

16 Effect Interactions

16 Effect Interactions

Preface – Update 2015

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 Reference within the text to 'URS' in the November 2015 Replacement ES has now been replaced by AECOM Infrastructure and Environment UK Limited (hereafter referred to as 'AECOM').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

Introduction

- 16.1 Cumulative effects can occur as either interactions between effects associated with just one project or interactions between the effects of a number of projects in an area.
- 16.2 As a result, two types of cumulative effects have been considered within this ES as follows:
- The effect interactions, being the combined effects of individual effects for the project, for example noise, airborne dust or traffic effects on a single receptor; and
 - The combined effect of several schemes which may, on an individual basis be insignificant but, cumulatively or additively, have a significant effect.
- 16.3 In some Environmental Impact Assessment (EIA) guidance documents, these two types of cumulative effects are often referred to as 'Type 1' (i.e. effect interactions) and 'Type 2' (i.e. combined effects) cumulative effects respectively.
- 16.4 The review of the combined effect of the Proposed Development with other development schemes is presented within each of the technical chapters of this ES. To avoid significant repetition, information on the potential combined effects of the Proposed Development with other development schemes is not presented within this chapter.
- 16.5 This chapter has been prepared by AECOM.

Legislation Context

- 16.6 European Commission (EC) Directive 85/337/EEC (Ref. 16-1) requires the assessment of: "the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent or temporary, positive and negative effects of the project".

- 16.7 EC Directive 97/11/E (Ref. 16-2) requires projects to be assessed under the selection criteria: "the cumulation with other projects and the existing land use".
- 16.8 The Town and Country Planning (Environmental Impact Assessment) (England) Regulations 2011 (Ref. 16-3) states the following:
- Schedule 3(1): "the characteristics of development must be considered having regard, in particular to... b) the cumulation with other development";
 - Schedule 3(2): "The environmental sensitivity of geographical areas likely to be affected by development must be considered having regard, in particular, to... a) the existing land use"; and
 - Schedule 4(4): "A description of the likely significant effects of the development on the environment which should cover... cumulative effects".
- 16.9 As a result of the legislative requirement, this ES (both Volumes I and II) considers both Type 1 (effect interactions) and Type 2 (combined effects) cumulative effects.
- 16.10 The other development schemes considered within the assessment are either consented, have a resolution to grant planning consent, or are under construction (refer **Chapter 2: EIA Methodology** for the list of other development schemes considered).

Methodology for Assessing Effect Interactions of Individual Effects

- 16.11 There is no established EIA methodology for assessing and quantifying the Type 1 (effect interactions) cumulative effects on sensitive receptors. However, the EC has produced guidelines (Ref. 16-4) for assessing effect interactions "which are not intended to be formal or prescriptive, but are designed to assist EIA practitioners in developing an approach which is appropriate to a project...".
- 16.12 These guidelines have been reviewed and an approach has been developed which uses the defined residual effects of the Proposed Development to determine the potential for Type 1 (effect interactions) cumulative effects.
- 16.13 A review of the residual effects presented in this ES has been undertaken and tabulates the residual effects against the resource / receptor or receptor groups. Only residual beneficial or adverse effects classified as being of minor, moderate, major have been considered. Residual negligible or neutral effects have been excluded from the Type 1 (effect interactions) cumulative effects assessment as, by virtue of their definition, are considered to be imperceptible to a receptor or resource.
- 16.14 For the purposes of the assessment, the resource / receptor and receptor groups are those defined within **Chapter 2: EIA Methodology** of this ES.
- 16.15 For some environmental aspects, no interactions with other aspects can occur, so the potential for combined effects are not considered likely. This is stated within the assessment table.
- 16.16 For other environmental aspects, it is apparent that interactions with other aspects could occur and affect a resource / receptor or receptor group in different ways. Type 1 (effect interactions) cumulative effects may occur, particularly for a resource / receptor or receptor group which are more sensitive to change (i.e. human receptors).
- 16.17 **Table 16.1A** and **Table 16.2A** present the assessment of the Type 1 (effect interactions) cumulative effects. Consideration has been given to the demolition and construction phase of the Proposed Development (**Table 16.1A**), and one the scheme is completed and occupied (**Table 16.2A**).

Effect Interactions of Individual Effects – Demolition and Construction

- 16.18 **Table 16.1A** presents the Type 1 (effect interactions) cumulative effects assessment throughout the demolition and construction stage of the Proposed Development, and the potential for effect interactions. The results presented in the table are discussed in more detail below.

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Table 16.1A Effect Interactions of Individual Effects – Demolition and Construction – Update 2015

Sensitive Receptor Group	Demolition and Construction Residual Effects	Potential for Effect Interactions and so Combined Effects?
Neighbouring Residential Property	Air Quality (Effects from dust on nearest receptors): Negligible to Minor Adverse Noise and Vibration (Effect of noise and vibration on receptors R1 (20a Shoreditch High Street), R2 (142 Commercial Street) and R3 (4 Elder Street)): Negligible to Minor Adverse Noise and Vibration (Effect of noise and vibration on receptors R4 (1 Blossom Street) and R5 (9 Folgate Street)): Negligible to Moderate Adverse	Yes in relation to: Air Quality & Noise and Vibration
Neighbouring and Local Commercial Properties and Businesses	Air Quality (Effects from dust on nearest receptors): Negligible to Minor Adverse Noise and Vibration (Effect of noise and vibration on receptors R1 (20a Shoreditch High Street), R2 (142 Commercial Street) and R3 (4 Elder Street)): Negligible to Minor Adverse Noise and Vibration (Effect of noise and vibration on receptors R4 (1 Blossom Street) and R5 (9 Folgate Street)): Negligible to Moderate Adverse	Yes in relation to: Air Quality & Noise and Vibration
Future On-Site Users	No effects of minor, moderate or major significance identified.	N/A
Demolition and Construction Workers	Air Quality (Effects from dust): Negligible to Minor Adverse Noise and Vibration (Effect of noise and vibration): Negligible to Minor Adverse	Yes in relation to: Air Quality & Noise and Vibration
Local Population and Resources	Waste and Recycling (Effect on local waste management infrastructure): Minor Adverse Air Quality (Effects from dust on nearest open space (Elder Gardens – Folgate Street (~100m SE of Site)): Negligible to Minor Adverse Noise and Vibration (Effect of noise and vibration on nearest open space (Elder Gardens – Folgate Street (~100m SE of Site)): Negligible to Moderate Adverse	Yes in relation to: Air Quality & Noise and Vibration
Employment and Local Economy	No effects of minor, moderate or major significance identified.	N/A
Air Quality	Air Quality (Effects from dust on nearest receptors): Negligible to Minor Adverse	No No aspects / effects to interact with
Surface Water / Water Resources	Water Resources, Drainage and Flood Risk (Effect on the River Thames through sewer discharges, containing sediment, contaminants, wastewater): Minor Adverse	No No aspects / effects to interact with
Ground Water / Water Resources	Water Resources, Drainage and Flood Risk (Effect on Secondary Undifferentiated Aquifer through ground disturbance, and contamination through leaks and spillages): Minor Adverse Water Resources, Drainage and Flood Risk (Effect on Principal Aquifer through ground disturbance, and contamination through leaks and spillages): Minor Adverse	No The effects relating to individual ground water / water resources do not interact with each other
Subsurface and Surface Utilities and Infrastructure	Water Resources, Drainage and Flood Risk (Effect on TWUL Water Infrastructure through damage and disturbance, and water demand): Minor Adverse	No No aspects / effects to interact with
Pedestrian and Cycle Network	Air Quality (Effects from dust on nearest receptors): Negligible to Minor Adverse Noise and Vibration (Effect of noise and vibration): Negligible to Minor Adverse Traffic and Transport (Pedestrian network – road and footway closures): Minor Adverse Traffic and Transport (Cycle network - road and footway closures): Minor Adverse	Yes in relation to: Air Quality & Noise and Vibration & Traffic and Transport
Local Highway Network	No effects of minor, moderate or major significance identified.	N/A
Public Transport Network	No effects of minor, moderate or major significance identified.	N/A

Sensitive Receptor Group	Demolition and Construction Residual Effects	Potential for Effect Interactions and so Combined Effects?
Archaeological Assets	Archaeology (Effects of demolition and construction on St Mary Spital Priory Scheduled Monument and Later Medieval Features associated with the Priory): Major Adverse Moderate Adverse	No No aspects / effects to interact with
Heritage Assets	Built Heritage (Effect on Elder Street Conservation Area): Minor Adverse Built Heritage (Effect on Listed Buildings): Negligible to Minor Adverse Built Heritage (Effect on Locally Listed Buildings): Minor Adverse	No The effects relating to individual heritage assets do not interact with each other.
Townscape Character	Townscape and Visual Impact Assessment (Effect of demolition and construction on Townscape Character Areas): Moderate Adverse	No The effects relating to individual Townscape Character Areas do not interact with each other.
Local and Long Distance Views	Townscape and Visual Impact Assessment (Effect of demolition and construction on views): Moderate Adverse	No The effects relating to individual views do not interact with each other.

16.20 Table 16.1A shows that there is potential for a series of potential effect interactions to take place during the demolition and construction phase of the Proposed Development, for the following resources / receptors / receptor groups:

- Neighbouring Residential Property;
- Neighbouring and Local Commercial Properties and Business;
- Demolition and Construction Workers;
- Local Population and Resources; and
- Pedestrian and Cycle Network.

16.21 Further discussion on the potential Type 1 (effect interactions) cumulative effects to these receptor groups is provided below.

Explanation of the Potential for and Significance of Effect Interactions

Noise & Vibration and Air Quality

16.22 During the demolition and construction programme, individual effects that may interact include air quality (dust emissions) and noise effects from demolition and construction works. The air quality (dust emissions) and noise effects has the potential to interact to create an adverse combined effect to occupiers of residential and commercial properties within the immediate surrounding area, including along Blossom, Folgate and Elder Streets. Visitors to the Elder Gardens (Folgate Street) may also experience a potential combined adverse effect. It is also likely that the demolition and construction workers on-site during the works will experience the combined effect.

16.23 Whilst there is the potential for a combined adverse effect, the magnitude of the impacts will vary depending on the stage and location of works. Some impacts, for example, which would arise from the operation of plant and equipment, would be localised. Therefore the combined effects are likely to be temporary and transient in nature.

16.24 The potential for construction related dust and noise impacts have been taken into consideration within the ES chapters **Chapter 9: Air Quality** and **Chapter 10: Noise and Vibration** respectively, and a series of mitigation measures have been proposed to prevent or minimise the magnitude of the potential impacts on sensitive receptors within the surrounding area. The chapters also make emphasis to the industry regulation and guidance, and the implementation of best practice.

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16.25 The commitments made within the ES chapters will be incorporated into a Demolition and Construction Environmental Management Plan (DCEMP), which will include roles and responsibilities, detail on control measures and activities to be undertaken to either prevent or minimise the potential impacts on site workers (i.e. workers - personal protective equipment, protocols and best practice for activities) and surrounding receptors (i.e. residential – use of mufflers on exhausts, turn off equipment when not in use; water down dust generate activities) and monitoring and record-keeping requirements. A commitment will be made to periodically review the DCEMP and undertake regular audits of its implementation during the demolition and construction phase of the Proposed Development. Further details can be found within **Chapter 5: Demolition and Construction** of this ES.

Air Quality, Noise, Traffic and Transport

16.26 Pedestrians, cyclists and road users have the potential to experience a combined adverse effect in relation to air quality (dust emissions) and noise when travelling in proximity of the Site. These users will also experience the additional effect of temporary road and footway closures and diversions, further exacerbating the potential magnitude of the combined effect during these temporary periods of closures and diversions.

16.27 As discussed above, as works progress across the Site, the effect will vary and the different stages of the works will generate different impact magnitudes. Further, the road and footpath closures and diversions will only be for temporary periods as and when required for particular stages of the works. Mitigation measures stated within **Chapter 8: Traffic and Transport** of this ES, together with the measures provided within the DCEMP, Construction Logistics Plan and Construction Traffic Management Plan, will be implemented in order to mitigate the potential effects and in doing so reduce the magnitude of the combined effect of individual effects.

Effect Interactions of Individual Effects – Demolition and Construction – Update 2015

March 2015 ES Addendum

16.28 Each technical chapter has been reviewed for the residual effects for the Revised Scheme against the resource / receptor or receptor groups they affect.

16.29 Overall, the conclusions presented in each of the technical chapters remain unchanged in terms of likely effects and significance, and therefore the assessment presented in the December 2014 ES remain valid.

November 2015 Amendments

16.30 The demolition and construction phase effect interactions presented in the 2014 ES have been reviewed against: the minor design changes associated with the March 2015 ES Addendum; the minor changes arising from the November 2015 amendments; and the updated technical assessments undertaken and presented in this ES Addendum. Whilst the technical assessments have been updated, the demolition and construction effect interactions do not change from those presented within the 2014 ES and therefore remain valid.

Effect Interactions of Individual Effects – Completed and Operational

16.31 Table 16.2A presents a review of the potential for effect interactions of individual effects once the Proposed Development is completed and occupied. The potential effect interactions, and so combined effects, are then further discussed below.

Table 16.2A Effect Interactions of Individual Effects – Completed and Occupied

Sensitive Receptor Group	Demolition and Construction Residual Effects	Potential for Effect Interactions and so Combined Effects?
Neighbouring Residential Property	<p>Daylight (Effect on existing residential properties): Negligible to Moderate Adverse</p> <p>Sunlight (Effect on existing residential properties): Negligible to Minor Adverse</p> <p>Light Pollution (Effect on existing residential properties): Negligible to Minor Adverse</p> <p>Socio-Economics (Open space): Minor Beneficial</p> <p>Traffic and Transport (Effect on pedestrian network – severance, delay, amenity): Minor Beneficial</p> <p>Air Quality (Effect of emissions – residential receptors R2 (225 Shoreditch High Street), R3 (193 Shoreditch High Street), R4 (16 Folgate Street), R5 (40 Folgate Street), R10 (26 Folgate Street)): Minor Moderate to Major Adverse</p> <p>Wind Microclimate (Effect on pedestrian thoroughfares): Negligible to Moderate Beneficial</p> <p>Built Heritage (Conservation Area): Major Beneficial</p> <p>Built Heritage (Listed Buildings): Moderate Beneficial</p>	<p>No</p> <p>The effects relating to daylight and sunlight conditions varies in terms of windows affected</p> <p>Effects for light pollution occurs in the evening</p> <p>Yes</p> <p>in relation to Socio-Economics & Traffic and Transport & Air Quality & Wind Microclimate & Built Heritage</p>
Neighbouring and Local Commercial Properties and Businesses	<p>Socio-Economics (Open space): Minor Beneficial</p> <p>Socio-Economics (Additional spending by new residents and workers - Local): Minor Beneficial</p> <p>Wind Microclimate (Effect on pedestrian thoroughfares): Negligible to Moderate Beneficial</p> <p>Traffic and Transport (Pedestrian network): Minor Beneficial</p> <p>Built Heritage (Conservation Area): Major Beneficial</p> <p>Built Heritage (Listed Buildings): Moderate Beneficial</p> <p>Air Quality (Effect of emissions on nearest receptors): Negligible to Minor Major Adverse</p>	<p>Yes</p> <p>in relation to Socio-Economics & Wind Microclimate & Traffic and Transport & Built Heritage & Air Quality</p>
Future On-Site Users	<p>Socio-Economics (Open space): Minor Beneficial</p> <p>Traffic and Transport (Effect on pedestrian network – severance, delay, amenity): Minor Beneficial</p> <p>Wind Microclimate (Effect on pedestrian thoroughfares): Negligible to Moderate Beneficial</p> <p>Wind Microclimate (Effect on entrances): Negligible to Minor Beneficial</p>	<p>Yes</p> <p>in relation to: Socio-Economics & Traffic and Transport & Wind Microclimate</p>
Demolition and Construction Workers	No effects of minor, moderate or major significance identified.	N/A
Local Population and Resources	<p>Socio-Economics (Contribution to housing - Local): Minor Beneficial</p> <p>Socio-Economics (Open space): Minor Beneficial</p> <p>Waste and Recycling (Effect on local waste management infrastructure): Minor Adverse</p> <p>Overshadowing (Transient overshadowing of amenity areas (football pitch next to</p>	<p>No</p> <p>The effects relating to socio-economics; waste and recycling; daylight, sunlight, overshadowing, solar</p>

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Sensitive Receptor Group	Demolition and Construction Residual Effects	Potential for Effect Interactions and so Combined Effects?
	Shoreditch Station)): Minor Adverse	glare and light pollution do not interact with each other.
Employment and Local Economy	Socio-Economics (Operational employment opportunities – Borough, Local): Minor to Moderate Beneficial Socio-Economics (Additional spending by residents and employees - Local): Minor Beneficial	No All effects relate to Socio-Economics. No other aspects / effects to interact with
Air Quality	Air Quality (Effect of emissions – residential receptors R2 (225 Shoreditch High Street), R3 (193 Shoreditch High Street), R4 (16 Folgate Street), R5 (40 Folgate Street), R10 (26 Folgate Street)): Minor Moderate to Major Adverse	No No aspects / effects to interact with
Surface Water / Water Resources	Water Resources, Drainage and Flood Risk (Effect on fluvial and tidal flood risk – reduced water use, increase capacity in sewer): Minor Beneficial Water Resources, Drainage and Flood Risk (Effect on the River Thames – reduced volume of discharge): Negligible to Minor Beneficial	No All effects relate to Water Resources. No other aspects / effects to interact with
Ground Water / Water Resources	Water Resources, Drainage and Flood Risk (Effect on Secondary Undifferentiated Aquifer – contamination from spills): Minor Adverse	No No aspects / effects to interact with
Subsurface and Surface Utilities and Infrastructure	Water Resources, Drainage and Flood Risk (Effect on TWUL water infrastructure – reduced demand; attenuation): Negligible to Moderate Beneficial	No No aspects / effects to interact with
Pedestrian and Cycle Network	Traffic and Transport (Effect on pedestrian network – severance, delay, amenity): Minor Beneficial Wind Microclimate (Effect on pedestrian thoroughfares): Negligible to Moderate Beneficial Solar Glare (Solar glare at junctions on highway network): Negligible to Moderate Adverse	Yes in relation to: Traffic and Transport & Wind Microclimate & Solar Glare
Local Highway Network	Solar Glare (Effect on solar glare to junctions on highway network): Negligible to Moderate Adverse	No No aspects / effects to interact with
Public Transport Network	No effects of minor, moderate or major significance identified.	N/A
Archaeological Assets	No effects of minor, moderate or major significance identified.	N/A
Heritage Assets	Built Heritage (Conservation Area): Major Beneficial Built Heritage (Listed Buildings): Moderate Beneficial	No All effects relate to Built Heritage. No other aspects / effects to interact with
Townscape Character	Townscape and Visual Impact Assessment (Townscape Character Areas): Minor to Major Beneficial	No No aspects / effects to interact with
Local and Long Distance Views	Townscape and Visual Impact Assessment (Effects of the completed and operational Proposed Development on views): No Effect to Major Beneficial	No No aspects / effects to interact with

16.32 Table 16.2 shows that there is potential for a series of potential effect interactions to take place once the Proposed Development is complete and occupied, for the following resources / receptors / receptor groups:

- Neighbouring Residential Property;
- Neighbouring and Local Commercial Properties and Business;
- Future On-Site Users;
- Pedestrian and Cycle Network.

16.33 Further discussion on the potential Type 1 (effect interactions) cumulative effects to these receptor groups is provided below.

Explanation of the Potential for and Significance of Effect Interactions

Socio-Economics, Traffic and Transport, Wind Microclimate, Built Heritage, Air Quality

16.34 On completion, residents and occupants of commercial properties within close proximity to the Proposed Development will experience the beneficial effects the scheme will bring to the immediate area, in terms of the provision of public open space (area: up to 1,034m²) which deficient within the surrounding area, and providing a suitable microclimate for those moving within the surrounding public realm (i.e. thoroughfares) and accessing (i.e. entrances) to the Site. The Proposed Development also enhances the character of the area, in terms of design of the new buildings and the retention of the historic elements, and in doing so benefiting the local townscape views and the setting of the heritage assets (statutory and locally listed buildings) within the surrounding area.

16.35 Neighbouring residents and commercial occupants will also experience transport related effects in terms of reduced pedestrian delay and severance due to the improved permeability of the Site, as well as improved pedestrian amenity and facilities. The beneficial effects of ease of movement around the Site and an improved pedestrian amenity combine to create a combined effect with a comfortable wind microclimate at entrances and pedestrian thoroughfares.

16.36 Local commercial properties and businesses will also benefit from the likely additional spending brought to the local area from an uplift in the employment to be generated on-site, in addition to the residential population that will also reside within the Site.

16.37 The impact in terms of air quality on neighbouring residents and commercial occupants is considered very low (i.e. imperceptible), however for a small number of receptors a low (i.e. small) impact may contribute to the existing elevated pollution levels that are above the Air Quality Strategy Objective threshold identified for the area (LBTH as a whole, as it is designated as a 'Air Quality Management Area'). However, the results of the 'air quality neutral' assessment conclude that the development is 'neutral' in terms of its emissions, falling within the benchmarks for transport and the fact that no on-site emissions of NO_x and PM₁₀ are being generated.

Socio-Economics, Traffic and Transport, Wind Microclimate

16.38 On completion and operation of the Proposed Development, the future residents and users of the Site will experience a beneficial combined effect in relation to an improved open space and a suitable microclimate both on the Site and moving within the surrounding public realm (i.e. thoroughfares) and entrances.

16.39 Users will also experience transport related effects in terms of reduced pedestrian delay and severance due to the improved permeability of the Site, as well as improved pedestrian amenity and facilities. The beneficial effects of ease of movement in and around the Site and an improved pedestrian amenity combine to create a combined effect with a comfortable microclimate at entrances and pedestrian thoroughfares.

Traffic and Transport, Wind Microclimate, Solar Glare

16.40 There is a potential beneficial combined effect of individual wind (microclimate) and traffic and transport effects for users of the pedestrian and cycle network within surrounding area.

16.41 The individual Traffic and Transport effects relate to reduced pedestrian delay and severance due to the improved permeability of the Site, as well as improved pedestrian amenity and facilities. The beneficial effects of ease of movement in and around the Site and an improved pedestrian amenity combine to create a combined effect with a comfortable wind microclimate at entrances and pedestrian thoroughfares.

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- 16.42** There is the potential for solar glare impacts at junctions around the Site which have the potential to compromise those moving on the road network in proximity of the Proposed Development i.e. comfortable and safe pedestrian movement at the Site and surrounding area. However the solar glare impacts occur only for short periods, during certain times of the day, i.e. during the summer months, the solar glare effects occur either very early in the day or very late in the day / early evening.

Effect Interactions of Individual Effects – Completed and Operational – Update 2015

March 2015 ES Addendum

- 16.43** Each technical chapter has been reviewed for the residual effects for the Revised Scheme against the resource / receptor or receptor groups they affect.
- 16.44** Overall, the conclusions presented in each of the technical chapters remain unchanged in terms of likely effects and significance, and therefore the assessment presented in the December 2014 ES remain valid.

November 2015 Amendments

- 16.45** Each technical chapter has been reviewed for the residual effects for the Amended Proposed Development against the resource / receptor or receptor groups they affect.
- 16.46** Whilst the technical assessments and some residual effects (i.e. air quality) have been updated, with the exception of the updated effect interaction discussed below in terms of the likely effect on air quality, the conclusions drawn in respect of the potential for effect interactions does not change from those presented within the December 2014 ES and March 2015 ES Addendum, and therefore remain valid.

Socio-Economics Traffic and Transport, Wind Microclimate, Built Heritage and Air Quality – Update 2015

- 16.47** In April 2015, the Institute of Air Quality Management (IAQM) and Environmental Protection UK (EPUK) released an updated guidance for planning purposes, which supersedes the guidance considered in the December 2014 ES and March 2015 ES Addendum. The updated IAQM and EPUK significance criteria increases the likelihood of moderate and major adverse effects occurring where total pollutant concentrations are already elevated beyond the relevant objective value.
- 16.48** A change in traffic data used in the December 2014 ES and March 2015 ES Addendum includes greater base flows being accounted for as a result of future development schemes coming forward for the updated indicative year of opening (now 2019). From review of the future baseline (2019), the annual mean NO₂ concentrations are expected to exceed the Air Quality Strategy (AQS) Objective value at all external sensitive receptors, as a result of background concentrations already being in excess of the objective value (40 µg/m³).
- 16.49** The assessment of the Amended Proposed Development in operation results in the annual mean NO₂ concentrations expected to exceed the AQS Objective values at all external receptors. This is as a result of the elevated background concentrations being already well above the threshold. In terms of the updated EPUK / IAQM guidance, the 'With Development (2019)' scenario model predicts a moderate adverse effect at the majority of locations within the study area, and a major adverse effect at limited locations within the study area.
- 16.50** The nature of the likely effects identified on external receptors is emphasised by the updated IAQM and EPUK significance criteria, which increases the likelihood of moderate and major adverse effects occurring where total pollutant concentrations are already elevated beyond the relevant objective value. In this instance, concentrations are elevated beyond the objective value mainly as a result of high background pollutant concentrations, rather than the contribution predicted as a result of the Amended Proposed Development. This is confirmed by the air quality neutral assessment, which concludes that road traffic emissions associated with the Amended Proposed Development is below the benchmark values and that the Amended Proposed Development remains Air Quality Neutral.

Cumulative Effects of the Proposed Development with Other Development Schemes

- 16.51** As highlighted within the introduction to this ES chapter, the review of the combined effect of the Proposed Development with other developments is presented within each of the technical chapters of this ES.
- 16.52** To avoid significant repetition, information of the potential combined effects of the Proposed Development with other development scheme is not re-presented within this ES chapter.

References

- Ref. 16-1 European Commission (EC), (1985); EIA Directive (85/337/EEC).
- Ref. 16-2 EC, (1997); Amendments to the 1985 EIA Directive (97/11/EC).
- Ref. 16-3 Her Majesty's Stationery Office (HMSO), (2011); Town and Country Planning (Environmental Impact Assessment) Regulations (as amended).
- Ref. 16-4 European Community, (1999); Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.

