Plough Yard and all other structures on the site and the erection of a decking structure and buildings comprising: • Building 1: a part 10, part 16 storey building to provide 76,465m2 (GEA) of office floorspace (Use Class B1) together with 1,471m^2 (GEA) of retail floorspace (Use Class A1-A4) at ground floor level. • Building 2: a 50-storey block comprising 243 private residential units (111 x one bed, 121 x two beds and 8 x three beds) together with 242m^2 (GEA) of retail floor space (Use Class A1-A4) at ground floor level. • Building 3: a 14-storey block providing 39 intermediate housing units (12 x one bed, 21 x two beds and 6 x three beds) and 116m^2 (GEA) of retail floorspace (Use Class A1-A4) at ground floor. • Building 4: a 6-storey block providing 17 affordable rent units (3 x one bed, 6 x two beds, 6 x three beds and 2 x four beds). • Building 5: a single storey block linked to buildings 3 and 4 comprising 263m^2 (GEA) of flexible floorspace (Use Class A1-A4/D1/D2/B1). • A single storey kiosk comprising 100m^2 (GEA) of retail floorspace (Use Class A1-A4). Together with two separately accessed basements, 51 residential parking spaces (2 blue badge) and 22 other (commercial) car parking spaces (2 blue badge), open space with hard and soft landscaping; retention and creation of new vehicular and pedestrian accesses, servicing areas and roof top plant and all other associated works (Total GEA: 75,186 m^2)	Under Construction
The Stage - Electricity Sub Station	2012/3873	Demolition of the sub-station and the construction of a 13-storey B1 office building with shared back of house uses and flexible retail/restaurant/bar use at ground floor to be serviced from other land in the ownership and control of the applicant, including basement and also including associated works. The appearance of the proposed building is reserved. The building provides 15,313 m^2 of B1 office floorspace; 614 m^2 of flexible retail/restaurant/bar floorspace (A1 - A4); and 614 m^2 of shared back of house (sui generis).	Resolution to grant

Address	*Application number*	*Description*	*Status (as of September 2015)*
The Stage Shoreditch	2012/3871	The demolition of buildings and structures; the excavation, preservation, and exhibition of the remains of the Curtain Theatre (D1 Use). The excavation of a basement structure containing A1-A4/B1/C3 uses. The provision of four buildings comprising a 40-storey residential tower with shared A1-A4/B1/C3 back of house uses and retail in A1-A4 use at ground floor; a 9-storey B1 office building with shared A1-A4/B1 back of house uses and flexible A1-A4/B1 uses at ground floor and first floors, and retail in A1-A4 use at ground floor, and associated servicing facilities; a 13-storey B1 office building with shared A1- A4/B1 back of house uses and retail in A1-A4 uses at ground floor, and flexible A1-A4/B1 uses at ground floor; a 2-storey pavilion containing D1/D2 uses. Demolition, alteration, extension and change of use to the railway viaduct to create a range of A1-A4 retail uses at ground and railway bed level along with the laying out of an open space. The laying out of open space on land currently occupied by a service yard and shed adjacent to the railway viaduct that will connect Great Eastern Street and Hewett Street to Plough Yard. The temporary removal and reinstatement of three grade II listed bollards on Curtain Road. (Total area: 11,200 m^2).	Consented
5-29 Sun Street, 1-17 Crown Place 8-16 Earl Street and 54 Wilson Street London EC2M 2PS	2009/2464	Demolition of existing buildings on site (excluding 5-11 Sun Street (bar rear elements) and construction within eastern part of the site of a 2 basement plus part eleven, part twelve, part seventeen, part twenty, part twenty one, part twenty four storey (105 metres AGL) office building providing 53,279 m2 of use Class B1 and 1,568m^2 of flexible retail/office (Use Class A1, A2, A3, A4 and B1) floor space, plus the refurbishment of 5- 11 Sun Street within the western part of the site and construction of ground plus three storey terrace for a 34 room hotel (2,591 m2 C1 Use Class) and 194 m^2 of flexible retail (Use class A1, A2 and A3); together with the provision of vehicular access, and 220 cycle spaces off Earl Street, hard and soft landscaping and enabling works associated with the development.	Consented
Former Beagle House Now Known As Maersk House, Braham Street, London, E1	PA/09/01122	Demolition of existing building (Beagle House) and construction of a 23 storey mixed-use development comprising 1,940 m2 of retail /commercial space (Class A1 - A5 use) at ground floor and 1st floor level with residential accommodation to provide 291 flats (Total GEA: 35,026 m^2).	Consented
Aldgate Place Land Bounded By Whitechapel High Street, Leman Street, Buckle Street & Commercial Rd, London, E1	PA/13/218	Demolition of existing buildings and creation of a mixed use development, comprising three towers of 22, 25 and 26 storeys and a series of lower buildings ranging from 6 to 9 storeys. Provision of 463 private and affordable residential dwellings.	Consented

Address	*Application number*	*Description*	*Status (as of September 2015)*
Goodman's Fields – NW Quadrant	PA/12/02068	Hybrid planning application for residential-led mixed-use redevelopment of the site comprising: 1) Outline Application - All matters reserved (except for access)Development of North East (NE) and South East (SE) quadrants of the site to provide: • Podium blocks of between 7-10 storeys (max 46.075m AOD) with two towers on each podium block of between 19-23 storey (max 85.425m AOD) and dwellings fronting Gower's Walk; • Up to 700 residential units • Up to 5,265 square metres (GEA) of flexible commercial and leisure floor space • Associated vehicular, pedestrian and cycle access; • At least 8,230 square metres of Public Open Space; and • Related infrastructure and engineering works. 2) Full details • Podium block between 6-10 storeys (max 46.075 AOD) and two towers up to 19 storeys (max 76.175m AOD) and 21 storeys (max 85.4m AOD) • 250 bedroom hotel including a restaurant at ground to sixth floor level; • 164 residential units • 857 square metre (GEA) ancillary gym and swimming pool at ground and first floor level residents use; • 1,758 square metre (GEA) flexible commercial/leisure floorspace at ground floor level; • 18,447 square metre (GEA) basement level across the site • Public Open Space to form part of the wider outline public open space strategy; and • Associated access, landscaping, surface car parking and cycle parking and related infrastructure and engineering works.	Under Construction
Goodman's Fields – SW Quadrant and 75 Leman Street	PA/11/590	Variation of conditions 2, 3 and 19 of planning permission PA/09/00965, dated 17/02/11, to allow minor amendments to the scheme involving, a change in the approved mix of units within 75 Leman Street	Consented

Address	*Application number*	*Description*	*Status (as of September 2015)*
Goodman's Fields – SW, SE and NE Quadrant	PA/11/03587	Hybrid planning application for residential-led mixed-use redevelopment of the site comprising: 1) Outline Application - All matters reserved (except for access)Development of North East (NE) and South East (SE) quadrants of the site to provide: • Podium blocks of between 7-10 storeys (max 46.075m AOD) with two towers on each podium block of between 19-23 storey (max 85.425m AOD) and dwellings fronting Gower's Walk; • Up to 700 residential units • Up to 5,265 square metres (GEA) of flexible commercial and leisure floor space • Associated vehicular, pedestrian and cycle access; • At least 8,230 square metres of Public Open Space; and • Related infrastructure and engineering works. 2) Full details • Podium block between 6-10 storeys (max 46.075 AOD) and two towers up to 19 storeys (max 76.175m AOD) and 21 storeys (max 85.4m AOD) • 250 bedroom hotel including a restaurant at ground to sixth floor level; • 164 residential units • 857 square metre (GEA) ancillary gym and swimming pool at ground and first floor level residents use; • 1,758 square metre (GEA) flexible commercial/leisure floorspace at ground floor level; • 18,447 square metre (GEA) basement level across the site • Public Open Space to form part of the wider outline public open space strategy; and • Associated access, landscaping, surface car parking and cycle parking and related infrastructure and engineering works.	Under Construction
1 Heron Plaza	10/00152/FULEIA	Alterations to 142- 150 Bishopsgate and 1-17 Devonshire Row (odd numbers), relocation of 1 Stone House Court and redevelopment of Stone House (128-140 Bishopsgate and 77-84 Houndsditch), Staple Hall (87-90 Houndsditch) and 1, 3 and 5 Stone House Court, to provide mixed use development comprising a luxury hotel, residential accommodation, retail uses (A1 - A3), hard and soft landscaping works including provision of a new public plaza, alterations to vehicular and pedestrian access and highways layout together with ancillary plant, servicing and associated works. 55,286 m^2. (GEA); 150.92m AOD (height).	Consented
Mitre Square, International House, Duke's Place, 11 Mitre Street & 1 Mitre Square London EC3	10/00371/FULMAJ	Demolition of existing building on the site and construction of two basements and a ground plus 18 storey office (Use Class B1) building, with retail (Use Classes A1/A3) at ground floor level, alterations to vehicular and pedestrian accesses into the site, the provision of a vehicular servicing access off Creechurch Lane and hard and soft landscaping and other incidental and enabling works associated with the development (39,340sq.m).	Consented

Address	*Application number*	*Description*	*Status (as of September 2015)*
100 Bishopsgate	11/00332/FULEIA	Erection of three buildings to comprise office (B1), retail (A1-A4), library (D1) and Livery Hall (Sui Generis) uses with associated public space and landscaping, disabled car parking, cycle parking, servicing and plant.	Consented
60-70 St Mary Axe	08/00739/FULEIA	Demolition of all existing buildings and replacement with an office building (90m high) with one retail unit at ground floor level with associated landscaping and public realm enhancement works at street level. Provision of servicing from Goring Street (total area 39,166 sq.m. GEA).	Consented
52-54 Lime Street	12/00870/FULEIA	Demolition of the existing buildings and erection of 2 basement levels and ground plus 38 storey tower comprising office (Class B1) use [58,196sq.m GEA] and retail (Class A1/A3) uses [1,072sq.m GEA] with ancillary access, servicing and landscaping. Total area 59,268sq.m GEA.	Under Construction
120 Fenchurch Street	11/00854/FULEIA	Demolition of existing structures on the site and redevelopment to provide a mixed use building of 15 storeys, plus mezzanine, lower ground, two basements and a publicly accessible roof garden, to provide Class B1 office use and Class A retail uses including a restaurant at 14th floor level, together with associated public space and landscaping, motorcycle, car and bicycle parking, servicing and plant accommodation (62,643sq.m).	Under Construction
Sugar Quay	12/01104/FULMAJ	Demolition of the existing building and construction of a new building of basement, ground and part 9, part 11 storeys plus plant comprising 165 residential units with associated residential facilities and 658sq.m. of retail / cafe and restaurant (A1-A4) use at ground floor, creation of vehicular access point from Lower Thames Street, works of hard and soft landscaping and ancillary works (total area 26,030sq.m. GEA).	Consented
Seal House	08/01044/FULMAJ	Erection of a single building incorporating 18,339sq.m (GEA) of B1 office uses, 118sq.m (GEA) of A1/A2/A3/A4 retail uses and demolition of elevated pedestrian crossing together with associated parking, servicing and plant (11 storeys 50.65m AOD).	Consented
33 King William Street	11/00933/FULMAJ	Demolition of the existing buildings and redevelopment to provide a new office building at basement, lower ground, ground and nine upper floors plus roof plant (29,603.6sq.m). Retail (Class A1, A2, A3 or A4) and/or offices (Class B1) uses at ground and lower ground floor levels (751.5sq.m GEA). Discontinuance and removal of the City Walkway to the southern boundary of 33 King William Street on the north side of Upper Thames Street and the bridge over Upper Thames Street.	Consented
11-19 Monument Street	13/00049/FULMAJ	Demolition of existing buildings and erection of a building to comprise office (class B1) and retail (class A1/A3) floorspace with associated cycle parking, servicing, storage and plant. Total area 13,069sq.m GEA.	Consented

Address	*Application number*	*Description*	*Status (as of September 2015)*
78-86 Fenchurch Street	08/00824/FULMAJ	Demolition of existing buildings and redevelopment of a building ranging from 9 to 15 storeys (plus ground and mezzanine floors) to comprise retail (A1 - A3), office (B1) and ancillary space, including 14 car parking spaces, 49 motorcycle spaces and 137 bicycle spaces, with vehicle access from Carlisle Avenue (Total floorspace: 12,831.5 m^2).	Consented
CitizenM Tower Hill Hotel	PA/11/00163	Erection of a 9-storey building with basement, comprising a 370-room hotel (Use Class C1) with associated ancillary hotel facilities including cafe (Use Class A3), bar (Use Class A4) and meeting rooms (Use Class B1) with plant and storage at basement and roof level.	Under Construction
1 Angel Court	10/00889/FULMAJ	Redevelopment of 33 Throgmorton Street and 1a-1d Angel Court and extensive refurbishment of the 1 Angel Court for office (B1) and retail (A1, A2, A3) and minor alterations to 41 Lothbury. Total area 43,823sq.m.	Under Construction
40 Leadenhall	13/01004/FULEIA	Partial demolition and works of refurbishment and reinstatement to 19-21 Billiter Street; demolition of all other buildings on the site; redevelopment to provide a new building comprising two basement levels and ground plus part 10, 14 and 34 storeys plus plant (total height 170m AOD) containing offices (B1) and flexible retail/financial and professional services/cafe and restaurant uses (A1/A2/A3) at ground floor level; food and drink (A3/A4) uses at levels 13 and 14; change of use at ground and first floor of 19-21 Billiter Street to retail/cafe and restaurant/bar use (A1/A3/A4); the provision of hard and soft landscaping; alterations to Fenchurch Buildings and other incidental works. Total area 125,699sq.m GIA.	Consented
10 Trinity Square	11/00317/FULMAJ	Alteration, part demolition, extension and change of use from offices (Class B1) to provide a 121 room hotel (Class C1) (31,281sq.m GEA), 41 residential apartments (Class C3) and ancillary facilities (11,582sq.m GEA); excavation under Seething Lane Garden to create basements to accommodate function room, plant, parking and servicing arrangements; replacement of Seething Lane Garden with an improved area of public open space together with the construction of two pavilions to provide access to basement levels; and other works incidental to the proposals.	Under Construction
5 Broadgate, EC2M 2QS	10/00904/FULEIA	Demolition of 4 and 6 Broadgate and redevelopment to provide a building of two basements, ground, mezzanine and 12 storeys plus roof top plant (maximum height 83.5m AOD) for B1 commercial office purposes (108,213sq m GEA); the creation of a new pedestrian route from Broadgate Circle to Sun Street Passage; works of hard and soft landscaping to Finsbury Avenue Square, Broadgate Circle, Sun Street and Sun Street Passage; the provision of a revised access on Broad Lane; the provision of car, cycle and motorcycle parking in the basement; works to the exposed flank wall of 8-10 Broadgate; the creation of a new pedestrian route through the base of 3 Broadgate and the provision of plant and other works ancillary to the main building.	Under Construction

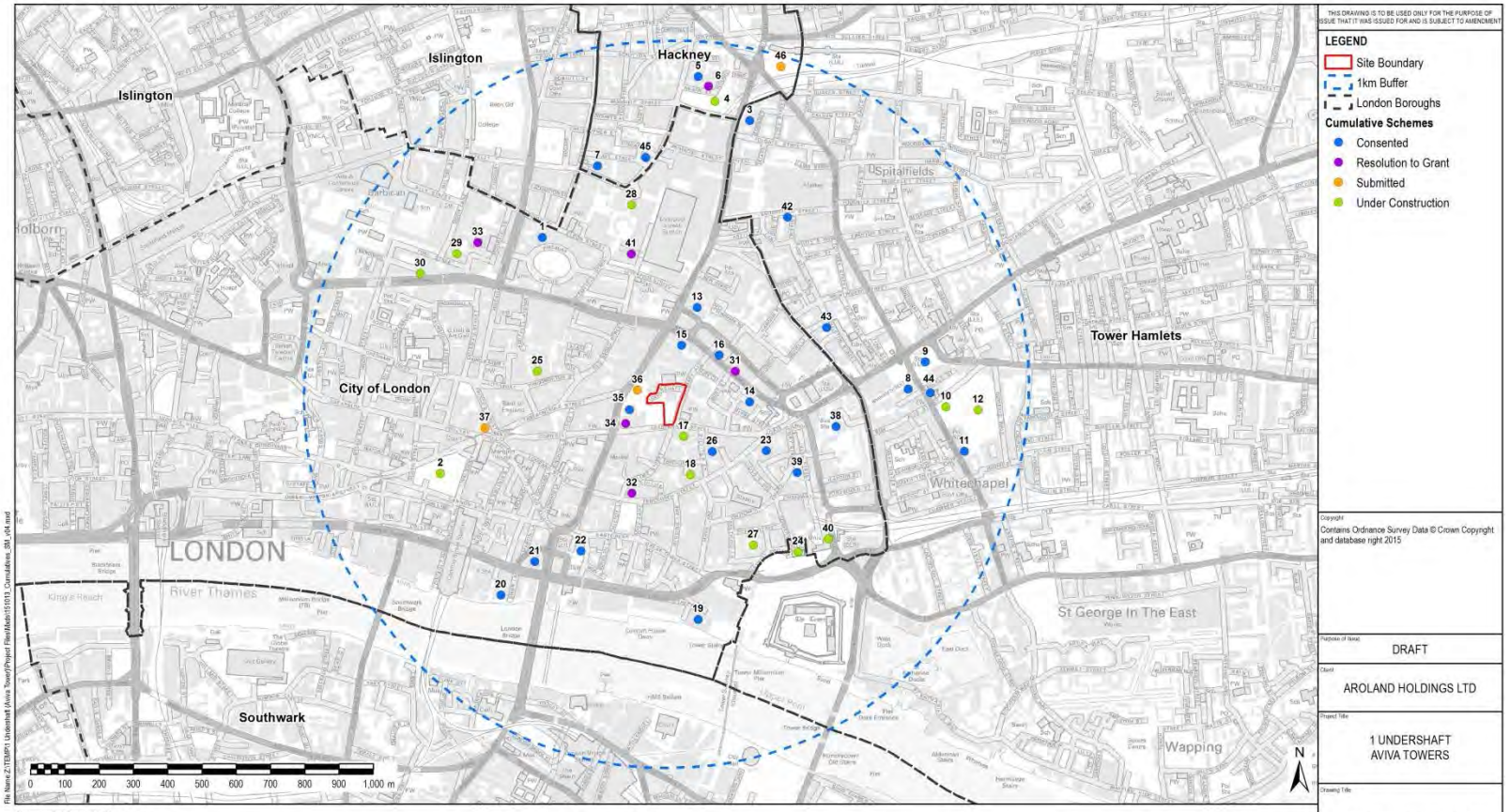
Address	*Application number*	*Description*	*Status (as of September 2015)*
Fore Street Telephone Exchange, Moor Lane & Retail Unit At 72 Fore Street EC2Y 5EJ	07/00092/FULL	Demolition of existing Telephone Exchange Building and adjacent retail unit at 72 Fore Street and redevelopment to provide an office-led development (B1) with a gymnasium/health and fitness centre (D2), retained telecommunications facility, consolidated electricity substation and associated plant, servicing, car and motorcycle parking and storage space for bicycles (31,838sq.m, 13 storeys).	Under Construction
London Wall Place, EC2	10/00832/FULEIA	Demolition of existing buildings and structures and erection of two buildings comprising an 18 storey west building and 14 storey east building providing 66,839sq.m of office (Class B1) floorspace and 2,075 sq.m of retail floorspace (Classes A1/A2/A3). Alterations to City Highwalk at Willoughby Highwalk, removal, realignment and reinstatement of Bassishaw Highwalk across London Wall, alterations to Moorfields Highwalk over Fore Street Avenue, removal, realignment and reinstatement of Alban Highwalk between Wallside/The Postern and Alban Gate and removal of Alban Gate Rotunda at London Wall and Alban Gate. Removal of stair from St Alphage podium level to St Alphage Garden and Salters Garden. Hard and soft landscaping and necessary enabling works, including alterations to and within the public highway.	Under Construction
Bevis Mark House	14/00433/FULMAJ	The demolition of the existing buildings and construction of 2 basement levels and ground plus 16 storey building (89m AOD) comprising office (Class B1) use [35,658sq.m GEA] and retail (Class A1/A3) uses [758sq.m GEA] with associated servicing and plant facilities. Total area 36,416sq.m GEA.	Resolution to grant
130 Fenchurch Street London EC3M 5DJ	14/00496/FULMAJ	Demolition of the existing building and erection of a new building of two basements, ground and 17 upper storeys comprising office (Class B1) use (40,502sq.m GEA) and flexible retail (Class A1/A3) floorspace (558sq.m GEA) and associated cycle parking, servicing, storage and plant. Total area 41,060sq.m GEA.	Resolution to grant
21 Moorfields	14/01179/FULEIA	Demolition of existing building and structures to existing ground slab level and construction of a mixed use development above and around the new Crossrail Station entrance to provide office (Class B1) space (64,683sqm GEA), retail (Class A1/A3/A4) space (1,156sqm GEA), a replacement City walkway, a new public square, cycle parking, servicing, storage, plant, landscaping and associated works. Total 65,839sqm GEA.	Resolution to grant
6-8 Bishopsgate	15/00443/FULMAJ	Demolition of existing buildings and redevelopment to provide a new building comprising lower ground and basement levels (including part basement mezzanine), ground and mezzanine levels plus part 8, part 20 and part 40 storeys plus plant [185.1m AOD to provide office (Class B1) use [70,053sq.m GEA], flexible shop/cafe and restaurant (Class A1/ A3) uses [418sq.m GEA] at part ground floor and mezzanine levels and flexible shop/cafe/restaurant/office (A1/ A3/B1) uses [235sq.m GEA] at part ground floor and mezzanine levels; and a publicly accessible roof top pavilion (sui generis) [795sq.m GEA] at level 40; the provision of hard and soft landscaping. [TOTAL 71,501sq.m GEA]	Resolution to grant

Address	*Application number*	*Description*	*Status (as of September 2015)*
22 - 24 Bishopsgate, 38 Bishopsgate (Crosby Court) & 4 Crosby Square	06/01123/FULEIA	Demolition and redevelopment to provide a building arranged on three basement floors, ground and 62 upper floors comprising floorspace for use within Classes B1 (office) and A (retail) of the Use Classes Order; the creation of new public realm and pedestrian routes; the provision of ancillary servicing and other works incidental to the development (149,834sq.m).	Consented* **Although consented, it is understood that this permission will not be fully implemented and a revised scheme has been submitted.(below)*
22 Bishopsgate	15/00764/FULEIA	Construction of a building arranged on three basement floors, ground and 61 upper floors plus mezzanines and plant comprising floorspace for use within Classes A and B1 of the Use Classes Order and a publicly accessible viewing gallery and facilities (Sui Generis); hard and soft landscaping works; the provision of ancillary servicing and other works incidental to the development. (200,527sq.m GEA)	Submitted
Bank Station Capacity Upgrade	TWAO	The works include a new southbound running tunnel to carry a diversion of the Northern Line together with a new passenger platform at Bank Station to serve the diverted line. The Order also authorises cross passages from the proposed new platform to the existing Northern Line southbound platform (which will become a new underground passenger concourse serving the Northern Line) as well as other works and conveniences to improve passenger access between the Northern Line, Central Line and Docklands Light Railway including new step free passenger access at street level within a proposed new station entrance in Cannon Street.	Submitted
15/16 Minories and 62 Aldgate High Street	13/01055/FULMAJ	Demolition of 15 Minories and 62 Aldgate High Street and redevelopment to provide a Class B1 office building with Class A1 retail (18,537sq.m). Extension and recladding of 16 Minories and change of use from offices (Class B1) to a hotel (Class C1), Class A3 restaurant and Class D1 (health)/ Class D2 (community) use (17,367sq.m.). Erection of new residential building (Class C3) providing 87 units (7829sq.m.). Re-landscaping of open space and public realm improvements.	Consented
Emperor House, Bine Street and Roman Wall House, Crutched Friars	13/00166/FULMAJ	Demolition of existing buildings and redevelopment of the site to provide an office (Class B1) and retail (Class A1/A3/A4) building comprising basement, lower ground, ground and ten upper floors, together with associated works. (25,439sq.m GEA).	Consented
100 Minories	12/00263/FULMAJ	Demolition of the existing building on site and erection of a hotel (Class C1 use) consisting of basement levels, ground and eight upper floors together with ancillary restaurant, bar, retail and tourist office facilities. (Total floorspace 18,884sq.m GEA).	Under Construction

Address	*Application number*	*Description*	*Status (as of September 2015)*
100 Liverpool Street	14/01285/FULEIA	Refurbishment and extension of the existing building including retention of building's structural frame and construction of new facade and the provision of three additional floors and rooftop plant to provide commercial office (B1) accommodation and flexible commercial floorspace comprising additional office (B1), retail (A1/A2/A3), and leisure (D2) uses at lower ground, ground and first floor levels and flexible office (B1)/restaurant (A3) use at 9th floor level; provision of car and cycle parking; hard and soft landscaping; alterations to facilities associated with the bus station; and the provision of other works ancillary to the main building. (Total 68,303sq.m GEA).	Resolution to Grant
13-14 Appold Street	2015/1685	Demolition of existing building and erection of a 45 storey mixed use office (Use Class B1) and business hotel (Use Class C1) with ancillary retail / restaurant use (A1/A3) at ground and lower ground and ancillary servicing and plant. The application is accompanied by an Environmental Statement pursuant to the Town and Country Planning (Environmental Impact Assessment) Regulations 2011.	Consented
The Goodsyard, Bishopsgate (LBTH & LBH)	PA/14/2011 & 2014/2425	An OUTLINE application for the comprehensive mixed use redevelopment of the site comprising: Residential (Class C3) comprising up to 1,356 residential units; Business Use (Class B1) – up to 65,859 sqm (GIA); Retail, financial and professional services, restaurants and cafes and hot food takeaways (Class A1, A2, A3 and A5) – up to 17,499 sqm (GIA), of which only 2,184 sqm (GIA) can be used as Class A5; Non-residential Institutions (Class D1) up to 495 sqm (GIA); Assembly and Leisure (Class D2) – up to 661 sqm (GIA); Public conveniences (sui generis) – up to 36 sqm (GIA); Ancillary and plant space – up to 30,896 sqm (GIA); Basement – up to 8,629 sqm (GIA); Formation of new pedestrian and vehicular access and means of access and circulation within the site; and Provision of 22,642 sqm of new public open space and landscaping.	Submitted

Further to the above list, there may be additional schemes outside of the 1km distance that shall be considered in connection with specific environmental topics, e.g. the Transport Assessment and Townscape, Heritage and Visual Impact Assessment. Townscape, Heritage and Visual Impact Assessment effects are potentially more extensive than the majority of the technical aspects covered within Volume I of the ES. Justification of the reasons behind including other schemes within the aforementioned studies will be provided in each technical ES chapter.

Figure 4: Location of the Cumulative Schemes in relation to the Application Site



Cumulative Schemes

1 - River Plate House
2 - Bloomberg Place
3 - Blossom Street
4 - Principal Place
5 - The Stage, Shoreditch
6 - The Stage - Electricity Sub Station
7 - 5-29 Sun Street, 1-17 Crown Place 8-16 Earl Street and 54 Wilson Street London EC2M 2PS
8 - Former Beagle House Now Known As Maersk House, Braham Street, London E1
9 - Aldgate Place Land Bounded By Whitechapel High Street, Leman Street, Buckle Street & Commercial Rd, London E1
10 - Goodman's Fields – NW Quadrant
11 - Goodman's Fields – SW Quadrant and 75 Leman Street
12 - Goodman's Fields – SW, SE and NE Quadrant
13 - 1 Heron Plaza
14 - Mitre Square, International House, Duke's Place, 11 Mitre Street & 1 Mitre Square London EC3
15 - 100 Bishopsgate
16 - 60-70 St Mary Axe
17 - 52-54 Lime Street
18 - 120 Fenchurch Street
19 - Sugar Quay
20 - Seal House
21 - 33 King William Street
22 - 11-19 Monument Street
23 - 78-86 Fenchurch Street
24 - CitizenM Tower Hill Hotel
25 - 1 Angel Court
26 - 40 Leadenhall
27 - 10 Trinity Square
28 - 5 Broadgate
29 - Fore Street Telephone Exchange, Moor Lane & Retail Unit At 72 Fore Street EC2Y 5EJ
30 - London Wall Place, EC2
31 - Bevis Mark House
32 - 130 Fenchurch Street, London, EC3M 5DJ
33 - 21 Moorfields
34 - 6-8 Bishopsgate
35 - 22 - 24 Bishopsgate, 38 Bishopsgate (Crosby Court) & 4 Crosby Square
36 - 22 Bishopsgate
37 - Bank Station Capacity Upgrade
38 - 15/16 Minories and 62 Aldgate High Street
39 - Emperor House, Bine Street and Roman Wall House, Crutched Friars
40 - 100 Minories
41 - 100 Liverpool Street
42 - Fruit and Wool Exchange
43 - 3-11 Goulson Street
44 - 15-17 Leman Street
45 - 13-14 Appold Street
46 - The Goodsyard Bishopsgate

Significance Criteria

For each technical chapter, the significance of effects will be evaluated with reference to definitive standards, accepted criteria and legislation where available. Where it has not been possible to quantify effects, qualitative assessments will be carried out, based on expert opinion and professional judgement. Where uncertainty exists, this will be noted in the relevant chapter of the ES.

Specific significance criteria for each technical discipline will be developed, giving due regard to the following:

- Extent and magnitude of the effect;
- Effect duration (whether short, medium or long-term);
- Effect nature (whether direct, indirect, reversible or irreversible);
- Whether the effect occurs in isolation, is cumulative or interactive;
- Performance against any relevant environmental quality standards;
- Sensitivity of the receptor; and
- Compatibility with environmental policies.

In order to provide a consistent approach across the different technical disciplines addressed within the ES, the following terminology will be used throughout the ES to define residual effects (i.e. the effect post the application of any required additional mitigation measures):

- Adverse – Detrimental or negative effects to an environmental resource or receptor; or
- Negligible – Imperceptible effects to an environmental resource or receptor; or
- Beneficial – Advantageous or positive effect to an environmental resource or receptor.

Where adverse or beneficial effects are identified, these will be assessed against the following scale:

- Minor; or
- Moderate; or
- Major.

In general, residual effects found to be ‘moderate’ or ‘major’ are deemed to be ‘significant’. Effects found to be ‘minor’ are considered to be ‘not significant’, although they may be a matter of local concern. ‘Negligible’ effects are considered to be ‘not significant’ and not a matter of local concern. Each technical chapter of the ES will provide further explanation and definition on the scale of effect significance, i.e. minor through to major. Each technical chapter of the ES will provide further explanation and definition on the scale of significance – i.e. minor through to major.

Mitigation measures will then be identified to either eliminate or reduce adverse effects. These will be incorporated into either the design of the Proposed Development; construction commitments or operational or managerial standards/procedures.

Alternatives Assessment

The EIA process provides an opportunity to consider alternative development options with their respective environmental effects before a final decision is taken on the design. In accordance with the EIA Regulations and statutory guidance, the ES will describe those alternatives that were considered by the Applicant, project team and architects, including:

- ‘Do nothing scenario’ – the consequences of no redevelopment taking place on the site;
- ‘Alternative designs’ – the ES will summarise the evolution of the design of the Proposed Development; the modifications which have taken place to date and the environmental considerations which have led to those modifications. A summary of the main alternatives considered, such as

alternative use combinations, floor heights, massing, and materials used will be presented together with a justification for the final design.

Regarding the consideration of 'alternative sites', the site is considered an appropriate and suitable site for the construction of an office scheme. The Proposed Development has therefore been designed as a direct response to the specific site's potential and no alternative sites have been considered for the Proposed Development.

Demolition and Construction

The ES will provide details of the proposed demolition and construction programme together with specific construction activities and methods, and their anticipated duration. Information will be provided on, but not limited to site preparation, demolition and construction logistics, including: site access and egress; materials and waste management; land or soil remediation; welfare facilities; and working hours.

Estimates of demolition volumes and the quantities of materials to be used throughout the construction phase will be considered, and an estimate of the peak periods of daily heavy goods vehicle (HGV) movements will be provided.

The ES will define and assess the potential effects of a reasonable worst-case scenario. The peak period or level of activity will be assessed in terms of traffic, noise and air quality effects. The peak period will be defined on the basis of the maximum number of HGV movements and an indication of the plant and equipment location on site in relation to the excavation and construction boundary.

The ES will present an outline of the Construction Environmental Management Plan (CEMP). The mitigation measures identified as a result of the site preparation demolition, excavation and construction assessment will be presented within the ES for future inclusion within a CEMP. It is likely that specific mitigation measures will be defined to reduce effects specifically on or arising from:

- Site preparation, demolition, excavation and construction traffic and workforce presence on site;
- Working close to neighbouring boundaries;
- Site access and egress (including mitigation for any loss of public right of way and road closures);
- Noise and vibration;
- Soil removal and land remediation;
- Water usage and site drainage;
- Energy usage and monitoring;
- Emission of dust and other pollutants; and
- Waste generation, management and disposal.

The mitigation measures and outline CEMP will take account of the requirements of the CoL's Code of Practice for Deconstruction and Construction Sites (2013) and the London Councils' guidance on 'The Control of Dust and Emissions from Construction and Demolition' (2006).

Socio-economics

The assessment will consider the socio-economic effects likely to arise from the Proposed Development, during both the construction and operational phases.

Baseline Context

The assessment will include a review the relevant policy at the local (CoL), regional (Mayor of London, GLA) and national levels to identify the key issues of relevance to the Proposed Development.

A baseline assessment will be undertaken, using a range of sources to provide a description of the socio-economic conditions within the local area and at borough level including population, housing employment and economy. This will be done using established statistical sources such as:

- 2001 and 2011 Census Data;

- Business Register and Employment Survey (BRES) (2012);
- Indices of Multiple Deprivation (IMD) (2010);
- Claimant Count Data (2015); and
- Office of National Statistics Labour Force and Neighbourhood Statistics (2014), and Annual Population Survey (2014).

Potential Impacts and Scope of Assessment

The Proposed Development is expected to generate several socio-economic effects, some of which would be temporary, whilst others would be long-term and permanent. The following effects will be considered in the assessment:

- Role of the Proposed Development in the generation of direct, indirect and induced employment opportunities at the local and regional level during both the construction and operational phases, including taking account of existing employment on-site; and
- Provision of public amenity space.

A cumulative effects assessment will assess potential combined socio-economic effects of the Proposed Development and the other key reasonably foreseeable developments (under application, with extant planning permission or under construction).

The methodology for the assessment of socio-economic effects will be made with reference to the standard EIA significance criteria terminology, in terms of the likely nature, scale, permanence and significance of effects.

Policy thresholds and best practice are used to assess the significance of the effects. In the absence of specific guidance on assigning significance, professional judgement is used to assess the impact of the Proposed Development on the social and economic baseline. The assessment will aim to be objective and quantify impacts and their effects as far as possible; however some impacts can only be evaluated on a qualitative basis.

Effects will be assessed on the basis of:

- Magnitude of change - this entails consideration of the absolute number of people or businesses affected and the size of area in which impacts will be experienced;
- Scale of the impact - this entails consideration of the relative magnitude of each effect in its relevant context (for example, impacts on local employment will be considered in the context of the overall size of the local labour market); and
- Scope for adjustment or mitigation - the assessment will be concerned in part with economies. These adjust themselves continually to changes in supply and demand, and the scope for the changes brought about by the Proposed Development to be accommodated by market adjustment will therefore be a criterion in assessing significance.

Transportation and Access

The Transport Chapter of the ES will assess the effects of the Proposed Development on the transport network in the surrounding area.

Baseline Context

The Chapter will review relevant planning policy documents at a national, regional and local level in respect of the Proposed Development. This will include the National Planning Policy Framework, the Mayor's Transport Strategy, the London Plan and the City of London Local Plan.

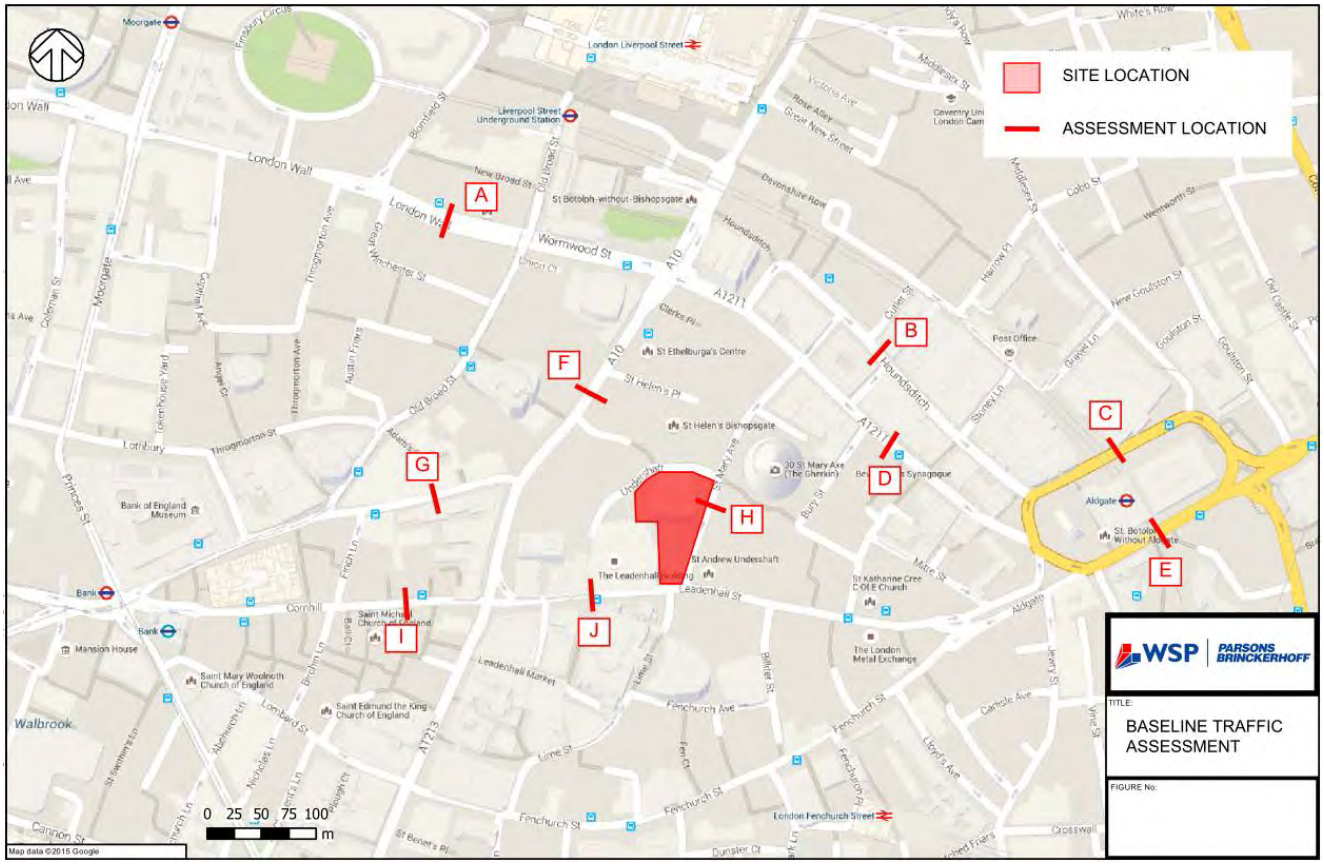
A full review of the baseline conditions on the surrounding pedestrian, highway and public transport networks will be undertaken, including a review of the existing levels of connectivity of the site to determine the baseline from which the net increase in trips as a result of the Proposed Development will be assessed.

Baseline traffic flows (AADT and AAWT) will be determined to inform Air Quality and Noise assessments at the locations summarised within Table and illustrated within Figure :

Table 3: Baseline Traffic Assessment Locations

Ref.	*Location*	
A	London Wall	between Blomfield Street and Old Broad Street
B	Houndsditch	between Cutler Street and Goring Street
C	St Botolph Street	between Houndsditch and Middlesex Street
D	Camomile Street	between Bury Street and Aldgate Gyratory
E	Aldgate High Street	between Minories and Mansell Street
F	Bishopsgate	between Great St Helen's and St Helens Place
G	Threadneedle Street	between Finch Lane and Bishopsgate
H	St Mary Axe	between Undershaft and Bury Court
I	Cornhill	between Finch Lane and Bishopsgate
J	Leadenhall Street	between Whittington Avenue and Lime Street

Figure 5: Baseline Traffic Assessment Locations

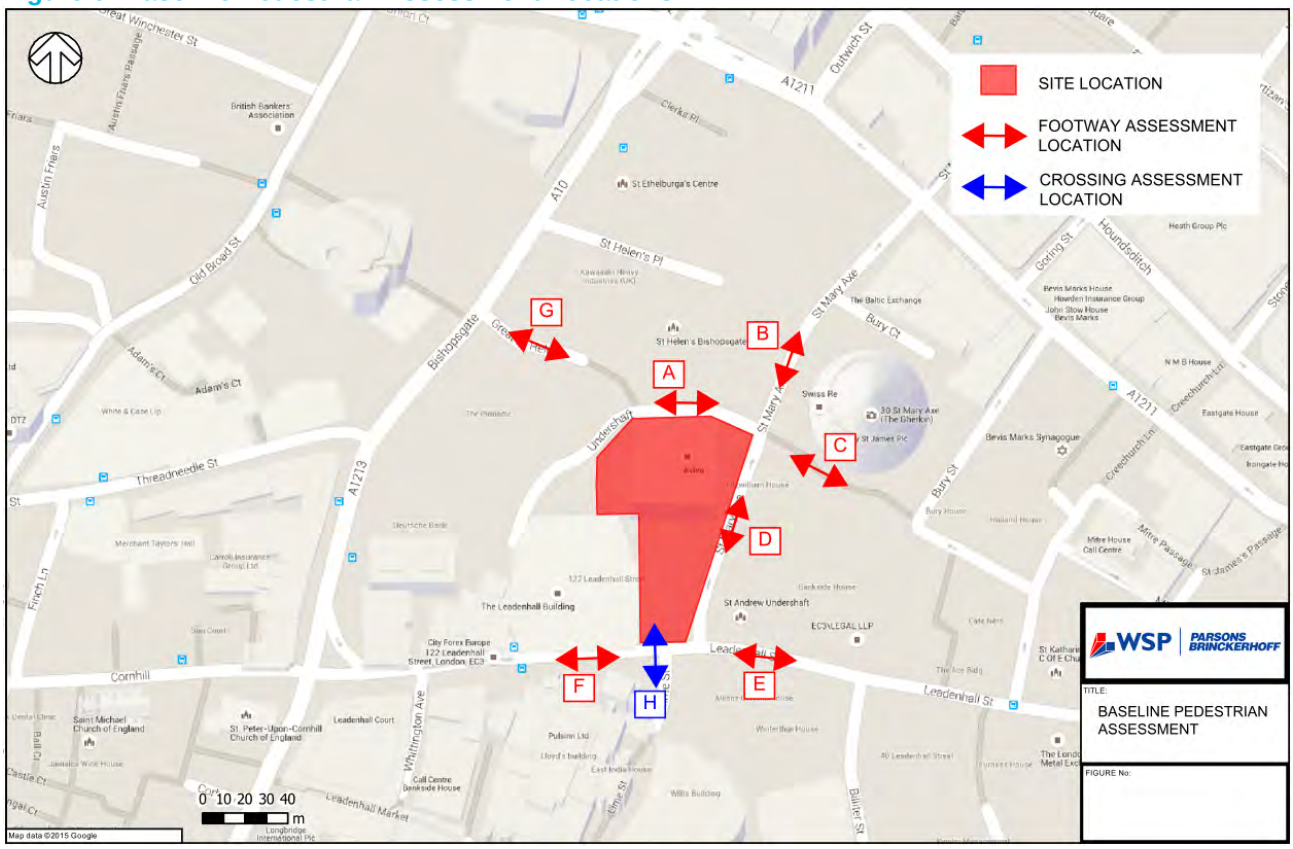


Baseline pedestrian flows will inform comfort analysis at key pedestrian footways and crossings in close proximity to the site, as summarised within Table and on Figure .

Table 4: Baseline Pedestrian Assessment Locations

Ref.	*Location*		*Footway / Crossing*
A	Undershaft	West of St Mary Axe	North and south footways and footway north of the access ramp
B	St Mary Axe	North of Undershaft (adjacent to 30 St Mary Axe, The "Gherkin")	West and east footways
C	30 St Mary Axe	Footway between St Mary Axe and Bury Street (South of The Gherkin)	Footway
D	St Mary Axe	South of Undershaft	West and east footways
E	Leadenhall Street	East of St Mary Axe	North footway (South footway currently closed as part of 52-54 Lime Street "Scalpel" construction)
F	Leadenhall Street	West of Lime Street and east of Bishopsgate	North and south footways
G	Great St Helen's	East of Bishopsgate	North and south footways
H	Leadenhall Street	West of Lime Street	Signalised pedestrian crossing

Figure 6: Baseline Pedestrian Assessment Locations



The site has excellent public transport connectivity with a Public Transport Access Level (PTAL) of 6b, the highest score available, and access to a range of services from various Underground and rail stations and

bus stops. The PTAL report for the site will be used to identify the provision of public transport services near to the site and the following data sources will be used to identify existing passenger volumes in relation to capacity:

- TfL Underground network Rolling Origin Designation Survey (RODS) data;
- TfL DLR network Rolling Origin Designation Survey (RODS) data; and
- Department for Transport (DfT) Rail statistics – passenger volumes into Central London.

Potential Impacts and Scope of the Assessment

The key transportation issues are considered to be:

- Policy compliance;
- Safe access to the site by vehicles, cyclists and pedestrians and interaction with the surrounding highway and transport networks;
- Provision of on-site cycle parking and car parking (disabled parking only) in line with policy;
- Providing a servicing delivery and waste collection strategy to accommodate the needs of the Proposed Development with limited effect on the highways and pedestrian networks;
- Establishing the volume and distribution of traffic and trips associated with cumulative schemes near to the site;
- Identification of the number of additional trips generated by the development during peak periods in actual terms and relative to the existing building, and the distribution of these trips onto the transport network;
- Quantifying the effect of the development proposals on pedestrian, cyclist and public transport infrastructure;
- Consideration of the design of pedestrian routes through the site and accommodating future increases in footfall;
- Construction traffic access, routing and volumes; and
- Mitigation measures and proposals for encouraging sustainable travel including the preparation of a Framework Travel Plan.

The Transport Chapter will assess the transport effect of the Proposed Development during the construction and operational phases. Cumulative effects will be assessed as a result of external developments along with residual effects from any proposed mitigation measures. The transport effects of the Proposed Development will be related to the baseline which includes the Consented Development. The assessment will therefore establish the net effect of the Proposed Development on the transport network.

The data and analysis within the Transport Chapter will be based upon the Transport Assessment which will also be submitted as part of the planning application. The proposed scope of assessments for inclusion within the Transport Assessment will be driven by the delivery of the key issues outlined above. A separate Transport Assessment Scoping Report will be prepared and issued to TfL and CoL for agreement.

The Proposed Development is referable to the Greater London Authority (GLA) and the Transport Assessment will be prepared in accordance with TfL's Transport Assessment Best Practice Guidance document (April 2010) as well as National Planning Practice Guidance for Transport Assessments and specific CoL requirements. The assessment will demonstrate how the development accords with relevant policies within the London Plan and CoL Local Plan.

Relevant committed developments located within the area surrounding the site will be considered as part of the Future Baseline scenario. The specific committed developments to be included within the assessment will be identified as part of the scoping process.

The IEMA's 'Guidelines for The Environmental Assessment of Road Traffic (1993)' identifies that assessments should consider the effect of the Proposed Development in terms of road traffic with regard to

severance, delay, fear and intimidation, amenity, and accidents and safety. It is anticipated that the Proposed Development will be 'car free' (disabled parking only) and also implement off-site delivery consolidation, thereby reducing the traffic generation associated with the development. This will be quantified within the assessment and it is therefore proposed to exclude traffic assessments from the assessment.

Traffic flows will however be provided for the purposes of Air Quality and Noise assessments. In line with a long standing trend of vehicle traffic declining in the City of London no traffic growth will be applied, however the traffic associated with nearby cumulative development schemes will be quantified and included within the assessment.

Given the expected net reduction in traffic, the assessment within the Transport Chapter will analyse the Proposed Development's effects on the pedestrian, cycle and public transport networks with appropriate consideration to delay (journey times), fear and intimidation, amenity and safety. Mitigation measures will be proposed where appropriate. Pedestrian comfort assessments will be undertaken (including for the extensive public realm improvements that are proposed) and additional public transport trips will be related to existing passenger volumes.

Whilst the IEMA guidelines do not specifically apply to the pedestrian and public transport networks they provide some useful criteria that can be applied to other travel modes when determining a study area:

> *"Rule 1: Include highway links where traffic flows will increase by more than 30% (or the number of HGVs will increase by more than 30%);*
>
> *Rule 2: Include any other specifically sensitive areas where traffic flows have increased by 10% or more"* (Paragraph 3.15).

Guidance provided by the IEMA and DfT will be consulted in order to identify significance criteria applicable to the assessment. Where there are no ready thresholds of significance, case interpretation and judgement will be applied based on quantitative data (where available) and knowledge of the local transport network.

Effects on the transport network will be quantified based on the generation and distribution of additional trips to and from the site. The assessment of trip generation of the Proposed Development will be forecast using a first principles approach, widely used for Central London office developments, and also informed by Census data and site survey information.

Consideration of the effect of construction traffic will also be assessed. A Construction Logistics Plan will be prepared for the planning application which will detail likely construction traffic routes and traffic increases.

The Transport Assessment will identify the Proposed Development impacts, the severity of the impacts and any mitigation, as well as describing the transportation benefits that the scheme will deliver. In order to reduce the effects of the Proposed Development a Travel Plan will be prepared in accordance with current DfT and TfL guidance and will include proposed measures to encourage and promote sustainable methods of transport.

Air Quality

Baseline Context

The CoL has declared the entire borough an Air Quality Management Area (AQMA), due to exceedances of the annual mean air quality objective (AQS objective) and hourly AQS objective for nitrogen dioxide (NO2) and the daily mean particulate matter (PM_{10}) AQS objective.

The data sources that will be considered in the baseline conditions review will include CoL air quality monitoring and The Department for Environment, Food and Rural Affairs (Defra) background pollutant maps.

Potential Impacts and Scope of the Assessment

The potential air quality impacts associated with the Proposed Development are considered to be:

- Dust during the demolition and construction phases;
- Vehicle and plant emissions during the demolition and construction phases; and
- On-site energy plant emissions generated by the operation phase.

Whilst the Proposed Development is car free, the proposal includes approximately 6 car park spaces for disabled use only. Therefore, it is considered that impacts associated with vehicle emissions will be of negligible significance and therefore changes in air quality associated with road traffic will not be assessed using detailed modelling as part of this air quality assessment.

It is understood that the proposed land use for this proposal is offices with some commercial use at lower floors. Based on Defra guidance, annual mean AQS objectives should not apply at offices. Therefore, a site suitability assessment has been scoped out from this assessment.

An air quality assessment will be undertaken in order to determine potential air quality impacts associated with the Proposed Development. The scope of the air quality assessment will include:

- A review of available local authority monitoring data;
- The identification of baseline air quality conditions and nearby sensitive receptors;
- Qualitative assessment of potential impacts arising from fugitive emissions of dust during the construction phase;
- Detailed modelling of emissions associated with on-site energy generation during the operational phase; and
- An air quality neutral assessment.

The potential impacts and nuisance from dust emissions generated during the construction phase of the Proposed Development will be qualitatively assessed using an approach based on the Mayor of London, the CoL and the Institute of Air Quality Management (IAQM) guidance for assessing impacts from construction activities (i.e. screening assessment and risk based qualitative assessment approach).

Construction plant emissions are not anticipated to be significant enough to require quantitative assessment. Demolition and construction plant emissions will not be explicitly modelled as these are considered to be a small emission source relative to ambient conditions. However, although small these will still be managed using suitable mitigation measures based on guidance presented in the Mayor of London, CoL code of construction, and the IAQM.

The number of construction vehicles that will be in operation during the construction phase of the Proposed Development will be considered in the context of the guidance available by the IAQM, the Mayor of London and the Highways England, previously Highways Agency. If significant numbers of additional vehicles are anticipated during the construction phase, these temporary impacts would be modelled using ADMS-Roads.

To assess the impact from the operational development background concentrations will be identified from Defra's background maps and any data available from nearby air quality monitoring stations representative of urban background conditions in close proximity to the proposed development site.

A quantitative assessment using dispersion modelling, ADMS 5.1, is proposed to identify the potential impacts of on-site heat and power generation within the Proposed Development. The impact on predicted pollutant concentrations together with background contributions from the dispersion model will be compared with relevant air quality objectives.

Air quality modelling for on-site energy centre emissions will utilise 2014 hourly sequential meteorological data from London Heathrow Airport which is considered to be representative of meteorological conditions at the proposed development site.

Key sensitive receptor locations around the Proposed Development will be selected in order to establish the effect on total NO_2 pollutant concentrations at these locations resulting from on-site heat and power emissions.

The significance of air quality impacts for the construction and operational phases will be described based on the approach outlined in the guidance available from Environmental Protection UK (EPUK), the IAQM and the Greater London Authority. Reference will also be made to relevant planning policy in determining the significance of air quality impacts and to the findings of the air quality neutral assessment as appropriate.

Where necessary, mitigation will be recommended to reduce local air quality impacts. Mitigation measures will be recommended using guidance from the CoL, GLA, EPUK and IAQM.

Air Quality Neutral Assessment

An air quality neutral assessment will be prepared for the Proposed Development as part of the assessment. In April 2014, an Air Quality Neutral Planning Support guidance document was published by the Greater London Authority (GLA). This document provides guidance on how to complete an air quality neutral assessment with regards to emissions from on-site energy generation associated with proposed developments. The Air Quality Neutral Assessment is based on the mass of key emissions from proposed developments (i.e. oxides of nitrogen and particulates) compared against defined benchmarks for a development of this type.

Noise and Vibration

Baseline Context

The primary noise sources currently affecting the site consist of road traffic from the surrounding network. Noise from aircraft fly overs and mechanical service plant from nearby buildings may also influence noise levels in the area. There are a number of noise and vibration sensitive receptors located in close proximity to the site.

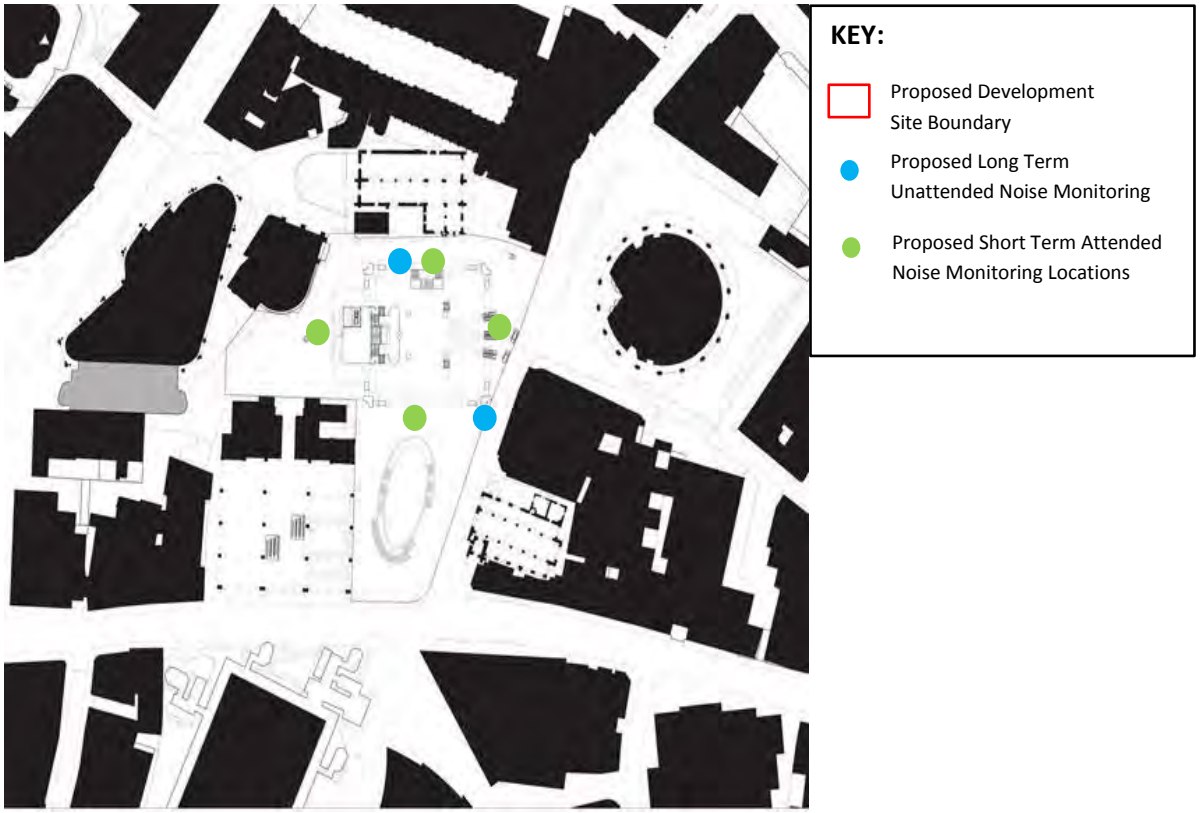
The closest potential source of vibration to the Proposed Development is underground trains from the Central Line which is located approximately 200m away. Due to such distance the vibration levels experienced at the site will be negligible; therefore a baseline vibration survey has been scoped out of this assessment.

A baseline noise survey will be undertaken in line with BS 7445:1991 (Parts 2-3) and 2003 (Part 1).

Baseline noise survey results at the indicative monitoring locations shown in Figure 7 below will be used to:

- Assess the suitability of the site for the intended uses;
- Characterise representative daytime and night-time noise levels at existing noise sensitive receptors for subsequent use in setting appropriate fixed plant noise emission criteria; and
- Establish ambient and maximum noise levels around the site in order to construct a detailed noise map.

Figure 7: Noise and Vibration Monitoring Locations



Potential Impacts and Scope of the Assessment

The current primary noise sources impacting the site and surrounding area broadly consist of road traffic noise from the surrounding road network.

Potential noise and vibration effects may occur at existing residential receptors due to the Proposed Development as a result of:

- Construction and demolition activities;
- Changes in road traffic flows; and
- Fixed plant associated with the Proposed Development.

Reference will be made to the CoL Noise Strategy 2012-16 in terms of noise and vibration. The noise and vibration assessment will take into consideration the existing noise and vibration sources. However as the closest source of vibration (trains on Central Line) is located 200m away from the Proposed Development the impact of external sources of vibration onto the site will be insignificant. On this basis, a vibration assessment has been scoped out.

The suitability of the site for development and noise mitigation measures for internal spaces will be recommended based on guidance noise levels within BS 8233:2014 for commercial uses. Additionally, guidance within the British Council for Offices (BCO) Guide to Specification 2009 will be referenced for office spaces to assist in identifying necessary mitigation measures.

A construction noise and vibration assessment in line with CoL's Code of Practice for Deconstruction and Construction site will be undertaken based on construction activity, plant use and traffic movement information. Noise levels at receptors will be calculated using BS 5228-1:2009 (and update A1 2014 Part 1 Noise) data and procedures. Vibration risks will be assessed based on the types of plant used and their proximity to receptors, using guidance in BS 5228-2:2009 and BS 7385:1990 (Part 1) and 1993 (Part 2). From the results of the construction noise and vibration assessment, preliminary mitigation measures will be advised in line with BS 5228 and CoL planning policy.

Building services noise associated with the operation of the completed development will be assessed in line with BS 4142:2014 and limits recommended such that the noise due to building services does not exceed the typical background noise in term of LA90.

Noise levels associated with construction traffic and future operational traffic flows will be calculated in line with Calculation of Road Traffic Noise (CRTN) issued by the Department of Transport in 1988. Changes in road traffic noise will be assessed with reference to the Design Manual for Roads and Bridges and mitigation measures will be detailed as necessary.

Cumulative effects of combined construction works and operational traffic from nearby consented schemes will be assessed.

The ES chapter will be supported by a technical appendix which will contain reference material and tabulated noise survey results.

Ground Conditions

Baseline Context

Historical mapping indicates that the site has been developed for commercial and residential land use since at least the mid-1750s. The current office building is shown to be present since the late-1960s.

The geology beneath the site comprises superficial deposits of the Langley Silt Member underlain by the Taplow Gravel Formation (River Terrace Member) over bedrock of London Clay (Base of London Clay is approximately 37m deep). The Langely Silt Member is designated as Unproductive Strata by the EA whilst the Taplow Gravel Formation is designated as a Secondary (A) Aquifer. The London Clay is designated as Unproductive Strata. The River Thames is located approximately 500m south of the site. According to the EA website there are three groundwater abstractions within 250m of the site. Without requesting further information from the EA, the use of these abstractions is unknown, however the site is not within a Source Protection Zone, which indicates that groundwater at the site is unlikely to be abstracted for potable water and is therefore of relatively low sensitivity as a resource. The EA website shows that there are no historic or current landfills in the vicinity of the site.

Potential Impacts and Scope of the Assessment

Potential impacts and their effects on this site could be from:

- Potential soil contamination;
- Potential surface water / groundwater contamination;
- Potential unexploded ordnance (UXO); and
- Demolition and construction processes.

The model procedures for the Management of Land Contamination, Contaminated Land Report (CLR) 11, have been developed to provide the technical framework for applying a risk management process when dealing with land affected by contamination. The process involves identifying, making decisions on, and taking appropriate action to deal with land contamination in a way that is consistent with government policies and legislation within the UK. The guidance presented in CLR11 is relevant to the Proposed Development and has been considered in developing the methodology below.

The evaluation will be specific to the environmental site setting, the Proposed Development and likely civil engineering construction elements (i.e. deep piled foundations etc.). The following evaluation methodology will be followed:

- Review of the Legislative and Planning Policy Context;
- Explanation of the Assessment Methodology and Significance Criteria;
- Review of available third party information;
- Collection of up to date environmental information (including an Envirocheck Report);
- An evaluation of the potential for the historical use of the Site to represent a potentially contaminative use and the likelihood of residual contamination being present in the ground or groundwater;
- Description of the baseline conditions to include - Geological Conditions, Made Ground, Hydrogeology, Contamination Potential, Presence of Underground Structures, Unexploded Ordnance and Asbestos;
- The potential for source-pathway-receptor pollutant linkages to exist;
- Assessment of the potential impacts (both demolition and construction phase and operational phase of the Proposed Development); and
- Assessment of residual and cumulative impacts.

The outcome of the above assessment will form part of the EIA report.

Water Resources, Drainage and Flood Risk

Baseline Context

According to the EA's flood zone maps, the site lies within Flood Zone 1. Flood Zone 1 delineates areas identified as at low risk of flooding from fluvial or tidal sources.

Based on a review of the EA maps of flooding from surface water there does not appear to be a significant risk of flooding from surface water. However, according to the CoL Strategic Flood Risk Assessment (SFRA) (2012) the site falls within a Critical Drainage Area (CDA) but not within a Local Flood Risk Zone (LFRZ).

The EA groundwater maps and the British Geological Survey website, indicates that the geology at the site consists of superficial deposits of the Langley Silt Member underlain by the Taplow Gravel Formation (River Terrace Member) over bedrock of London Clay (Base of London Clay is approximately 37m deep). The Langely Silt member is designated as Unproductive Strata by the EA whilst the Taplow Gravel Formation is designated as a Secondary (A) Aquifer. The London Clay is designated as Unproductive Strata.

The River Thames is located approximately 500m south of the site. According to the EA website there are three groundwater abstractions within 250m of the site. Without requesting further information from the EA, the use of these abstractions is unknown, however the site is not within a Source Protection Zone, which

indicates that groundwater at the site is unlikely to be abstracted for potable water and is therefore of relatively low sensitivity as a resource.

Potential Impacts and Scope of the Assessment

The Proposed Development may impact the water environment by:

- Causing pollution both during demolition, construction and operation stage;
- Increase in water demand;
- Increased foul water discharge; and
- Increased on and offsite flood risk etc.

Water Resources, Drainage and Flood Risk ES Chapter

The Water Resources, Drainage and Flood Risk ES chapter will include a review and summary of relevant legislation and national, regional and local planning policy relevant to the water environment.

The assessment methodology and significance criteria will be defined and an assessment of the magnitude of effect against the importance of the receptor will be undertaken to determine the significance of effect. The proposed methodology used to assess the significance of effects on water resources and flood risk has been based on the methodology given in the Department for Transport's document 'The Water Environment Sub-Objective' Transport Analysis Guidance (TAG) TAG Unit A3 - Environmental Impacts, which brings together the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 10 document and the 'Guidance on the Methodology for Multi-Modal Studies (GOMMMS)' document. Whilst this guidance was produced to facilitate the comparison of transport schemes, the definitions provided take into account the sensitivity and vulnerability of the water resource and are therefore applicable to the activities associated with the Proposed Development. Mustow *et al.,* (2005) expanded the GOMMMS methodology in their publication: Practical Methodology for Determining the Significance of Effects on the Water Environment' to make the application of the method more standardised and less open to the subjectivity of the assessor, and it is this method that will be used in this assessment.

A conceptual Site Source Pathway Receptor model will be produced to identify potential water resource receptors. Consultation will be undertaken with the relevant bodies (including the EA and TWUL) to determine the baseline for the water resource receptors, including groundwater and surface water bodies, water supply wastewater and drainage infrastructure. The baseline assessment will determine the importance of the receptor to effects, based on attributes such as water quality or water supply. At the scoping stage the following have been identified as potential water resource receptors: River Thames, sewer network and groundwater.

An assessment of the potential direct and indirect effects of the Proposed Development, for both the demolition and construction and the operational phases of the Proposed Development, will be undertaken. Recommendations will be made for mitigation measures in order to minimise the potential effects of the Proposed Development on water resources and flood risk. Any residual effects will be identified as well as the potential for cumulative effects associated with other developments. The chapter will summarise the findings and recommendations of the FRA.

Wind Microclimate

The Proposed Development would have the potential to influence the ground level wind speed and direction on, and adjacent to, the site. This could affect the associated relative 'comfort' and safety for pedestrians using the site and its surroundings.

Baseline Context

Given the size and geometry of the Proposed Development, in addition to the site's location in relation to surrounding buildings and nearby areas of public realm, it is important to avoid undesirable wind speeds being generated at ground level. Undesirable wind speeds could make some spaces within and around the Proposed Development uncomfortable or unsafe for pedestrian use.

Potential Impacts and Scope of the Assessment

The ES will therefore quantify the potential changes to the local wind environment (both on-Site and within the surrounding area) in terms of pedestrian amenity and public open space and quantify these in relation to their 'usability' for a range of pedestrian activities defined by the Lawson Comfort Criteria.

Scale models (1:300) will be built of the following scenarios:

1. The buildings currently occupying the site and the existing surrounding buildings / area (the baseline);
2. The complete Proposed Development massing occupying the site and the existing surrounding buildings / area; and
3. The Proposed Development's massing occupying the site, and the surrounding buildings / area including the massing of nearby cumulative schemes.

Notably, due to the uncertainty of the 22 Bishopsgate site and its proximity to the 1 Undershaft site, careful consideration will be given to the representation of any building massing represented for the 22 Bishopsgate scheme.

The models will be manufactured and tested in a boundary layer wind tunnel test facility. Mean and peak wind speeds will be measured around the base of the buildings forming the Proposed Development and other surrounding buildings, paths, roads, and areas of open spaces, for all wind directions. These results will be combined with long-term meteorological climate data for the London area.

The results of this analysis will then be benchmarked against the well-established Lawson Comfort Criteria to determine the suitability of the different areas both within and surrounding the site for sitting, standing, entering a building, leisure walking, business walking or crossing the road. The suitability of the conditions both within the site and surrounding the site will be presented and discussed within the ES. Should mitigation measures be required to ensure that wind conditions are suitable for their intended use, the areas requiring mitigation will be identified and mitigation measures will be developed. Where necessary, mitigation measures will be tested through additional rounds of wind tunnel studies. The potential for strong winds to occur will also be quantified.

Through the determination of the suitability for use of the areas surrounding the site (for scenarios 2-3 identified above), a direct comparison can then be made with the baseline / existing off-site conditions where appropriate, and the effect to these surrounding areas assessed, with the significance of effects identified. Where applicable, selected roof terraces will be tested within the wind tunnel in order to determine the suitability of these areas for future residents. Although the assessment of these spaces will be completed for all seasons, the focus will be on the wind microclimate during the summer when these areas are more likely to be frequently used.

The results of all of the above assessments will be presented within the ES Chapter.

Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare

Daylight Sunlight and Overshadowing

Given the scale of the Proposed Development along with its proximity to potentially sensitive receptors, a daylight, sunlight and overshadowing assessment is considered necessary.

In terms of the daylight and sunlight analysis, the scope will focus on the adjoining residential properties where the occupants have a reasonable expectation of daylight and sunlight, as per the Building Research Establishment (BRE) Guidelines. The following residential properties will be considered due to their proximity to the site:

- 22-24 Wormwood Street;
- 20-21 Wormwood Street;
- 6 Creechurch Lane;
- 18-20 Creechurch Lane;

- 16 Creechurch Lane;
- 14 Creechurch Lane;
- 12 Creechurch Lane;
- 10 Creechurch Lane; and
- 2 Creechurch Lane.

In addition to residential properties, the BRE guidelines state that they may also be applied to any existing non-domestic building where the occupants have a reasonable expectation of daylight such as schools, hospitals, hotels and hostels. Therefore the scope of assessment will also include livery halls or churches. We have identified the following properties that are considered as sensitive:

- Drapers Hall;
- 19 Old Broad street (City of London club);
- Parish Church of St Helen Bishopsgate;
- St Andrew Undershaft Church;
- Merchant Taylor's Hall; and
- Gibson Hall, 15 Bishopsgate.

The assessments will be carried out in accordance with the BRE Guidelines 2011 and the British Standard (2008) 8206 part 2. The analysis will be calculated from a three-dimensional (3D) computer model based upon specialist software.

Baseline Context

For the baseline the daylight and sunlight conditions within each of the surrounding residential properties according to the existing site conditions by reference to the VSC, NSL and APSH methods.

With regards to the relevant surrounding amenity space, the sun on ground will be assessed on the 21st March. In addition, transient overshadowing will be mapped for the following key dates in regards to the baseline:

- 21st March (Spring Equinox);
- 21st June (Summer Solstice); and
- 21st December (Winter Solstice).

Light pollution and solar glare are not comparative assessments; the presence of either in the baseline does not justify the occurrence of glare of light intrusion as a result of the Proposed Development. Therefore both of these assessments focus on the potential impacts of the Proposed Development in absolute terms and not against baseline conditions.

Potential Impacts and Scope of the Assessment

Daylight & Sunlight

Both the VSC and NSL assessments will be undertaken following the implementation of the Proposed Development and these will be compared against the baseline conditions.

The sunlight amenity to the surrounding residential receptors will be considered by reference to the APSH method of assessment and compared against the baseline.

Overshadowing

The effects of the Proposed Development on surrounding amenity areas will be considered by reference to the sun on ground and transient overshadowing methods.

The BRE provide criteria for the sun on ground assessment and where the results show compliance the potential effect will be considered to be negligible. Where the effects are beyond the BRE guidelines,

professional judgement will be used to establish whether a potential effect would be either beneficial or adverse and of minor, moderate or major significance.

In regards to transient overshadowing the BRE guidelines provide no criteria other than to establish the time of year and day when shadow will be cast on the surrounding area and in particular on areas of amenity. Professional judgement will be used to establish whether a potential effect would be either beneficial or adverse and of minor, moderate or major significance.

Light Pollution

The Proposed Development consists entirely of commercial use where extensive artificial lighting will be used. However, light levels drop with distance from the source and beyond a set distance (20 metres) the light pollution effects become negligible and therefore need not be considered. None of the residential properties are located within proximity to the proposed commercial space and therefore it is unlikely the Proposed Development will result in adverse effects. In addition, any future external lighting would be designed in accordance with ILE recommendations. As such, it is not considered necessary to include a quantitative assessment of light pollution.

Solar Glare

The façade design includes areas of glazing and/or reflective cladding, therefore, a solar glare assessment is considered necessary. This will be undertaken from a number of viewpoints surrounding the site at pedestrian/vehicle junctions which are sensitive in terms of glare.

Professional judgement will be used to establish whether a potential effect would be either beneficial or adverse and of minor, moderate or major significance.

An assessment will be undertaken to determine the extent of the proposed scheme on existing residential receptors and amenity areas, with the cumulative schemes being developed at the same time.

In addition, those residential cumulative schemes located in close proximity to the site will also be considered as sensitive receptors in regards to daylight and sunlight.

Electronic Interference

Baseline Context

Terrestrial TV signals are transmitted in digital format (Freeview) and the Crystal Palace transmitter provides this service for London. It is located approximately 10.0km to the south of the Proposed Development. Satellite TV signals are provided by both Sky and Freesat and are potentially at risk of disruption. However, Cable TV services are not at risk as they are transmitted via underground cables, so they are not transmitted through the air. The OFCOM database has identified several mobile communication aerials in the vicinity of the Proposed Development. This part of the City of London is densely populated by tall office towers and office blocks (typically 8 storeys), some with flats above. There are also some blocks of residential flats.

Potential Impacts and Scope of the Assessment

The introduction of new structures of significant height and bulk into an environment can cause disruption to both terrestrial and satellite TV reception. This is because these signals use frequencies that travel more or less in straight lines and hence can be blocked by the introduction of new buildings. The only relevant interference mechanism affecting TV signals is attenuation due to buildings physically blocking (and absorbing) the signals and, if they are too weak, the pictures very quickly deteriorate into random ‘blocks’ and then disappear altogether.

There is considered to be no significant risk to radio reception (both analogue and digital) as they use signals at lower frequencies that can bend to a greater extent around obstructions. Combined with an ability to make constructive use of reflected signals, therefore radios are able to operate successfully in urban environments. As a result radio reception will not be considered in this assessment.

It is possible that communication networks such as those used by mobile telephone operators or emergency services could be adversely affected if their aerials are overshadowed by the Proposed Development.

Calculations based on the architectural drawings will indicate how far the terrestrial and satellite TV shadows will fall and what properties will be at risk of losing television reception. Principles of radiowave propagation from transmitting to receiving antennae are used to study the likely significant effect of the Proposed

Development on TV reception in the area surrounding the site. The terrestrial TV shadow (from the Crystal Palace transmitter) will fall to the north and the satellite shadow will fall to the north-west. There will be two main areas of concern. The first is the satellite shadow, which will be about 500m long, as it will fall across some residential buildings, potentially compromising their satellite TV reception. The second is the terrestrial TV shadow, simply because it will be very large and therefore has the potential to degrade terrestrial TV reception. This will be refined once the design of the Proposed Development is frozen.

A site visit will identify and generate an estimate of numbers of properties potentially adversely affected. Existing cable and satellite usage will be noted and assessed. Consideration will be given to any potentially adverse effects to existing mobile telephone systems, wireless networks and emergency services. Mitigating measures will be identified. Consideration will be given to any potential cumulative effects caused by nearby consented schemes.

Archaeology

MOLA (Museum of London Archaeology) will provide the technical input to the EIA in terms of the predicted effect of the Proposed Development on buried heritage assets (archaeological remains). These are parts of the historic environment which are considered to be significant because of their historic, evidential, aesthetic and/or communal interest.

One of the 12 core principles that underpin both plan-making and decision-taking within the National Planning Policy Framework (NPPF) is to 'conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations'. It recognises that heritage assets are an irreplaceable resource, and requires the significance of heritage assets to be considered in the planning process, whether designated or not.

The site is located in the City of London; the entirety of which is considered to be an area of archaeological priority.

The site is situated just to the north-east of the location of the Roman Forum. One previous archaeological observation by the Guildhall Museum in 1964 recorded a thickness of 2-3 feet of layers of gravel (resembling Roman road metalling) overlying the natural brickearth which covered most of the site. Most archaeological investigations in the vicinity of the site have recorded remains from the Roman period. Remains from the prehistoric, early medieval, later medieval period and post-medieval periods have also been recorded.

Potential Impacts and Scope of the Assessment

Where archaeological survival is anticipated, likely significant effects could arise throughout the construction phase from any form of ground disturbance. This might include preliminary demolition, pile probing and obstruction removal, site set up, along with ground excavations for basements, and foundations and works such as new services, levelling and landscaping/planting.

Physical effects upon archaeological remains would all be permanent, whether or not the proposed works are temporary in nature (e.g. ground excavation for temporary services, lighting and hoarding).

Once the Proposed Development has been completed, no further ground disturbance would occur and consequently there would be no additional operational effect upon buried heritage assets. An assessment of operational phase effects will therefore be scoped-out.

The assessment would:

- quantify predicted buried heritage assets that may be affected by the proposed scheme;
- assess any previous impacts which may have affected asset survival; and
- provide an evaluation of asset significance based on statutory designation, or in the absence of designation, professional judgement against values set out in English Heritage Conservation Principles.

Against this 'baseline assessment', MOLA would:

- assess the development impacts and hence the significance of environmental effects arising from the proposals during the construction phase;
- provide recommendations for mitigation that would offset or eliminate any adverse effects; and
- quantify any residual effects (those that might remain after mitigation) and cumulative effects.

The assessment will deal solely with the archaeological implications of the Proposed Development and does not cover built heritage issues except where buried parts of historic fabric are likely to be affected. The Townscape and Visual Effect, and Built Heritage Assessments cover the impact on above ground assets (designated and undesignated historic structures and conservation areas, and historic character, views and setting).

The archaeology assessment will be supported by a fully illustrated technical appendix. This will include a detailed baseline compiled through a broad and standard range of data sources. In order to set the Proposed Development into its full archaeological and historical context, a broad range of sources will be consulted within an appropriate study area around the site. This will include:

- information held at the primary repositories of such information within Greater London; these comprise the London Archaeological Archive and Research Centre (LAARC) and the Greater London Historic Environment Record (HER);
- MOLA's Geographical Information System and archaeological deposit survival archive, published georeferenced historic maps and archaeological publications, along with information on burial grounds;
- Historic England – statutory designations including scheduled monuments and listed buildings;
- the London Society Library – published histories and journals;
- London Metropolitan Archive – historic maps inducing Goad maps, published histories and old photographs;
- historic Ordnance Survey maps from the first edition (1860–70s) to the present day;
- British Geological Survey (BGS) – solid and drift geology digital map; online BGS geological borehole record data;
- available architectural and engineering drawings of the existing and earlier buildings on the site; and
- geotechnical data for the site, where available.

The assessment will include a site visit in order to verify the topography of the site, existing land use and the nature of the existing buildings on the site, and to provide further information on areas of possible past ground disturbance and general historic environment potential.

The effect significance would be determined by comparing the asset 'heritage significance' of the known or likely assets (receptors) potentially affected by the proposals, along with the 'magnitude of change' (effect). Effects may be either adverse (negative) or beneficial (positive) and are defined initially without mitigation.

- Adverse effects are those which detract from the significance of buried heritage assets by truncation or removal of the asset, with a consequent reduction in significance and understanding and appreciation of the asset and its context; and
- Beneficial effects increase the significance of buried heritage assets for example by improved understanding of the asset, understanding and appreciation of the asset and its context, greater dissemination of information or increased public accessibility.

Where information is insufficient to be able to quantify either the asset significance or magnitude of change with any degree of certainty, the effect will be given as 'uncertain'.

An appropriate mitigation strategy will be set out in the EIA with the aim to reduce or offset any adverse effect (i.e. resulting in no significance residual effects). Measures to mitigate effects would normally consist of design adjustments, to allow significant resources to be protected and retained (preservation in situ) or, where this is not feasible, investigation and recording before and during development, with dissemination at an appropriate level (preservation by record).

Townscape, Heritage and Visual Impact Assessment

A full Townscape, Heritage and Visual Impact Assessment (THVIA) will be undertaken by the Professor Robert Tavernor Consultancy ('Tavernor Consultancy', townscape and built heritage consultants) and Cityscape (visualisation consultancy).

The assessment will take into account the existing physical fabric of the area, the character and settings of conservation areas and listed buildings in the vicinity, the appropriateness of the site for the Proposed Development, and the character of the proposed design. The assessment of townscape effects will describe how the Proposed Development will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. The assessment of visual effects will

describe how people may be affected by changes in the content and character of views. The assessment will consider the effects during the construction phase and following completion.

The assessment will include consideration of a number of pre-selected views and assess effects on the townscape character in the area around the Site. This will include locations of particular sensitivity, e.g. those with heritage designations such as conservation areas, World Heritage Sites, listed buildings and their settings.

Baseline Context

The site holds an important location within the City of London. The Proposed Development is a tall building which will be seen in relation to the emerging 'Eastern Cluster' of tall buildings. The Proposed Development will potentially affect the setting of a number of conservation areas and listed buildings in the close and wider area and the Tower of London World Heritage Site.

The existing character and history of the townscape on and around the site will be appraised following site inspections and reviews of historic and architectural accounts of the area and relevant policy designations.

The site is not in a conservation area. However, the St Helen's Place Conservation Area is adjacent to the north of the site. The Bank Conservation Area is close by to the west and the Leadenhall Market Conservation Area is to the south. There are other conservation areas further afield whose setting may also be affected.

There is one existing building on the site, 1 Undershaft; it is the subject of a certificate of immunity from listing designation. There are listed buildings both close to the site and in the wider area that will be seen in relation to the proposals. The closest to the site are:

- 46 Bishopsgate (Grade II), 48 Bishopsgate (Grade II), 52-68 Bishopsgate (Grade II), the Guild Church of St Ethelburga the Virgin (Grade I) and the Church of St Helen (Grade I) to the north;
- 40 St Mary Axe (Grade II) and Holland House (Grade II*) to the north-east;
- The Church of St Andrew Undershaft (Grade I) to the east;
- Lloyd's Building (Grade I) to the south;
- 147 and 148 Leadenhall (Grade II), 139-144 Leadenhall Street (Grade II) and Leadenhall Market (Grade II*) to the south-west; and
- The Royal Bank of Scotland (Grade II), 7 and 9 Bishopsgate (Grade II), Lloyds Bank (Grade II), British Linen Bank (Grade II) and Westminster Bank (Grade I) to the west.

Potential Impacts and Scope of the Assessment

The THVIA will cover two scenarios; demolition and construction and the Completed Development. The change in form, function and massing of the site as a result of the Proposed Development has the potential to change the existing townscape character, the settings of heritage assets and views towards the site. As such the THVIA will address the following effects:

- Temporary visual intrusion during the construction works;
- Effects of the Proposed Development on the setting of conservation areas, listed buildings and the Tower of London World Heritage Site;
- Changes to the character, context and quality of the site and the local townscape of the Proposed Development; and
- Effects of the Proposed Development on local, medium and distant views, both statutorily protected and non-statutorily protected.

The methodology for the assessment will follow the Guidelines for Landscape and Visual Impact Assessment (Third Edition, 2013), produced jointly between the Landscape Institute and the IEMA, adapted for townscape analysis; the London View Management Framework Supplementary Planning Guidance (LVMF SPG) (GLA, March 2012) and The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (March 2015) and Seeing the History in the View (May 2011) both produced by Historic England. The massing and external appearance of the Proposed Development will be assessed in relation to

relevant urban design, tall building and heritage settings guidance, specifically Planning Practice Guidance (PPG) (DCLG, March 2014) and Guidance on Tall Buildings (2007) produced jointly by Historic England and CABE.

A desk-based study will be undertaken which will include a review of planning policies relating to townscape and visual issues, including strategic or locally valued view corridors where appropriate. A 3D model will be created to test the theoretical visibility of the site and inform the visual assessment. Field surveys will be carried out to verify the desk-based work and establish the visual envelope of the site. The CoL will be consulted to agree the views to be assessed. Table 5 provides a draft list of the 71 proposed views.

Table 5: Proposed Views

View No.	*Location*
1	Alexandra Palace: viewing terrace – south-western section [LVMF 1A.1]
2	Alexandra Palace: viewing terrace – approaching from the north-eastern carpark [LVMF 1A.2]
3	Parliament Hill: the summit [LVMF 2A.1]
4	Kenwood: the viewing gazebo – in front of the orientation board [LVMF 3A.1]
5	Primrose Hill: the summit [LVMF 4A.1]
6	Greenwich Park: the General Wolfe statue [LVMF 5A.2]
7	Blackheath Point – near the orientation board [LVMF 6A.1]
8	St. James's Park Footbridge [LVMF 26A.1]
9	Lambeth Bridge Downstream: at the centre of the bridge [LVMF 19A.1]
10	Golden Jubilee/Hungerford Footbridges: downstream – crossing the Westminster bank [LVMF 17B.1]
11	Golden Jubilee/Hungerford Footbridges: downstream – close to the Westminster bank [LVMF 17B.2]
12	Waterloo Bridge: downstream – close to the Westminster bank [LVMF 15B.1]
13	Waterloo Bridge: downstream – at the centre of the bridge [LVMF 15B.2]
13N	Waterloo Bridge: downstream – at the centre of the bridge [LVMF 15B.2] – Night
14	London Bridge: downstream – close to the Southwark bank [LVMF 11B.2]
15	London Bridge: downstream – at the centre of the bridge [LVMF 11B.1]
16.1	The Queen's Walk at City Hall: foot of pathway from Potter's Fields [LVMF 25A.1]
16.2	The Queen's Walk at City Hall – in front of the public terraces [LVMF 25A.2]
16.3	The Queen's Walk at City Hall – close to Tower Bridge [LVMF 25A.3]
17	The South Bank: Gabriel's Wharf viewing platform – centre of north rail [LVMF 16B.1]

18	The South Bank: Gabriel's Wharf viewing platform – centre of north-east rail [LVMF 16B.2]
19S	Tower Bridge: upstream [LVMF 10A.1]
19	Tower Bridge: upstream [LVMF 10A.1]
20	Somerset House Terrace, on the Seaman's steps
21	Tate Modern, viewing gallery (members balcony)
21N	Tate Modern, viewing gallery – Dusk
22	Butler's Wharf
23	Tower of London, the Inner Ward
24	Tower of London, near Scaffold Site
25	Tower of London, Inner wall, east of Devereux Tower
26	Tower of London, Byward Tower Entrance
27	Fleet Street, western corner of junction with Fetter Lane
28	Fleet Street, eastern corner of junction with Fetter Lane
29	Fleet Street, at entrance to Johnson's Court
30	Fleet Street, at entrance to St. Dunstans Court
31	Fleet Street opposite Whitefriars Street
32	Holborn Circus
33	St. Paul's Cathedral Golden Gallery
34	St. Paul's Cathedral Churchyard
35	One New Change, roof terrace
36	Queen Victoria Street, at junction with Watling Street
37	Gresham Street, at junction with Basinghall Street
38	Bank Junction
39	Cornhill, adjacent to Nos. 15-22
40	Gracechurch Street, at junction with Lombard Street, west pavement
41	Geffrye Museum

42	Shoreditch High Street, at junction with Redchurch Street
43	Bunhill Fields, central footpath
44	Honourable Artillery Company, north-west corner
45	Finsbury Square, north-west corner
46	Finsbury Circus, adjacent to Britannic House
47	Whitechapel Road, adjacent to the Royal London Hospital
48	Commercial Road, at junction with Philpot Street
49	Altab Ali Park
50	Leadenhall Street, at junction with Fenchurch Street
51	Monument Viewing Gallery
52	20 Fenchurch Street, the Sky Garden
53	Bishopsgate, adjacent to No.155
54	Bishopsgate, south of junction with Liverpool Street
55	Bishopsgate, at junction with Camomile Street
56	Bishopsgate, south-west junction with Lombard Street
57	North of Devonshire Square
58	St. Helens Place
59	Threadneedle Street, north of junction with Finch Lane
60	Threadneedle Street, adjacent to the British Linen Bank
61	Option B – Mock up: Outside Lloyds entrance on Lime Street looking north
62	Leadenhall Street, at junction with St Mary Axe
63	St Helen's Church, western entrance to churchyard
64	Undershaft
65	Undershaft towards St. Mary Axe
66	St. Mary Axe
Appendix Views	

A1	King Henry VIII's Mound [LVMF 9A.1]
A2	Bridge over the Serpentine – at the centre of the bridge [LVMF 23A.1]
A3	Westminster Pier [LVMF 8A.1]
A4	St. James's Park, at the Victoria Memorial
A5	Garden Bridge, northern end
A6	Garden Bridge, centre
A7	Finsbury Circus Gardens, north of Bowling Green (option a)
A7	Finsbury Circus Gardens, north of Bowling Green (option b)

Cityscape will verify and survey the agreed selection of views (refer to Figure 8, Figure 9 below and Appendix 2 (attached)) and insert accurate representations of the Proposed Development into them, either in outline (wireline) or detail (fully rendered) form, which will be assessed by the Tavernor Consultancy.

Potential effects will be categorised as causing no change, having a negligible effect or having a minor, moderate or major effect. Where negligible, the Proposed Development has been deemed likely to cause little or no change to the view. For effects judged to be minor, moderate or major, the significance of that effect will be further categorised as beneficial or adverse. Beneficial effects are those that contribute to the value of the view and adverse effects are those that detract from the value of the view.

The magnitude of the change to the existing townscape and views as a result of the Proposed Development will take account of factors including the proximity, scale and contribution of the Proposed Development to the character of the view. Where the effect is minor, moderate or major, good design may reduce or remove potential harm or provide enhancement, and design quality may be the main consideration in determining the balance of harm and benefit.

Figure 8: Localtion of Proposed Views

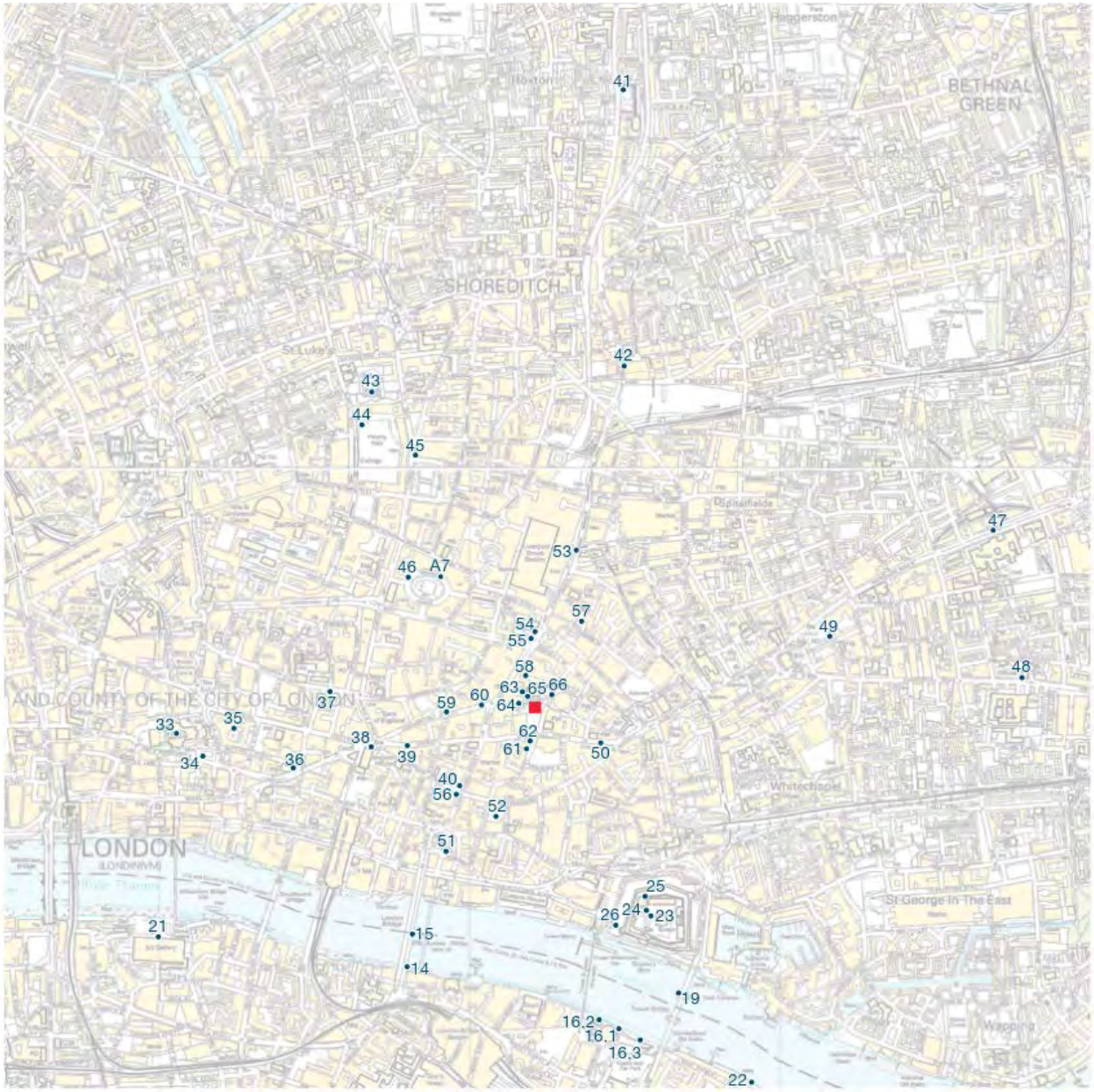
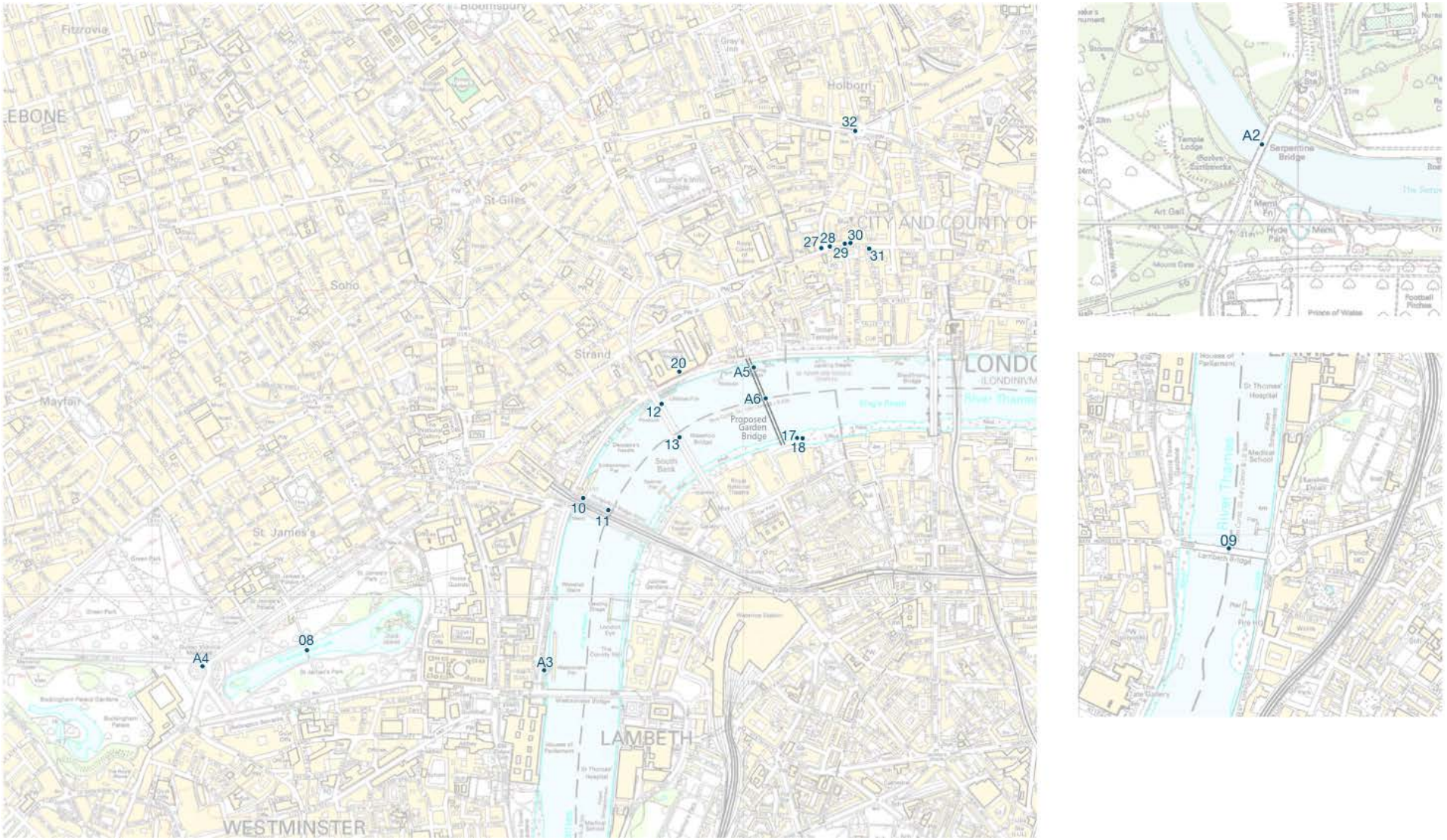


Figure 9: Localtion of Proposed Views



Other Environmental Considerations

07

Other Environmental Considerations

Energy and Sustainability

A separate Energy Strategy and Sustainability Statement (including a BREEAM Assessment) will be prepared and submitted to accompany the Planning Application which will address all energy and sustainability related issues.

The energy strategy will be structured in accordance with the energy hierarchy: Be Lean, Be Clean, Be Green.

Be Lean

The first step to achieve compliance with the following building regulations and planning targets to reduce energy demand:

- The Prposed Development must achieve a 35% carbon emissions reduction over Part L 2013, as required by the London Plan;
- The Prposed Development must achieve a minimum rating of BREEAM 'Excellent', as required by the City of London Plan (2015); and
- The Prposed Development should be connected to a decentralised energy scheme such as district heating where possible.

This will be achieved through high performance building fabric and highly efficient building services.

Be Clean

After consumption has been reduced through the application of energy efficiency measures the next step is to consider low carbon technologies in order to provide a further reduction in carbon dioxide emissions. This includes consideration of the following technologies.

- District heating network;
- Combined Heat and Power (CHP); and
- Combined Cooling, Heat and Power (CCHP).

There is an existing district heating network (Citigen) located half a mile from the development, however it may not be feasible to connect to this. This will be investigated further with Citigen at a later stage. It is proposed to provide space for a heat exchanger room in the basement to allow for future connection to a district heating network should this prove feasible.

On the basis that the development cannot be supplied from a district heating network, it is proposed to provide a centralised CHP led LTHW heating system. The hot water consumption will provide a baseline heat load for the use of CHP. It is anticipated that three CHP engines will serve as the lead heating system.

Be Green

As part of the developing energy strategy a number of renewable energy technologies have been evaluated. At this stage, we would expect that the carbon emissions targets would be principally met through the provision of high performance building fabric, efficient building services plant and the provision of a CHP led energy centre. PV panels would provide a further reduction in carbon emissions, however there is limited roof space and the inclusion of this may not be feasible.

The Sustainability Strategy will be prepared in line with local regional and national policy in order to ensure that sustainability is integrated into the design of the development. The City of London's Local Plan further requires that Sustainability Statements must be submitted with all planning applications. They should include:

- BREEAM pre-assessment;
- Energy statement in line with London Plan requirements; and
- Demonstration of climate change resilience measures.

BREEAM

The City of London requires all major non-residential developments to be certified against the BREEAM green building rating system, with a minimum score requirement of 'Excellent'.

The new non-residential spaces of the Proposed Development are composed of office space and retail units.

A pre-assessment has been undertaken against the BREEAM New Construction 2014 rating system. This was carried out by the project BREEAM Accredited Professional (AP).

The indicative target score for 1 Undershaft is 74.26% equating to a BREEAM Excellent rating. Further to this, those criteria which could be attained with additional investigation / consideration / cost were also noted. These are recorded as 'Additional' with credits giving rise to an additional score 14.07% identified as such. This means that an Outstanding rating might be feasible (85%) however it would likely accrue additional capital cost.

A summary of the credits targeted can be found in the Stage 1 Feasibility Report. It is important to note that at this stage of design the pre-assessment is not fixed and some credits may be replaced by others and additional credits may be targeted whilst the detailed design progresses.

As the Energy Statement and Sustainability Statement would not form part of the ES, where necessary, for the purposes of technical assessment, the ES will draw upon the information presented within these documents.

Flood Risk Assessment

According to the National Planning Policy Framework (NPPF), a Flood Risk Assessment (FRA) is required to support a planning application as the site lies within a Critical Drainage Area. The FRA should identify and assess all forms of flooding to and from the Proposed Development and demonstrate how these flood risks will be managed, so that the Proposed Development remains safe throughout its lifetime, taking into account the vulnerability of the Proposed Development and the potential effect of climate change on risk.

The overall objective of the FRA is to meet with the requirements of NPPF and CoL's Flood Risk Policies and which considers, with respect to surface water runoff management, the specific needs of the EA, the CoL and Thames Water Utilities Limited (TWUL).

The FRA will consider flood risks to the site from all sources. A review of flood risk will be undertaken based on the most up-to-date information available from the EA, the CoL SFRA and other relevant consultees will also be included.

The FRA will identify how, if at all, the risk of flooding will change as a result of the Proposed Development (including taking climate change into account). The FRA will include recommendations for flood risk mitigation to manage to an acceptable level, considering the vulnerability of the Proposed Development to flooding, so that the development remains safe throughout its lifetime.

Environmental topics to be ‘scoped out’ of the EIA

08

Environmental Topics to 'scoped out' of the Environmental Statement

The aim of the Scoping Phase is to focus the EIA on those environmental aspects that may be significantly impacted by the development proposals. In so doing, the significance of impacts associated with each environmental aspect becomes more clearly defined, resulting in certain aspects being considered 'non-significant'. It is the intention to scope the following out of the ES:

Ecology

A Preliminary Ecological Appraisal including a Phase 1 Habitat survey of the site was undertaken on 29th September 2015. The survey followed the Joint Nature Conservation Committee (JNCC) Phase 1 survey guidelines and the habitats on the site were identified and classified according to the Phase 1 Habitat survey methodology.

The Preliminary Ecological Appraisal also included a search for invasive species such as Japanese knotweed Fallopia japonica listed on Part II of Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) (WCA). The survey was extended to assess the potential of the site to support protected and notable species, including birds and bats. This involved an inspection of the buildings to assess their potential to support roosting bats and/or nesting birds, using binoculars as required, to identify potential access points, roosting locations and signs to indicate the presence of birds or bats, including animals in situ, scratch marks, staining, droppings and feeding remains.

It was concluded that the site lacks the potential to support any notable or protected species; this includes an assessment of the buildings on site, which are considered to have negligible potential to support roosting bats and nesting birds. In order to meet the requirements of current planning policy and wildlife legislation, measures should be put in place to avoid nesting birds on site In order to avoid any offence under the Wild Mammals Act 1996, precautionary measures should be put in place to prevent wild mammals entering the site and becoming trapped, such as the covering of all deep holes and trenches overnight and/or the provision of planked escape routes for any wildlife that may fall in.

It is recommended that the Proposed Development incorporate ecological enhancements, including the provision of trees and shurbs that have a structure to encourage roosting for species such as the House Sparrow, the provision of bird boxes and the consideration of incorporating a roof garden or living roof. Further detail on recommendations for this site would form further work through achieving Ecology Credits for BREEAM assessments.

The Preliminary Ecological Appraisal report can be found in Appendix 1 of this EIA Scoping Report. No further ecological surveys or assessment are recommended. As such, it is advised that an ecological assessment chapter will be scoped out of the ES.

Waste and Recycling

As part of a drive to cut red tape, central Government revoked the requirement for Site Waste Management Plans (which focused solely on construction waste) as of 1st December 2013 and as such, they are no longer mandatory.

The planning application will be accompanied by a concise, Site Wide Waste Management Strategy that will include estimated volumes of waste associated with construction activities together with details of how they will be managed to minimise environmental effects in accordance with guidance, legislation and local targets. Relevant details will be included in the ES to form the basis of the assessment of the demolition and construction effects and the effects associated with the transportation of waste in terms of dust, noise and visual intrusion will be covered in other relevant sections of the ES.

Waste management during the operational phase of the Proposed Development will also be undertaken and follows a similar approach (waste volumes will be quantified and the handling, storage and collection of this waste will be detailed). As the capacity of waste disposal sites is commercially sensitive information, it would not be possible to identify whether there is sufficient capacity for waste from the Proposed Development and cumulatively at waste disposal sites in the locality of the site. Also, at this stage, it is unknown which specific waste disposal sites will be used. Consultation will take place with the City of London regarding the provision of bins and compactors to accommodate recycling and general waste for the proposed office and retail land uses once operational.

Aviation

The Proposed Development is located within close proximity to arrival and departure flight paths from the major airports of London Heathrow and London City Airport.

Airports in the UK are strictly regulated under CAP393 Air Navigation: The Order and the Regulations which sets out the basic rules of aviation for the United Kingdom. The regulations and ODPM Circular 01/2003 Safeguarded Aerodromes, and CAP 738 document (CDR45) requires that new development needs to maintain safe and efficient use of airspace over London. CAP 738 documents a process that has been established against which buildings are assessed as to their potential effect on safe aircraft operations at aerodromes. This assessment is known as Safeguarding. The process sets out how safeguarded airports are to assess development against the criteria set out in the relevant regulations and is a key responsibility with respect to maintaining their license to operate.

Additionally the second edition of CAP 738 sets out the London Tall Buildings policy which specifically addresses the development of tall structures in a defined area. The policy is specifically aimed at preventing tall buildings from impacting the safe and regular operation of aircraft in the wider London airspace. Any attempt to contravene the policy will be met by an objection from the airports which the CAA would support.

CAP 738 clearly sets out the assessment process which demonstrates the method for obtaining a letter of no objection which is for the development to comply with the needs of the safeguarded airports.

The UK Civil Aviation Authority (CAA) regularly inspect airports to ensure that they are meeting their obligation with respect to their operating license which includes a review of their decisions on planning applications. Should the CAA determine that an airport has not executed its obligations the CAA can lodge an objection to a development with the Secretary of State who will then call in the application for determination. To this date we are not aware of any instance where the government has gone against a recommendation of an objection on the basis of safety.

Consultation with the airports and the CAA is currently being undertaken in line with the defined polices above to establish the maximum safe height of the Proposed Development and associated temporary cranes. As statutory consultees only the airports and the CAA have the required knowledge of the relevant rules and regulations to make a determination.

On this basis, it is proposed that an aviation impact assessment is scoped out of the EIA as an Environmental Statement does not allow a proper review of the effect of the development on safeguarded airports due to the lack of specific detail which is required by airports. The Aviation Statement showing the relevant consultation will be provided as a standalone document to accompany the planning application.

Proposed Structure of the Environmental Statement

09

Proposed Structure of the Environmental Statement

The ES will comprise the following set of documents:

ES Non-Technical Summary (NTS): this document will provide a concise summary of the Proposed Development, alternative designs that were considered, environmental effects and mitigation measures.

ES Volume I: This will contain the full text of the EIA with the proposed chapter headings as follows:

- Introduction;
- EIA Methodology;
- Alternatives and Design Evolution;
- The Proposed Development;
- Demolition and Construction;
- Socio-economics;
- Transportation and Access;
- Air Quality;
- Noise and Vibration;
- Wind Microclimate ;
- Daylight, Sunlight, Overshadowing and Solar Glare;
- Ground Conditions;
- Water Resources, Flood Risk and Drainage;
- Electronic Interference;
- Archaeology;
- Effect Interactions; and
- Residual Effects and Conclusions.

ES Volume II: Townscape, Heritage and Visual Impact Assessment: the ES will include a stand-alone Townscape, Heritage and Visual Impact Assessment accompanied by a full set of views and verified images.

ES Volume III: Technical Appendices: these will provide supplementary details of the environmental studies conducted during the EIA including relevant data tables, figures and photographs.

Summary and Conclusions

10

Summary and Conclusions

This Report requests a Scoping Opinion of the CoL pursuant to Regulation 13 of the Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2011. The EIA Scoping Report suggests a comprehensive scope of work based on previous experience of the assembled team of specialists and existing knowledge of the site. The CoL and consultees are invited to consider the contents of this Report and comment accordingly within the five-week period prescribed by the EIA Regulations.

Appendix 1

Phase 1 Habitat Survey

1 Undershaft

Preliminary Ecological Appraisal

29th September 2015

Prepared for:

Aroland Holdings Limited

REVISION SCHEDULE					
Rev	**Date**	**Details**	**Prepared by**	**Reviewed by**	**Approved by**
1	29th September 2015	Issue	Max Wade Technical Director	James Sanders Associate Director	Max Wade Technical Director

This report has been prepared and provided in accordance with the Code of Professional Conduct of the Chartered Institute of Ecology and Environmental Management.

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The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this Report. The work described in this Report was undertaken on the 28th September 2015 and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

Where assessments of works or costs identified in this Report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

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Certain statements made in the Report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the Report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. AECOM specifically does not guarantee or warrant any estimate or projections contained in this Report.

Where field investigations are carried out, these have been restricted to a level of detail required to meet the stated objectives of the services. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in issuing this Report.

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SUMMARY

AECOM was instructed by Aroland Holdings Limited to carry out a Preliminary Ecological Appraisal (PEA) of the proposed 1 Undershaft development in the City of London. This PEA was commissioned to identify whether there are known or potential ecological receptors that may constrain or influence the design and implementation of the proposed re-development.

The PEA consisted of two elements: a desk study and a field survey. The desk study was carried out to identify nature conservation designations, and protected and notable habitats and species potentially relevant to the proposed re-development. The field survey comprised a Phase 1 Habitat survey and an appraisal was made of the potential suitability of the habitats present to support protected and notable species.

No evidence was found that the Site supports any protected or otherwise notable species, nor were any notable or particularly diverse habitats noted as being present.

The proposed re-development will not have any effect on any sites designated statutorily or non-statutorily for their nature conservation value.

On the basis of the results of the Preliminary Ecological Appraisal, it is concluded that the proposed re-development will not result in any significant environmental effects on ecology and on any nature conservation receptors.

The report includes recommendations to achieve some biodiversity enhancement within the re-development.

1 INTRODUCTION

AECOM was instructed by Aroland Holdings Limited to carry out a Preliminary Ecological Appraisal (PEA) of the proposed 1 Undershaft development in the City of London (CoL). This is subsequently referred to as the Site. The central grid reference for the Site is TQ 332 812. The purpose of the project is to demolish the existing tower building located on site and to construct a 73 storey office building providing 61 floors of office space and approximately 1,800 m^2 of retail space provided at lower ground.

This PEA was commissioned to identify whether there are known or potential ecological receptors (nature conservation designations, and protected and notable habitats and species) that may constrain or influence the design and implementation of the proposed re-development. The approach applied when undertaking this PEA accords with the *Guidelines for Preliminary Ecological Appraisal* published by the Chartered Institute of Ecology and Environmental Management (CIEEM 2012). The PEA addresses relevant wildlife legislation and planning policy as summarised in Section 2 of this report.

In order to deliver the PEA, a desk study and an extended Phase 1 Habitat Survey were undertaken by an appropriately experienced ecologist, to identify and assess any ecological features within the proposed development site and the wider potential zone of influence, a radius of 1 km from the centre of the development site and the environment immediately surrounding the Site, i.e. within 50m. The Site is located within a highly urbanised setting.

The purpose of the PEA was to:

- identify and categorise all habitats present within the Site and any areas immediately outside of the Site where there may be potential for direct or indirect effects (the “zone of influence”);
- carry out an appraisal of the potential of the habitats recorded to support protected or otherwise notable species of fauna and flora; and
- provide advice on any potential ecological constraints and opportunities in the zone of influence, including the identification (where relevant) of any requirements for follow-up habitat and species surveys and/or requirements for ecological mitigation.

The purpose of this report is to provide a high level appraisal of the ecological risks and opportunities associated with the proposed re-development site. High level recommendations are made on potential options for the avoidance, mitigation or compensation of the potential impacts of the proposed re-development (where known) on the identified ecological receptors, and of potential enhancements to the biodiversity and ecosystem services.

2 WILDLIFE LEGISLATION AND PLANNING POLICY

2.1 Wildlife Legislation

The following wildlife legislation is potentially relevant to the proposed re-development:

- The Wildlife and Countryside Act (WCA) 1981 (as amended);
- The Countryside and Rights of Way (CRoW) Act 2000;
- The Natural Environment and Rural Communities (NERC) Act 2006; and
- The Conservation of Habitats & Species Regulations 2010 (as amended).

The above legislation has been considered when planning and undertaking this PEA using the methods described in section 3, when identifying potential constraints to the proposed development, and when making recommendations for further survey, design options and mitigation, as discussed in section 5. Compliance with legislation may require the attainment of relevant protected species licences prior to the implementation of the proposed development.

Further information on the requirements of the above legislation is provided as Appendix 2.

2.2 National Planning Policy

The National Planning Policy Framework (NPPF) was published on 27 March 2012 and details the Government's planning policies for England and how these are expected to be applied.

The NPPF states the commitment of the UK Government to minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity. It specifies the obligations that the Local Authorities and the UK Government have regarding statutory designated sites and protected species under UK and international legislation and how this it to be delivered in the planning system. Protected or notable habitats and species can be a material consideration in planning decisions and may therefore make some sites unsuitable for particular types of development, or if development is permitted, mitigation measures may be required to avoid or minimise impacts on certain habitats and species, or where impact is unavoidable, compensation may be required.

Further information on the relevant parts of the NPPF is provided as Appendix 2.

2.3 Regional Planning Policy

There are a number of policy documents at the regional level with relevance to biodiversity, which are summarised below. The London Plan[i] contains the following policies of relevance to ecology.

The Mayor's London Plan, Spatial Development Strategy for Greater London (2011)

- *Policy 2.18 Green Infrastructure* states that development proposals should protect, promote, expand and manage the extent and quality of London's network of green infrastructure;
- *Policy 5.3 Sustainable Design and Construction* states that development proposals should promote and protect biodiversity and green infrastructure, for example through the provision of green roofs;

- *Policy 5.10 Urban Greening* states that development proposals should integrate green infrastructure, which could include tree planting; green roofs and walls; and soft landscaping;

- *Policy 5.11 Green Roofs and Development Site Environs* states that major development proposals should include roof, wall and site planting, especially green roofs and walls where feasible;

- *Policy 7.19 Biodiversity and Access to Nature* describes the protection that should be given to internationally and nationally designated sites, Sites of Importance for Nature Conservation (SINCs), protected species and priority species identified in the UK, London and borough BAPs; and

- *Policy 7.21 Trees and Woodlands* states that trees and woodlands should be managed in accordance with the London Tree and Woodland Framework.

Revised Early Minor Alterations to the London Plan (2013)

The REMA[ii] to the London Plan were published in October 2013. The alterations set out proposed changes to the London Plan to address the NPPF.

Reference is made to a number of biodiversity policies; however the proposed amendments are aimed at replacing earlier references to government guidance now superseded by the NPPF and therefore propose no material alterations to these policies.

The Mayor's Biodiversity Strategy (2002)

The Mayor's Biodiversity Strategy[iii] details the Mayor of London's vision for protecting and conserving London's natural open spaces. The strategy aims to protect wildlife habitats, encourage businesses to incorporate green design into their development proposals and protect London's most vulnerable wildlife.

2.4 Local Planning Policy

Local Plan: Strategic Policies

City of London: Core Strategic Policy CS19: Open Spaces and Recreation

This policy encourages healthy lifestyles for all the City's communities through improved access to open space and facilities, increasing the amount and quality of open spaces and green infrastructure, while enhancing biodiversity, by:

1. Seeking to maintain a ratio of at least 0.06 hectares of high quality, publicly accessible open space per 1,000 weekday daytime population:

(i) protecting existing open space, particularly that of historic interest, or ensuring that it is replaced on redevelopment by space of equal or improved quantity and quality on or near the site;

(ii) securing public access, where possible, to existing private spaces;

(iii) securing additional publicly accessible open space and pedestrian routes, where practical, particularly in the eastern part of the City;

(iv) creating additional civic spaces from underused highways and other land where this would not conflict with other strategic objectives;

(v) encouraging high quality green roofs, roof gardens and terraces, particularly those which are publicly accessible, subject to the impact on the amenity of adjacent occupiers.

2. Improving access to new and existing open spaces, including those in neighbouring boroughs, promoting public transport access to nearby open space outside the City and ensuring that open spaces meet the needs of all of the City's communities.

3. Increasing the biodiversity value of open spaces, paying particular attention to sites of importance for nature conservation such as the River Thames. Protecting the amenity value of trees and retaining and planting more trees wherever practicable.

4. Improving inclusion and access to affordable sport, play and recreation, protecting and enhancing existing facilities and encouraging the provision of further facilities within major developments.

Policy DM19.1 Additional Open Space

1) Major commercial and residential developments should provide new and enhanced open space where possible. Where on-site provision is not feasible, new or enhanced open space should be provided near the site, or elsewhere in the City.

2) New open space should:

- be publicly accessible where feasible; this may be achieved through a legal agreement;
- provide a high quality environment;
- incorporate soft landscaping and Sustainable Drainage Systems, where practicable;
- have regard to biodiversity and the creation of green corridors; and
- have regard to acoustic design to minimise noise and create tranquil spaces.

3) The use of vacant development sites to provide open space for a temporary period will be encouraged where feasible and appropriate

Policy DM19.2 Biodiversity and urban greening

Developments should promote biodiversity and contribute to urban greening by incorporating:

- Green roofs and walls, soft landscaping and trees;
- Features for wildlife, such as nesting boxes and beehives;
- A planting mix which encourages biodiversity;
- Planting which will be resilient to a range of climate conditions; and
- Maintenance of habitats within Sites of Importance for Nature Conservation.

2.5 Biodiversity Context

A key outcome of the Convention on Biological Diversity in 1992 is a requirement by the UK government to halt, and if possible reverse, the steady decline of species and natural habitats. To this aim, Biodiversity Action Plans (BAPs) have been produced at national, regional and local levels. They contain plans to protect and enhance species and natural habitats, with targets against which progress can be measured. Relevant national, regional and local BAPs are described below.

UK Post- Development Framework (2010)

This document was produced in response to a change in strategic thinking following the publication of the Convention of Biological Diversity's Strategic Plan for Biodiversity 2011–2020[iv] and its 20 'Aichi targets' and the launch of the new EU Biodiversity Strategy[v]. It set a broad enabling structure for action across the UK between now and 2020, including a shared vision and priorities for UK-scale activities to help deliver the Aichi targets and the EU Biodiversity Strategy. A major commitment by Parties to the Convention of Biological Diversity is to produce a National Biodiversity Strategy and/or Action Plan (NBSAP). The UK Post-Development Framework is relevant in the context of Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006, meaning that Priority Species and Habitats are material considerations in planning.

London Biodiversity Action Plan (2007)

The London Biodiversity Partnership was established in 1996 in response to the UK BAP. It aims to protect and enhance the capital's habitats and species and has produced 26 Action Plans. Priority Habitats and Species of potential relevance to the site are wasteland, bats and House Sparrow *Passer domesticus*. Black Redstart is also listed as an 'other important species', although a Species Action Plan (SAP) has not been prepared. Similarly, built structures are considered to be 'other important habitats', although a Habitat Action Plan (HAP) has not been prepared.

3 METHODS

3.1 Desk Study

A desk study was carried out to identify nature conservation designations, and protected and notable habitats and species potentially relevant to the proposed re-development.

A stratified approach was taken when defining the desk study area, based on the likely zone of influence of the proposed re-development on different ecological receptors; and, an understanding of the maximum distances typically considered by statutory consultees. Accordingly, the desk study identified any statutory nature conservations designations within 2 km of the boundary of the main part of the Site; and, local non-statutory nature conservation designations, and protected and notable habitats and species within 1 km of the Site boundary.

The desk study was carried out using the data sources detailed in Table 3.1. Protected and notable habitats and species include those listed under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended); Schedules 2 and 4 of The Conservation of Habitat & Species Regulations 2010 (as amended); and species and habitats of Principal Importance for nature conservation in England listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Records of non-native controlled weed species were also collated, such species are listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Table 3.1: Desk study data sources

Data Source	Accessed	Data Obtained
Multi-Agency Geographic Information for the Countryside (MAGIC) website	25th September 2015	• Statutory designations within 2 km • Ancient woodlands and notable habitats within 1 km • Information on habitats and habitat connections (based on aerial photography) relevant to interpretation of planning policy and assessment of potential protected and notable species constraints
AECOM database and library	25th September 2015	• Non-statutory designations within 1 km
Ordnance Survey 1:2500 Pathfinder maps and aerial photography	26th September 2015	• Information on habitats and habitat connections (based on aerial photography) relevant to interpretation of planning policy and assessment of potential protected and notable species constraints
City of London Biodiversity Action Plan 2010-15	26th September 2015	• General information on Local Biodiversity Action Plan Priority Habitats and Species

3.2 Field Survey

The field survey comprised a Phase 1 Habitat survey and an appraisal was made of the potential suitability of the habitats present to support protected and notable species. It included a search for any invasive non-native species.

3.2.1 Phase 1 Habitat Survey

A Phase 1 Habitat survey was undertaken in accordance with the standard survey method (Joint Nature Conservation Committee, 2010). Phase 1 Habitat survey is a standard method of environmental audit. It involves categorising different habitat types and habitat features within a survey area. In this case, the survey area included the ground level area as well as the roof of the building. The latter included an assessment of the potential for any biodiversity enhancement. The information gained from the survey was used to determine the likely ecological value of a site, and to direct any more specific survey work which may need to be carried out prior to the submission of a planning application. The standard Phase 1 Habitat survey method was "extended" to record target notes on protected, notable and invasive species.

The survey was undertaken on the 29th September 2015 by a suitably qualified AECOM ecologist who recorded and mapped all habitat types present within the survey area, along with any associated relevant ecological receptors observed. The survey area encompassed all safely accessible parts of the Site and adjacent habitats to a maximum distance of 50m where access permission had been granted in advance of survey, or this land was visible from within the Site boundary or from public rights of way, or other publicly accessible areas.

3.2.2 Appraisal of potential suitability of habitats to support protected and notable species

An appraisal was made of the potential suitability of the habitats present to support protected and notable species of plants or animals (as defined in Section 2.1). Field signs, habitat features with potential to support protected species and any sightings or auditory evidence were recorded when encountered, but no detailed surveys were carried out for any particular species.

A note was made of visible instances of invasive non-native plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), including Japanese knotweed (*Fallopia japonica*). Locations of plants or stands of any such invasive non-native plant species found were recorded.

Section 5 of this report identifies further requirements for species survey based on the results of the habitat survey. These surveys should be completed prior to submission of a planning application as the results are likely to be material for determination of the planning application.

3.3 Desk Study and Field Survey Limitations

The aim of a desk study was to help characterise the baseline context of a proposed re-development and provide valuable background information that would not be captured by a single site survey alone. Information obtained during the course of a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular habitats or species does not necessarily mean that the habitats or species do not occur in the study area. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the proposed re-development.

4 RESULTS

4.1 Nature Conservation Designations

4.1.1 Statutory Designations

No sites with statutory nature conservations designations were identified by the desk study, based on the method given in Section 2.1 of this report.

4.1.2 Non-statutory Designations

Table 4.1 details the non-statutory nature conservations designations identified by the desk study based on the method given in Section 2.1 of this report.

Table 4.1: Sites with non-statutory designations for nature conservation

Designation	Distance from the Site (km)	Reason(s) for Designation
River Thames and its tidal tributaries SMI	0.7	A range of features including birds and aquatic invertebrates
London Wall and walls of the tower of London and St Catherine's Pier SLI	0.6	The presence of London-rocket, a nationally rare plant

SMI = Site of Metropolitan Importance; SLI = Site of Local Importance

4.2 Habitats

4.2.1 Phase 1 Habitat Types

The only habitat recorded was that of buildings and hard standing. There were six trees which had been planted in the plaza area and some ornamental planting.

Ground level

At ground level the only significant plant life present was found in the plaza area. This included six lime trees, three at least of which were in relatively poor condition. There were about 18 planters (including two to three behind wooden hoarding erected across the northern part of the plaza) in which shrubs had been planted, e.g. Oregon Grape, Cordyline, Box and Choisya, as well as some ornamental flowers, e.g. Petunia, and also Ivy.

Ruderal plant species were found at the base of two of the trees including Annual Meadow-grass, Fleabane, a Butterfly-bush seedling, Chickweed and a moss (10 species in total).

Additionally there were a further three lime trees on the north-east corner by the café point along with a very little more Annual Meadow-grass.

Ruderal plants were also noted on steps at the western edge of the Site, a similar range of species to those noted on the plaza including a Willowherb and a sow thistle (9 species in total).

Overall, a total of 15 species were found at ground level.

Roof level

The roof was devoid of any plants except for small amounts of moss on paving blocks.

4.3 Habitats and vegetation within 50m of the application site

The Site is surrounded by roads and buildings. There was one lime tree on the edge of the Site by Hiscox's building.

4.4 Protected and Notable Species

The Site does not support and protected or otherwise notable species.

The trees lacked the structure to support any nesting birds and the buildings were unsuitable for nest too.

Likewise there was no scope for any bats to use the Site either for feeding or roosting.

5 IDENTIFICATION OF ECOLOGICAL CONSTRAINTS AND RECOMMENDATIONS

5.1 Approach to the Identification of Ecological Constraints

No relevant ecological receptors that might represent constraints to the proposed re-development were identified. Opportunities to deliver ecological enhancement in accordance with planning policy, are identified in Section 4 of this report.

5.2 Constraints and Requirements for Further Survey: Designations

Based on available information, neither of the non-statutorily designated nature conservation sites identified in the desk study (Tables 4.1) is considered to be relevant to the proposed re-development because of the lack of any features on the Site and the distance between the sites. The proposed re-development does not have the potential to adversely affect the integrity of any designated site either during construction or operational phases.

5.3 Constraints and Requirements for Further Survey: Habitats

There are no notable or diverse habitats present within or immediately adjacent to the Site that potentially represent a constraint on its re-development. No further surveys for habitats are required.

5.4 Constraints and Requirements for Further Survey: Species

The Site and the area immediately adjacent are not considered suitable to support protected or otherwise notable species that may potentially represent a constraint on the re-development of the Site.

The assessments outlined here will need to be reassessed if there is a significant change to the type or scale of development proposed, or if there are any significant changes in the use or management of the land that would affect the habitats and species. If a planning application is made two years or more after a PEA it is advisable to review and update the survey data.

5.5 Opportunities for Ecological Enhancement

The design for the re-development includes limited scope for enhancing the biodiversity of the Site.

It is recommended that the landscaping and associated planting includes the targeting of bird species and House Sparrow in particular. This species has undergone a substantial decline in London and would make a valuable contribution to the environs of the development.

The needs of such a species would be catered for by the inclusion of any trees and shrubs that had a structure that encouraged roosting, e.g. sufficiently dense growth form to provide protection preferably with an associated food source, e.g. blossom to attract insects throughout the year and/or berries to sustain birds over winter.

The opportunity of incorporating a living roof or roof garden should be investigated as part of the scheme design. The roofing type and plants should be chosen for their ability to thrive in the particular conditions associated with such roof habitat. The extent of such habitat can be limited to patches and edges whilst still providing biodiversity gain, e.g. a source of insets and seeds for birds to feed on. Living roof may also have the benefit of ameliorating the discharge of rain water from the building(s). Species mixes can be chosen to compliment local priority habitats. Further consultation with the architect and ecologists on the nature of the planting

seed mix and the final design of the living roof should be carried out to create a biodiverse living roof. Installation of features that increase its biodiversity value including different substrate depths and types and log piles should also be incorporated.

The enhancements should also include bird boxes to be provided within the built structure. These boxes will be suitable for House Sparrow.

A five year Ecological Management Plan (EMP) should also be drawn up for the proposed enhancements.

6 CONCLUSIONS

This report provides an assessment of the ecological impacts and associated constraints with respect to the proposed re-development. No evidence was found that the Site supports protected or otherwise notable species, nor were any notable or diverse habitats noted as being present.

The proposed re-development will not have any effect on any sites designated statutorily or non-statutorily for their nature conservation value.

On the basis of the results of the Preliminary Ecological Appraisal, it is concluded that the proposed re-development will not result in any significant environmental effects on ecology and on any nature conservation receptors.

There is scope to include measures to achieve some biodiversity enhancement within the re-development.

7 REFERENCES

British Standards (2013) Biodiversity — Code of practice for planning and development. BS42020:2013.

CIEEM (2012) *Guidelines for preliminary ecological appraisal*. http://www.cieem.net/data/files/Resource_Library/Technical_Guidance_Series/GPEA/GPEA_April_2013.pdf [accessed May 2015]

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