17 Inter-relationships and Cumulative Effects

17.1 Introduction

17.1.1 While the environmental topic chapters of this Environmental Statement (ES) consider the effects of the proposed development for each environmental discipline, it is also important to consider how these effects may potentially combine with one another and/or with those of other proposed development projects.

17.1.2 As required by *Rule 11* and Schedule *1* of the *Transport and Works (Applications and Objections Procedure) (England and Wales) Rules 2006* (*TWA Rules)* this chapter considers firstly how the potential for inter-relationships between environmental effects has been dealt with in the ES and secondly considers the potential cumulative effects with other developments.

17.1.3 To define these terms:

- 'inter-relationships' occur between the individual environmental effects of the proposed development and have the potential to combine with one another and lead to significant effects; and
- 'cumulative effects' could arise as a result of the proposed development in combination with other large scale developments in the vicinity of the site. It should be noted that existing developments form part of the baseline against which the proposed development has been assessed.

17.2 Inter-relationships

17.2.1 Where appropriate, inter-relationships have been considered within the relevant environmental topic chapters themselves. Table 17.1 summarises the inter-relationships that have been considered across the specialist chapters.

17.2.2 It can be seen from Table 17.1 that there are a number of inter-relationships between the study topic areas and that each has not been studied in isolation, but has taken account of the interactions as outlined.

17.2.3 Table 17.2 presents the results of a review of the environmental topic chapters to identify those receptors considered to have the potential to experience a combination of effects. As there are no recognised guidelines to enable quantification of combined effects, professional judgement has been used to consider if the interaction might lead to a greater combined effect.

Table 17.1: Inter-relationships within the Environmental Statement

Chapter	Chapter Topic	Inter-relationships
7	Townscape and Visual Effects	Built Heritage (Chapter 10) • the built heritage baseline (e.g. location, number and historic interest of nearby heritage assets) partly informs the assessment of local townscape sensitivity.
8	Transport and Movement	Waste Management and Resource Use (Chapter 15) • assessment of construction and operational phase transport movements has included liaison with the project waste assessment specialist to confirm volumes of material which will be managed from the proposed development site during construction and operation.
9	Noise and Vibration	Transport and Movement (Chapter 8) • potential noise and vibration impacts from traffic and transport are considered in the noise and vibration assessment.
10	Built Heritage	Townscape and Visual Effects (Chapter 7) • the Zone of Visual Influence (ZVI) determined by the Townscape and Visual Effects assessment team was used to support definition of the study area relating to heritage assets. Noise and vibration (Chapter 9) and Air quality (Chapter 12) • consideration of works in proximity to heritage assets which may result in local noise and air quality (dust) effects, is considered as part of the assessment of effects on setting.
11	Archaeology	Land Contamination (Chapter 14) • the results of ground investigation works are considered within the archaeological assessment.
12	Air Quality	Transport and Movement (Chapter 8) • potential air quality impacts from traffic and transport are considered in the air quality assessment.
13	Water Resources and Flood Risk	Land Contamination (Chapter 14) • the results of ground investigation works are considered within the water resources and flood risk assessment.
14	Land Contamination	Water Resources and Flood Risk • water resources as receptors or as pollution pathways are considered as part of the land contamination assessment.
15	Waste Management and Resource	No effects identified in other ES Chapters require subsequent assessment in the context of the assessment of waste.

Chapter	Chapter Topic	Inter-relationships
	Use	
16	Socio-Economics	Transport and Movement (Chapter 8) • the socio-economic assessment considers information within the transport assessment in order to establish the beneficial effects of the Bank Station Capacity Upgrade (BSCU) on the local and wider economy.

17.2.4 The receptors identified in Table 17.2 are assessed as having the potential to experience a combination of effects. However, individual topic assessments show that the effect of most impacts would not be significant. Although there is potential for combined effects upon some receptors, many effects only occur intermittently and during the construction phase. Where appropriate, specific mitigation measures for each effect are discussed in the relevant topic chapters and general measures that would be implemented are outlined in the draft Code of Construction Practice (CoCP) provided in Appendix A4.1. With the implementation of these measures, and considering the intermittent, temporary nature of many effects, it is considered unlikely that there will be any significant effects arising from the inter-relationship of impacts.

17.2.5 A number of effects which have potential to combine will remain during operation of the proposed development, however these are almost all beneficial.

17.2.6 Utilities and protective works could result in effects from combined noise, dust, traffic and visual impacts on businesses, residential properties or places of worship. However, with implementation of the project CoCP, the scale and duration of utilities works is not likely to result in combined effects which are considered to be significant.

Table 17.2: Potential Combined Effects

No.	Sensitive Receptor / Land Use	Potential Combined Effects
1	St.Mary Abchurch including pedestrians accessing the church and users of Abchurch Yard.	Townscape and Visual Effects (Chapter 7) Transport and Movement (Chapter 8) Noise and Vibration (Chapter 9) Built Heritage (Chapter 10) Air Quality, including dust (Chapter 12)
2	Bank Conservation Area including listed buildings and heritage assets in the area.	Townscape and Visual Effects (Chapter 7) Transport and Movement (Chapter 8) Noise and Vibration (Chapter 9) Built Heritage (Chapter 10) Air Quality, including dust (Chapter 12)
3	Businesses and people working on and around Abchurch Lane, Nicholas Lane, King William Street and Cannon Street.	Townscape and Visual Effects (Chapter 7) Transport and Movement (Chapter 8) Noise and Vibration (Chapter 9) Air Quality, including dust (Chapter 12) Socio-Economics (Chapter 16)
4	Businesses and people working on and around Arthur Street	Townscape and Visual Effects (Chapter 7) Transport and Movement (Chapter 8) Noise and Vibration (Chapter 9) Air Quality, including dust (Chapter 12) Socio-Economics (Chapter 16)
5	Residential Properties in the vicinity of the BSCU Work Sites.	Townscape and Visual Effects (Chapter 7) Transport and Movement (Chapter 8) Noise and Vibration (Chapter 9) Air Quality, including dust (Chapter 12)
6	Pedestrians and Cyclists likely to be in the vicinity of the BSCU Work Sites	Townscape and Visual Effects (Chapter 7) Transport and Movement (Chapter 8) Noise and Vibration (Chapter 9) Air Quality, including dust (Chapter 12)

17.3 Cumulative Effects

17.3.1 In line with normal EIA practice, existing developments are considered in the baseline of the topic chapters and are an inherent consideration in the specialist assessments and their findings.

17.3.2 The assessment of all other cumulative effects considers the advice of the Planning Inspectorate (2012) who suggest that:

In assessing cumulative impacts, other major developments should be identified through consultation with the local planning authorities and other relevant authorities on the basis of those that are:

- *under construction;*
- *permitted application(s), but not yet implemented;*
- *submitted application(s), not yet determined;*
- *projects on the* [Infrastructure Planning Commissions]*'s programme of projects;*
- *identified in the relevant development plan (and emerging development plans – with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposals will be limited, and*
- *identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.*

Consideration of Cumulative Effects with an OSD

17.3.3 Planning permission for a replacement building (an over site development (OSD)) located over and around the new station entrance was granted by the City of London Corporation in June 2014 under the *Town and Country Planning Act 1990*. It is expected that construction of an OSD will be undertaken between 2021/22 – 2023/25 (i.e. commencement within one year of completion of the Bank Station Capacity Upgrade (BSCU); however, to account for a reasonable worst case scenario, assessments have also considered a potential overlap in works of up to one year).

17.3.4 Consideration has been given within the environmental topic chapters to the potential for significant cumulative effects with an OSD. The cumulative effects assessments have assumed that an OSD will be developed in a form similar to that of the scheme that was granted planning permission in June 2014. Figure 17.1 provides an overview of the anticipated construction phases for the two schemes, including where there is potential for overlapping works. The potential for cumulative effects with an OSD is reported within each of the

relevant specialist topic chapters and summarised within this chapter. This includes an assessment of the combined duration of the construction works.

17.3.5 It is possible that the BSCU will need to be completed prior to the foundation and basement works (and later building structure and fit out) for an OSD, in which case there would not be the potential for cumulative construction effects at that time. However, the exact phasing of this work is uncertain at this stage, and the ES considers a realistic worst case of a one year overlap in construction programme between these two aspects (as shown in Figure 17.1).

Figure 17.1: Anticipated Programme of Construction Works

BSCU																																
Over Site Development																																
Time Period (Quarter)	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	2016				2017				2018				2019				2020				2021				2022				2023				2024			

17.3.6 Given the distance between the BSCU Arthur Street Work Site and an OSD at the Whole Block Site, and the phasing and nature of the works likely to be undertaken at each site, the potential cumulative effects would be limited to construction traffic. As peaks in construction do not coincide, significant cumulative transport effects are not considered likely.

17.3.7 At the Whole Block Site, the work programme could result in overlapping, as well as consecutive works. However, based on the findings of the respective EIAs for the BSCU and OSD, cumulative impacts from construction noise and vibration, dust generation and traffic movements are likely to result in limited cumulative effects due to the phasing of works. With the implementation of CoCPs for the BSCU and for an OSD, significant adverse cumulative effects are considered unlikely.

Approach to Identification of Other Cumulative Schemes

17.3.8 To enable a reasonable and proportionate assessment, a set of criteria has been used to identify those schemes which could result in potentially significant cumulative effects. The effects may be construction related, where the construction programme overlaps with that for the scheme, or operational.

17.3.9 The criteria utilised are as follows, and include those schemes which:

- are within approximately 500m of the site;
- have been submitted for planning, have a permission or resolution to grant permission, or are under construction; and

- are ‘major applications’ – i.e. of a significant scale or importance, and thus are either over 10,000m^2 uplift in Gross External Area (GEA) and/or are referable to the Greater London Authority (Mayor of London).

17.3.10 Figure 17.2 (see ES Figures Volume) shows all proposed developments within 500m of the site, however Table 17.3 includes only those which meet the criteria outlined above.

17.3.11 Table 17.3 also includes the assumptions made as to the likely construction period, so as to determine the likelihood of construction related cumulative effects. The assumed construction programme for each scheme is based on an overestimate of the likely time needed to build them, and so represents a reasonable worst case approach. Where developments are known to be completed, or assumed to be completed, they form part of the baseline situation.

17.3.12 As part of work to assess the 10 King William Street OSD application, consultation with the City of London Corporation was undertaken in January 2014, to verify the list of local development projects.

17.3.13 Using the screening criteria described above and following consultation with the City of London Corporation, consideration of potential cumulative effects with a total of 18 local developments are considered within this EIA. The developments mostly comprise demolition of existing buildings and construction of replacement buildings comprising mainly office and retail space.

17.3.14 No other plans or programmes involving development in close proximity to the site (and requiring assessment of potential cumulative effects) have been identified.

17.3.15 Consideration of cumulative effects with other development projects is undertaken within specialist topic chapters. The findings of these assessments which consider an OSD and the developments listed in Table 17.3 are summarised in the following section.

Table 17.3: Third Party Schemes Meeting the Screening Criteria

No.	Address	Application Ref	Description of Development	Planning Status and Construction Assumptions
6	St Swithin's House (30-37 Walbrook, 11-12 St Swithin's Lane), Walbrook House (19-27 Walbrook), Granite House (97-101 Cannon Street), including St Swithin's Church Garden, London, EC4	06/00839/FULL	Demolition of existing buildings and redevelopment to provide Class B1 offices (57,263 m^2) and Class A retail uses (3,863 m^2) together with associated parking, servicing and plant accommodation, alteration of vehicular access on Slater's Hall Court, new cycle/motorcycle access from Oxford Court, extension to St Swithin's Church Garden and creation of new pedestrian route from Bond Court to St Swithin's Lane. (Scheme B)	Consented. Development complete.
7	33 King William Street London EC4R 9AS	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 (29,603.6m^2). Retail (Class A1, A2, A3 or A4) and/or offices (Class B1) uses at ground and lower ground floor levels (751.5 m^2 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. Demolition: July 14 – Dec 14 Construction: Jan 15 – Dec 15 Cladding & Fit-out: Jan 16 – Apr 16 Construction finish/ lease commencement: Jan 17 Considered in cumulative construction assessment from Quarter 4 2016 until completion; post 2017 future baseline receptor to construction impacts to Arthur Street Work Site.

No.	Address	Application Ref	Description of Development	Planning Status and Construction Assumptions
8	Centurion House 24 Monument Street London EC3R 8AJ	11/00294/FULMAJ	Substantial demolition of existing building and erection of a new office (Class B1) building at lower ground floor, ground floor and nine upper storeys plus plant [9,971m^2 GEA]. New retail (Class A1, A2, A3 or A4) or non-residential institution (Class D1) uses in the north facade at ground floor level and in the south west corner at ground and lower ground levels [636m^2 GEA]. Realignment of the City Walkway from Lower Thames Street to Pudding Lane.	Consented. Demolition began Oct 2011. Presume completed by Quarter 4 2016.
9	20 Fenchurch Street, 14-15 Philpot Lane, 10 Rood Lane, 33-35 Eastcheap, & Part Basement At 37-39 Eastcheap London EC3P 3DP	06/00158/FULEIA	Demolition of the existing buildings and structures on the site and its redevelopment: Erection of a 39 storey building comprising Class B1 office, Class A retail at ground level and basement including entrance for public access to Skygarden at 35th floor level and above, including roof terraces to be used for uses within Class D1 (non-residential institution), Class A3/A4 (restaurant and café/ drinking establishment and private dining and similar functions). Erection of a 4 storey building for Class A3 (restaurant and café) and A4 (drinking establishment) uses, and associated servicing facilities, including vehicle lifts and parking for bicycles and motorcycles at levels 2 and 3. Construction of two levels of basement for underground parking, servicing, and ancillary plant and storage. Provision of a new pedestrian route and publicly accessible open area, landscaping, and new vehicular access arrangements and reconfiguration of existing servicing arrangements for adjoining properties and other associated works. (94,379m^2)	Consented. Building complete as of April 2014.
		08/01061/FULMAJ	Erection of a 38 storey building comprising Class B1 (office), Class A1 (shop) and Class D1 (non-residential institution) at ground level providing entrance for public access to the skygarden at 35th floor level and above, including roof terrace to be used for uses within Class D1 (non-residential institution) and Class A3/A4 (restaurant and cafe/drinking establishment). Erection of a five storey building for Class A1 (shop), Class A3 (restaurant and	Consented. Building complete as of April 2014.

No.	Address	Application Ref	Description of Development	Planning Status and Construction Assumptions
			cafe) and A4 (drinking establishment) uses, associated servicing facilities, including vehicle lifts to basement and parking for bicycles and motorcycle at levels 2 and 3 and plant at levels 4 and 5 behind screened enclosures and associated works. Construction of two levels of basement for underground parking, servicing, and ancillary plant and storage. Provision of a new pedestrian route and publicly accessible open area, landscaping, and provision of new vehicular access arrangements and reconfiguration of existing servicing arrangements for adjoining properties and other associated works. (99,739 m^2) (1,073,617ft^2).	
10	Ocean House, Fur Trade House, Queensbridge House, 10 Little Trinity Lane, London EC4	11/00572/FULMAJ	Demolition of existing buildings and the construction of a new 224 bedroom hotel (Class C1) and 9 residential apartments (Class C3) utilising existing foundations and the provision of a new section of Riverside Walkway (Total floorspace: 21,138m^2) (AMENDED APPLICATION).	Consented. Demolition already underway. Considered in cumulative construction assessment from Quarter 4 2016 until completion.
11	Mondial House 90 - 94 Upper Thames Street London EC4R 3UB	05/00653/FULEIA	Redevelopment of land and buildings to provide new buildings ranging between four and eleven storeys with lower ground and two basements, for uses within Class B1 (offices) and Class A (retail) with ancillary plant, servicing and basement parking, provision of public conveniences; change of use of office floorspace to fire station accommodation, external alterations and extensions to the existing fire station premises; works to the pedestrian walkway, works of hard and soft landscaping, alterations to existing vehicular and pedestrian access and highways layout together with other associated and enabling works.	Consented. Presume completed by Quarter 4 2016.

No.	Address	Application Ref	Description of Development	Planning Status and Construction Assumptions
13	Sugar Quay Lower Thames Street London EC3R 6EA	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 658m^2. 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 26,030 m^2. GEA).	Consented. Due for completion mid 2016 (approved 2012 Construction Method Statement).
15	51 Eastcheap London EC3M 1JA	11/00153/FULMAJ	Demolition of the existing nine storey office building (Class B1) and its replacement with an eleven storey office building (Class B1) with retail provision (Class A1, A2 and A3) together with improved pedestrian access and the installation of plant.	Pending decision. Assumed construction Quarter 4 2016 – Quarter 1 2020. Considered in cumulative construction assessment.
16	Land Bounded By Cannon Street, Queen Street, Queen Victoria Street, Bucklersbury & Walbrook London EC4 (Bloomberg)	11/00935/FULEIA	Construction of two new buildings comprising floorspace within Classes B1 (office) and A (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.	Consented. Completion date is Dec 2016 (based on Aug 2012 approved Construction Method Statement). Potential future baseline receptor to construction impacts from utilities/ground settlement works.
18	39-53 Cannon Street, 11-14 Bow Lane And Watling Court London EC4	13/00339/FULMAJ	Demolition of the existing building and erection of a new 8 storey plus basement building for: (i) office (Class B1) use (11,622m^2); (ii) retail (Class A1 & A3) use (822m^2) and a single unit for a flexible use for either Class B1 or A1 purposes (246m^2) at part ground floor level and basement levels, (iii) provision of a publicly accessible open space, (iv) a relocated subway entrance.	Consented. Considered in cumulative construction assessment from Quarter 4 2016 until completion.

No.	Address	Application Ref	Description of Development	Planning Status and Construction Assumptions
19	8 - 10 Moorgate, 3 & 4 King Arms Yard, 16/16A & 17 Tokenhouse Yard & 8 - 10 Telegraph Street London EC3	12/00474/FULMAJ	Redevelopment to provide office and retail accommodation together with associated parking, servicing and plant. Revised Proposal. (17,405m^2 - nine storeys).	Consented. Considered in cumulative construction assessment from Quarter 4 2016 until completion.
21	1 Angel Court & 33 Throgmorton Street London EC2R 7HJ	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. (43,823m^2)	Consented. Considered in cumulative construction assessment from Quarter 4 2016 until completion.
22	11 - 19 Monument Street, 46 Fish Street Hill And 1 - 2 Pudding Lane London EC3R	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. [13,069 m^2 GEA]	Consented 23 Sep 2013. Considered in cumulative construction assessment from Quarter 4 2016 until completion.
23	52-54 Lime Street & 21-26 Leadenhall (Prudential House), 27 & 27A Leadenhall Street (Allianz	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 [58,196m^2 GEA] and retail (Class A1/A3) uses [1,072 m^2 GEA] with ancillary access, servicing and landscaping. [Total 59,268m^2 GEA]	Consented Due for completion 2017. Considered in cumulative construction assessment from Quarter 4 2016 until completion.
24	Land Bounded By Fenchurch Street, Fen Court, Fenchurch	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	Consented. Demolition due to begin Jun 2014 – approx. demolition through to

No.	Address	Application Ref	Description of Development	Planning Status and Construction Assumptions
	Avenue & Billiter Street (120 Fenchurch Street) London EC3		restaurant at 14th floor level, together with associated public space and landscaping, motorcycle, car and bicycle parking, servicing and plant accommodation (62,643m^2).	completion is 36 months. Considered in cumulative construction assessment from Quarter 4 2016 until completion.
25	40 - 46 Cannon Street, 27 - 28 Garlick Hill And 14 - 15 Great St Thomas Apostle London EC4V 2BA	13/00319/FULMAJ	(1) Demolition of 13-14 St Thomas Apostle to slab level and erection of a new 7 storey building with a total floor area of 1,813 m^2 for hotel Class C1 use, the remaining buildings forming the site would be retained, (2) roof extension at 15 Great St. Thomas Apostle for hotel Class C1 Use (674 m^2), (3) removal of plant room and roof extension at 40-46 Cannon Street, (4) Minor external alterations to the exterior of retained buildings within the site, (5) Change of use of buildings (to the extent shown on the submitted drawings and information) from Class B1 office use to form a single 5,393 m^2 integrated hotel (Class C1 Use) with retention of separate Class A1, A2 and A4 uses at ground floor level.	Consented. No prior to commencement conditions submitted yet. Assumed construction Quarter 4 2016 – Quarter 1 2020, so considered in cumulative construction assessment.
26	67 Lombard Street London EC3P 3DL	10/00128/FULMAJ	Redevelopment behind retained facades on Lombard Street and Birchin Lane to provide restaurant (A3) use at basement and ground floor levels (375m^2 floor space) and office use (13,144m^2 floorspace). (Renewal of planning permission to extend the time limit	Consented. Demolition works began Aug 2011. Presume completed by Quarter 4 2016.
27	100 Cheapside, 1 Honey Lane, 28-30 Lawrence Lane & 39 King Street London EC2	09/00353/FULMAJ	Demolition of existing buildings and erection of a basement, lower ground, ground and nine upper floors for office and retail (Class A1) purposes together with ancillary parking, servicing and access (12,890m^2, 10 storeys).	Consented. Demolition began June 2012. Presume completed by Quarter 4 2016.

Summary of Cumulative Effects Assessments in this Environment Statement

17.3.16 The following sections summarise the potential cumulative effects of the BSCU with an OSD and with the third party developments listed in Table 17.3.

Townscape and Visual Effects (ES Chapter 7)

17.3.17 Only an OSD at 10 King William Street, the 33 King William Street redevelopment and the Bloomberg Place development are identified as having the potential to result in cumulative townscape and visual effects.

17.3.18 Potential for cumulative effects could arise from the following scenarios:

- effects between the operational BSCU and an OSD at the site;
- effects between the construction of the 33 King William Street redevelopment and construction of the BSCU; and
- effects with the Bloomberg Place development during construction and operation of the BSCU.

BSCU and an OSD

17.3.19 At this stage, the exact phasing of construction of an OSD is uncertain. There is potential that deconstruction of 20 Abchurch Lane, and construction of an OSD will overlap with the final stages of the BSCU construction. However, whilst it is expected that construction of an OSD within one year of completion of the BSCU is likely, there could be a gap between completion of the BSCU and construction of an OSD. In either scenario, normal construction site management practices as outlined in the draft CoCP will be followed to mitigate potential adverse effects, including suitable site hoardings.

17.3.20 In the case that one construction phase merges into the next, benefits would result from a reduced overall duration of construction. In the latter scenario, the resulting effect would be a pause in construction activity, although there would be an obvious gap in the built form, where the operational Station Entrance Hall and the retained 20 Abchurch Lane would appear incongruously together on the Whole Block Site. However, the site would be left in a tidy state, with suitable hoardings and appropriate temporary finishes to the Station Entrance Hall and effects would not be significant.

17.3.21 In conjunction with the operational Station Entrance Hall, the completed OSD is likely to result in significant beneficial effects on townscape and visual amenity.

BSCU and 33 King William Street Redevelopment

17.3.22 Construction of the 33 King William Street redevelopment is anticipated to overlap marginally with the BSCU. The effect of the Arthur Street Work Site on the character of Fenchurch and Monument Townscape Character Area (TCA) is judged not to be significant because a relatively small part of the overall TCA will be directly affected and there will be no direct impact on any conservation area. By commencement of Arthur Street works in 2016, the 33 King William Street development is anticipated to be largely complete, with only cladding and fit-out work on-going to shortly beyond Quarter 1 2016. Adverse cumulative effects will therefore be largely indiscernible and are not considered likely to be significant based on their potential to impact on only a small part of the TCA.

Bloomberg Place Development during Construction and Operation of the BSCU

17.3.23 The Bloomberg Place development lies in the Walbrook TCA, where intervisibility with the Station Entrance is limited to oblique, distant views along Cannon Street. The predicted impact of the operational Station Entrance Hall on the Walbrook TCA is classified as negligible and it is not therefore considered that significant cumulative effects will result.

17.3.24 The Low Level 2 Sewer works adjacent to the Bloomberg Place development will potentially result in temporary adverse townscape impacts within the Bank and Walbrook TCAs, as well as within the Bank Conservation Area. The works will also potentially result in temporary adverse effects on the visual amenity of nearby receptors. However, construction of Bloomberg Place is anticipated to be largely complete ahead of commencement of any utilities works associated with the BSCU, therefore cumulative effects are not considered likely.

Transport and Movement (ES Chapter 8)

Over Site Development

17.3.25 The assessment of the completed BSCU is based on TfL passenger forecasts for 2026. These forecasts have been prepared using baseline information associated with the current occupants of the Whole Block Site i.e. the site where the OSD will be located.

17.3.26 The OSD has a floor area greater than the combined floor areas of the buildings that are to be replaced. This means that the OSD will generate additional trips compared to the existing uses at the site. The number of additional pedestrians associated with the increase in area is though small and is therefore not considered to be a significant cumulative effect.

Effects with Other Transport Schemes

17.3.27 Proposals for a new east-west Cycle Superhighway are currently being prepared by TfL. The route, if it is implemented, is expected to pass through the Arthur Street/Upper Thames Street junction and the BSCU design team will

work with the relevant designers of the cycle route to ensure the schemes are delivered in a complementary way.

Other Development Sites

17.3.28 Planning applications for nearby schemes have been reviewed to understand potential cumulative effects during the construction of the BSCU.

17.3.29 The scheme at 33 King William Street (11/00933/FULMAJ) was the only one found to be both near the site and likely to be under construction at the same time as the BSCU. The planning application included a detailed Construction Logistics Plan (CLP) and this information has been considered to assess the combined impact of this scheme and the BSCU. The CLP describes a proposed construction programme covering six months for demolition and 21 months for construction. Completion of the building is expected during the second half of 2016. The CLP includes forecasts for a maximum of three construction vehicles per hour travelling to the site.

17.3.30 The BSCU construction works using Arthur Street are expected to overlap with the fit-out stage of the works at 33 King William Street. During this period of overlap the total number of vehicle movements from both the BSCU and the 33 King William Street scheme is approximately six to seven vehicle movements per hour and this is similar to the maximum number of vehicle movements assessed for the main BSCU.

17.3.31 The cumulative impact of the two schemes in 2016 is therefore expected to be similar to the overall impact of the BSCU during the period of peak activity, which is not assessed to be a significant adverse effect.

After completion of the scheme

17.3.32 The passenger demand forecasts for 2026 make allowance for growth in travel to and from the City of London and an additional assessment has been made assuming a further 31 per cent growth in passenger demand. This assessment shows that the station will be able to accommodate this potential growth in passenger demand.

17.3.33 The scope for additional impacts of the scheme once it has been completed is therefore expected to be low due to the assessment of these scenarios which consider increases in passenger usage of the station.

Noise and Vibration (ES Chapter 9)

17.3.34 Given the distances between the application site and other nearby developments that have been identified, and considering the acoustic shielding afforded by intervening buildings, and the levels of existing noise in the area as a result of road traffic, it is reasonable to assume that no significant cumulative

noise or vibration effects with any of the other developments would occur, during either construction or operation.

17.3.35 By commencement of Arthur Street works in 2016, the 33 King William Street development is anticipated to be largely complete, with only cladding and fit-out work on-going to shortly beyond Quarter 1 2016. Adverse cumulative effects are therefore considered unlikely.

17.3.36 Consideration has also been given to the potential for cumulative effects with an OSD during the period where construction works may overlap i.e. when the final stages of the construction of the BSCU may overlap with sub-structure, superstructure and fit-out activities associated with an OSD development.

17.3.37 It is considered that the greatest likelihood for adverse or significant adverse cumulative noise effects would result from construction traffic, as construction noise from non-traffic related sources would be effectively shielded by intervening buildings and minimised through the application of the respective CoCPs.

17.3.38 However, with regard to construction traffic, it is considered that due to the existing high traffic flows on surrounding road links, and the relatively few movements associated with the construction works, that the cumulative noise impact at any receptor location would be negligible. Evidence of this can be found within Chapter 8: Transport and Movement, which indicates only very small percentage changes in 12 hour flows. Therefore no significant adverse cumulative traffic noise effects are anticipated.

17.3.39 In terms of operational (plant) noise, preliminary assessment of the plant likely to be installed on the roof of the OSD development has identified no significant cumulative effect. Bespoke mitigation, particularly to potential adiabatic coolers will ensure rating levels at surrounding receptor locations (including the upper floors of the Travelodge on Sherbourne Lane) will not exceeded the City of London Corporation's requirements.

17.3.40 Therefore, while the OSD has its own environmental noise effects, no significant cumulative effect is anticipated as a result of the BSCU.

Built Heritage (ES Chapter 10)

17.3.41 The settings of Fishmongers Hall (BH85) and Adelaide House (BH86) would be affected by the development of 33 King William Street, with some construction (such as cladding and fit out of 33 King William Street) likely to be concurrent with BSCU construction at Arthur Street. Though there will be a cumulative impact on setting, based on the types of activities and likely short duration of overlap with the construction of the BSCU, the impact is assessed as very low and not significant.

17.3.42 Views west from The Monument (BH84) will encompass both the 33 King William Street construction site and the Arthur Street Work Site. In line with the points stated in the previous paragraph, the cumulative impacts on setting are assessed as very low and not significant.

Archaeology (ES Chapter 11)

17.3.43 BSCU construction works at the Whole Block Site are likely to affect the same general assets as the OSD construction works, including the fire debris and walls and remains of the Roman road recorded beneath 143-149 Cannon Street which may extend across the southern frontage of the Whole Block Site. It is intended that integrated programmes of archaeological investigation and recording will be undertaken to mitigate individual and cumulative impacts. All archaeological works will be designed in consultation with the City of London Corporation's Historic Environment Advisor to ensure that there are no significant cumulative effects arising from these works.

17.3.44 The wider archaeological resource of the study area comprises buried archaeological remains which have accumulated as a result of human activity since the Roman period and dense urban occupation of the City of London during the subsequent centuries. The third party schemes identified in Table 17.3 have the potential to result in localised impacts to the wider archaeological resource of the area surrounding the BSCU.

17.3.45 The grant of planning permission for each of the cumulative schemes would be made in accordance with national, regional and local planning policy and guidance within which archaeological assets are a material consideration and will have included the provision of appropriate archaeological investigation and recording as mitigation measures specific to each scheme. As a result, the cumulative impacts of the identified schemes in conjunction with the BSCU are considered to be not significant.

Air Quality (ES Chapter 12)

17.3.46 During the construction phase, cumulative effects associated with dust deposition and an increase to short-term concentrations of PM_{10} may occur at sensitive receptors located within 350m of BSCU Work Sites and 350m of committed development work sites, when works are being undertaken simultaneously.

17.3.47 It is standard practice across London for construction works to be undertaken in accordance with the Mayor of London's guidance on *Controlling Dust and Emissions from Construction and Demolition* (GLA, 2006; 2013). The implementation of control measures described within this guidance has a track record of successfully controlling the effects of dust and PM_{10}. If such control measures are implemented on other construction sites (as they are expected to

be) in order to comply with London-wide requirements, and the BSCU adheres to the agreed CoCP (which is in line with the City of London Corporation's *Code of Practice for Deconstruction and Construction Sites*), the cumulative effect on dust soiling and short-term concentrations of PM_{10} will be minor and not significant.

17.3.48 The assessment of construction phase road traffic emissions is described in Chapter 12: Air Quality, and has already taken into account committed developments in the air quality study area. Therefore the cumulative impacts are the same as those described in the Air Quality chapter. In summary, the effects of emissions relating to road traffic caused by the project are not considered likely to be significant. Furthermore, it is not considered likely that impacts of the BSCU would interfere with other measures being brought forward through policies or action plans at the national and local level, to reduce the contribution from background sources or the contribution from existing local road traffic emissions.

Water Resources and Flood Risk (ES Chapter 13)

Construction Effects

17.3.49 The third party schemes within Table 17.3 largely comprise demolition of existing buildings followed by redevelopment. Most of the developments are at least 80m from the BSCU Work Sites. Assuming best working practices as required by the City of London Corporation, significant cumulative effects are not expected.

17.3.50 The proposed development at 33 King William Street is adjacent to the Arthur Street Shaft and involves 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. As there are basement works it is possible that dewatering of the shallow aquifer might be required. Construction is planned for completion during 2015, compared with construction of the BSCU commencing in 2016. Even if an overlap should develop, no significant cumulative effects are anticipated.

Permanent and Operational Effects

17.3.51 No permanent and operational cumulative effects associated with other developments in the area have been identified with respect to water resources and flood risk.

Land Contamination (ES Chapter 14)

17.3.52 Given the low likelihood of contamination in the area, and the nature of the works being undertaken within the consented and pending nearby developments, no significant cumulative effects associated with land

contamination have been identified for the construction and operational phases of the BSCU.

Waste Management and Resource Use (ES Chapter 15)

17.3.53 The assessment of the BSCU shows that excavation and construction waste arisings will peak in 2017.

17.3.54 The largest of the third party developments listed in Table 17.3, 20 Fenchurch Street, will be completed by 2016. This building is therefore not considered to have a cumulative effect relating to waste and resource use.

17.3.55 There is potential for the demolition of 20 Abchurch Lane, required for the construction of an OSD, to overlap with the end of the BSCU construction works in 2020, when the operational station fit out is underway. However, a low level of Construction, Excavation and Demolition waste arisings are anticipated during this phase of the BSCU and therefore the cumulative effects are unlikely to be significant.

17.3.56 Within the *Present and Future Waste Arisings - Review for the City of London* the City of London Corporation has identified an increase in new build commercial property in the City of London and its waste projections take this into account. The assessment considers the BSCU waste arisings against the post 2016 baseline and has identified the magnitude of impact as very low and not significant.

17.3.57 The assessment estimates that the operational waste arisings from the BSCU will contribute to significantly less than one per cent of the City of London Commercial & Industrial waste arisings as a result of the predicted increase in passenger numbers. Based on projections of Commercial and Industrial waste for the City of London, it is reasonable to assume that sufficient waste processing capacity will exist in the City of London and Greater London in 2022 and beyond. Should waste arisings increase, a large proportion is likely to constitute recyclable material which can be sustainably managed without resulting in significant adverse effects either alone or in combination with other developments.

Socio-Economics (ES Chapter 16)

17.3.58 Although the construction works for the BSCU require the demolition of the Whole Block Site, which will result in the temporary loss of commercial floorspace, the replacement building is likely to result in a net increase. This will therefore also result in a net increase in employment.

17.3.59 In addition, the OSD will replace existing older office stock with high quality office space better suited to modern working patterns, which will be more sustainable and efficient. This will further help to improve the quality of the

office stock within the City of London, which together with the BSCU, will assist in attracting new business to locate to the area.

17.4 Conclusion

17.4.1 The impacts of the BSCU are assessed in each of the technical chapters of this ES in order to identify any likely significant effects. Where relevant, specific mitigation measures are also discussed. With the implementation of these mitigation measures, and considering the intermittent, temporary nature of likely combined effects during demolition and construction, no significant effects arising from the inter-relationship of impacts are considered likely to occur. A number of effects which have potential to combine will remain during operation of the new building, however these are almost all beneficial.

17.4.2 It is concluded that the BSCU is unlikely to lead to significant adverse cumulative effects with other developments identified in the area, including an OSD.

17.4.3 In conjunction with the operational Station Entrance Hall, the completed OSD is likely to result in significant beneficial effects on townscape and visual amenity.