

Chapter 15: Effect Interactions

INTRODUCTION

- 15.1 This chapter of the Environmental Statement (ES) summarises the likelihood for in-combination effects or ‘effect interactions’. Effect interactions occur because of interactions between multiple individual effects associated with just one project on a receptor i.e. the combination of individual effects, for example effects in relation to noise, dust and traffic on a receptor.
- 15.2 Effects arising from the Proposed Development in combination with other developments or ‘cumulative schemes’ have been discussed separately throughout this ES (in **ES Volume 1, Chapters 6 to 14**) as appropriate and have not been re-iterated within this ES chapter to avoid repetition.
- 15.3 There is no established EIA methodology for assessing the nature and scale of effect interactions on a receptor. However, the European Commission¹ (EC) has produced guidelines to assist EIA practitioners in developing an approach which is appropriate to a project. These guidelines have been used to develop an approach which uses the defined residual effects of the Proposed Development (as presented throughout this ES (in **ES Volume 1, Chapters 6 to 14**) to determine the potential for effect interactions. These residual effects are reliant on mitigation measures (as identified throughout this ES and presented in **ES Volume 1, Chapter 17: Environmental Management, Mitigation and Monitoring Schedule**); the mitigation measures have been assumed to be undertaken / adopted.
- 15.4 The approach to defining effect interactions involves tabulating the residual effects of the Proposed Development against receptors or, where more appropriate, receptor groups to identify the potential for in-combination effects or effect interactions. For the purposes of this assessment, residual effects that have been identified in **ES Volume 1, Chapters 6 to 14** that **do not affect a common sensitive receptor have not been presented in this ES chapter, as no effect interactions are anticipated**. Only residual effects that are likely to give rise to effect interactions have been considered and discussed as relevant.
- 15.5 Residual effects that are beneficial, neutral or adverse in nature and that are minor, moderate or major in scale have been considered. Within the tables presented throughout this chapter, adverse effects are shaded in ‘orange’, beneficial effects are shaded in ‘green’ and neutral effects are shaded in ‘blue’ for ease of identification.
- 15.6 Based on the definitions of what negligible effects comprise for each of the technical assessments as presented in this ES, these do not warrant further consideration in relation to in-combination effects and have therefore not been pulled through into the assessment of effect interactions. Only effects described as minor and above in scale are therefore considered.
- 15.7 The potential for in-combination effects is identified, and professional judgement is then used to determine if the potential in-combination effects could lead to an effect interaction. Where a resultant effect interaction is identified, this is further discussed qualitatively.
- 15.8 The scale of an effect interaction is not assigned as part of this assessment; however, whether the effect interaction is a likely significant effect has been identified². For example, when one or more residual significant effects (i.e. effects that are typically moderate or major in scale) from different EIA topics (i.e. air quality, noise and vibration) coincide on a receptor, the effect interaction is deemed ‘significant’. If none of the individual effects are significant, consideration is given as to whether the combination of ‘not significant’ effects could result in a combined significant effect, based on professional opinion.
- 15.9 Where the nature of effects that interact are the same (i.e. they are all either adverse or beneficial), the nature of the effect interaction is reported upon. Where multiple effects of differing natures interact (i.e. there is a combination of both beneficial and adverse effects), the nature of any significant effect interaction identified has not been assigned.

¹ European Community (1999); *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions*.
² The methodology for determining a significant in-combination effect has been defined by the HS2 Phase 2a: West Midlands – Crewe Scoping and Methodology Report (July 2017) and the published HS2 Phase 2a Environmental Statement Volume 1 Introduction and Methodology and

- 15.10 This ES chapter has subsequently been divided into two parts:
- Demolition and Construction – which addresses potential intra-project effects and effect interactions arising from the deconstruction and construction works; and
 - Completed Development – which addresses potential intra-project effects and effect interactions arising from the completed and operational Proposed Development.

DEMOLITION AND CONSTRUCTION

- 15.11 Table 15.1 identifies the potential for effect interactions throughout the demolition and construction works. Where the potential for an effect interaction is identified, this is discussed in more detail below.
- 15.12 It is important to note that during demolition and construction, the effects on daylight amenity would range from Negligible (demolition) to Major Adverse (external fit-out phase). Therefore, reference has been made to the assessments of the Completed Development to represent a ‘worst-case’ scenario, where there is the potential for interactions with other effects identified during the demolition and construction works.

Table 15.1 Effect Interactions – Demolition and Construction

Sensitive Receptor	Technical Topic Area and Residual Effect	Scale and Nature of Residual Effect	Significance of Individual Effect
Non-Motorised Users (Hanover Park)	Traffic and Transport Severance of Communities	Minor Beneficial	Not Significant
	Traffic and Transport Non-Motorised User Delay	Minor Adverse	Not Significant
	Traffic and Transport Non-Motorised User Amenity, Fear and Intimidation	Minor Beneficial	Not Significant
Non-Motorised Users (On-Site)	Traffic and Transport Severance of Communities	Moderate Adverse	Significant
	Traffic and Transport Non-Motorised User Delay	Moderate Adverse	Significant
Residential Properties on Peckham High Street	Noise Demolition and Construction Noise for Phase 1 – Timeslice 1 (Receptor A within ES Volume 1, Chapter 9: Noise and Vibration)	Minor Adverse	Not Significant
	Noise Demolition and Construction Noise for Phase 2 – Timeslice 3 (Receptor A within ES Volume 1, Chapter 9: Noise and Vibration)	Moderate Adverse	Significant
	Vibration Demolition and Construction Vibration from Piling (Receptor A within ES Volume 1, Chapter 9: Noise and Vibration)	Minor Adverse	Not Significant
	Daylight Reduction in Daylight (68 – 72 Peckham High Street, 74 Peckham High Street, 86 Peckham High Street, 88 Peckham High Street, 90 Peckham High Street, 92 Peckham High Street, 96 Peckham High Street, 98 Peckham High Street)	Minor Adverse	Not Significant

Volume 2 Community Area Reports (July 2017). The methodology for assigning significance to in combination effects has been specifically included in this ES to assess if there are any combination effects would result in a significant effect.

Sensitive Receptor	Technical Topic Area and Residual Effect	Scale and Nature of Residual Effect	Significance of Individual Effect
	Street, 102 Peckham High Street, 104 Peckham High Street, 106 Peckham High Street, 110 Peckham High Street, 114 Peckham High Street, 116 Peckham High Street, 118 Peckham High Street, 120 Peckham High Street and 122 Peckham High Street)		
	Daylight Reduction in Daylight (108 Peckham High Street, and 112 Peckham High Street)	Moderate Adverse	Significant
	Sunlight Reduction in Sunlight (116 Peckham High Street)	Minor Adverse	Not Significant
	Sunlight Reduction in Sunlight (112 Peckham High Street and 114 Peckham High Street)	Moderate Adverse	Significant
Residential Properties above commercial units along Rye Lane	Noise Demolition and Construction Noise for Phase 2 – Timeslice 3 (Receptor L within ES Volume 1, Chapter 9: Noise and Vibration)	Major Adverse	Significant
	Vibration Demolition and Construction Vibration from Piling (Receptor L within ES Volume 1, Chapter 9: Noise and Vibration)	Minor Adverse	Not Significant
	Noise Demolition and Construction Noise for Phase 2 – Timeslice 4 (Receptor L within ES Volume 1, Chapter 9: Noise and Vibration)	Moderate Adverse	Significant
	Daylight Reduction in Daylight (43 Rye Lane)	Major Adverse	Significant

Non-Motorised Users (Hanover Park)

- 15.13** Non-motorised users on Hanover Park have been identified as having the potential to experience in-combination effects. The demolition and construction of the Proposed Development will result in a reduction in traffic on Hanover Park as a result of the reduction in size of the existing car park and closure of the petrol filling station, therefore resulting in Minor Beneficial (Not Significant) effects in relation to both severance and amenity, fear and intimidation. However, the demolition and construction works will also include the narrowing of footways along Hanover Park to provide working space where proposed buildings abut footways. It will also include temporary closure of footways on one side of the street, where footway enhancements are proposed, therefore resulting in a Minor Adverse (Not Significant) effect on non-motorised user delay. Whilst these effects have the potential to interact, given the scale and nature of the effects in isolation, the effect interaction is considered to be **Not Significant**.

Non-Motorised Users (On-Site)

- 15.14** Non-motorised users on-site have been identified as having the potential to experience in-combination effects. The demolition and construction of the Proposed Development will result in the temporary closure of existing through routes across the site, which provide access between Hanover Park to the south and Peckham High Street to the north, therefore resulting in Moderate Adverse (**Significant**) effects with regards to both severance and delay. Due to the significance of both the severance and delay effects, there will be a **Significant** effect interaction for non-motorised users on-site.

Residential Properties on Peckham High Street

- 15.15** Residential properties on Peckham High Street have been identified as having the potential to experience in-combination effects. Firstly, residents have been identified as likely to experience a Minor Adverse (Not Significant) noise effect in relation to construction noise from the demolition and construction works associated with Phase 1 of the Proposed Development (site enabling, demolition and piling works), a Moderate Adverse (Significant) construction noise from the demolition and construction works associated with Phase 2 of the Proposed Development (site enabling, demolition and piling works) as well as a Minor Adverse (Not Significant) effect vibration effect from piling.
- 15.16** It should be noted that the construction noise effect during Phase 1 and the construction noise effect during Phase 2 do not have the potential to interact, given that they relate to different stages of the demolition and construction programme.
- 15.17** Construction noise predictions are based on worst-case assumptions which represent high periods of construction activity over the course of the working day, with all plant being operational during the assessed period (as set out in **ES Volume 1, Chapter 9: Noise and Vibration**). In practice, noise sources will likely operate for shorter periods of time. The Minor Adverse vibration effect is only likely to occur if piling activities are taking place in close proximity to sensitive receptors (i.e. less than 20m distance). In reality, high vibration generating activities are unlikely to occur so close to sensitive receptors as it is expected that the detailed planning methodology can seek to further reduce the potential for adverse impacts.
- 15.18** Therefore, due to the scale and nature of the effects in isolation, this effect interaction of construction noise and vibration effects during Phase 1 of the demolition and construction works is deemed **Not Significant**. However, due to the significance of the construction noise effect during Phase 2 in isolation, this effect interaction between the construction noise and vibration effects is deemed **Significant**.
- 15.19** Furthermore, residential properties on Peckham High Street have also been identified as having the potential to experience in combination daylight and sunlight effects. During the later stages of the demolition and construction of the Proposed Development, as it approaches its maximum massing, the below residential properties will experience following:
- 112 Peckham High Street will experience a reduction in daylight amenity (Moderate Adverse) and sunlight amenity (Moderate Adverse). Due to the significance of these effects in isolation, this effect interaction is deemed **Significant**;
 - 114 Peckham High Street will experience a reduction in daylight amenity (Minor Adverse) and sunlight amenity (Moderate Adverse). Due to the significance of these effects in isolation, this effect interaction is deemed **Significant**; and
 - 116 Peckham High Street will experience a reduction in daylight amenity (Minor Adverse) and sunlight amenity (Minor Adverse). Given the scale and nature of these effects in isolation, this effect interaction is deemed **Not Significant**.
- 15.20** There is the potential for some short-term effect interactions at the above properties on Peckham High Street as a result of effects on noise levels and reductions in daylight and sunlight amenity, as the construction works of the main structures are near completion.

Residential Properties above Commercial Units along Rye Lane

- 15.21

Residential properties above commercial units along Rye Lane have been identified as having the potential to experience in-combination effects. Firstly, residents have been identified as likely to experience a Moderate Adverse (**Significant**) noise effect in relation to construction noise from the demolition and construction works associated with Phase 2 of the Proposed Development (site enabling, demolition and piling works), as well as a Minor Adverse (**Not Significant**) effect vibration effect from piling.
- 15.22

Construction noise predictions are based on worst-case assumptions which represent high periods of construction activity over the course of the working day, with all plant being operational during the assessed period (as set out in **ES Volume 1, Chapter 9: Noise and Vibration**). In practice, noise sources will likely operate for shorter periods of time. The Minor Adverse vibration effect is only likely to occur if piling activities are taking place in close proximity to sensitive receptors (i.e. less than 20m distance). In reality, high vibration generating activities are unlikely to occur so close to sensitive receptors as it is expected that the detailed planning methodology (through the Demolition and Construction Environmental Management Plan) can seek to further reduce the potential for adverse impacts. However, for the purposes of this assessment, due to the significance of the construction noise effect in isolation, this effect interaction is deemed **Significant**.
- 15.23

Furthermore, residents at 43 Rye Lane have also been identified as having the potential to experience in combination noise and daylight effects. Residents will experience an increase in noise (Moderate Adverse) as a result of the demolition and construction works associated with Phase 2 of the Proposed Development (substructure, superstructure and external envelope). During the superstructure and external envelope phases of construction, 43 Rye Lane will also experience a reduction in daylight amenity (Major Adverse), as the Proposed Development reaches its maximum massing. Therefore, as both effects are significant in isolation, this effect interaction is deemed **Significant**.

COMPLETED DEVELOPMENT

- 15.24

Table 15.2 identifies the potential for effect interactions associated with the completed and operational Proposed Development. Where the potential for an effect interaction is identified, this is discussed in more detail below.

Table 15.2 Effect Interactions – Completed Development

Sensitive Receptor	Technical Topic Area and Residual Effect	Scale and Nature of Residual Effect	Significance of Individual Effect
Non-Motorised Users (Hanover Park)	Traffic and Transport Severance of Communities	Minor Beneficial	Not Significant
	Traffic and Transport Non-Motorised User Amenity, Fear and Intimidation	Minor Beneficial	Not Significant
Non-Motorised Users (On-Site)	Traffic and Transport Severance of Communities	Moderate Beneficial	Significant
	Traffic and Transport Non-Motorised User Delay	Minor Beneficial	Not Significant
	Traffic and Transport Non-Motorised User Amenity, Fear and Intimidation	Moderate Beneficial	Significant
Residential Properties at 81 Hanover Park	Daylight Reduction in Daylight	Major Adverse	Significant
	Sunlight Reduction in Sunlight	Major Adverse	Significant
	Daylight Reduction in Daylight	Minor Adverse	Not Significant

Sensitive Receptor	Technical Topic Area and Residual Effect	Scale and Nature of Residual Effect	Significance of Individual Effect
Residential Properties at 18A,18B Rye Lane	Sunlight Reduction in Sunlight	Minor Adverse	Not Significant
Residential Properties at 112 Peckham High Street	Daylight Reduction in Daylight	Moderate Adverse	Significant
	Sunlight Reduction in Sunlight	Moderate Adverse	Significant
Residential Properties at 114 Peckham High Street	Daylight Reduction in Daylight	Minor Adverse	Not Significant
	Sunlight Reduction in Sunlight	Moderate Adverse	Significant
Residential Properties at 116 Peckham High Street	Daylight Reduction in Daylight	Minor Adverse	Not Significant
	Sunlight Reduction in Sunlight	Minor Adverse	Not Significant
Residential Properties at Dunstall House	Daylight Reduction in Daylight	Minor Adverse	Not Significant
	Sunlight Reduction in Sunlight	Minor Adverse	Not Significant

Non-Motorised Users (Hanover Park)

- 15.25

Non-motorised users on Hanover Park have been identified as having the potential to experience in-combination effects. Given the reduction in car parking spaces compared to the existing site, the complete and operational Proposed Development will result in a reduction in traffic on Hanover Park, therefore resulting in Minor Beneficial (Not Significant) effects in relation to both severance and amenity, fear and intimidation for non-motorised users. Whilst these effects have the potential to interact, given the scale and nature of the effects in isolation, the effect interaction is considered to be **Not Significant**.

Non-Motorised Users (On-Site)

- 15.26

Non-motorised users on-site have been identified as having the potential to experience in-combination effects. The complete and operational Proposed Development will result in the enhancement of existing through routes across the site, providing access between Hanover Park to the south and Peckham High Street to the north. These routes will be traffic free, therefore resulting in Moderate Beneficial (Significant) effects with regards to both severance and amenity, fear and intimidation. The improvements to these pedestrian routes will also result in a Minor Beneficial (Not Significant) effect on non-motorised user delay. Therefore, due to at least one of these effects being significant in isolation, this effect interaction is deemed **Significant**.

Residential Properties at 81 Hanover Park

- 15.27

Residents at 81 Hanover Park have been identified as having the potential to experience in-combination effects, in relation to daylight and sunlight. Once the Proposed Development is complete and operational, 81 Hanover Park will experience a reduction in daylight amenity (Major Adverse) and sunlight amenity (Major Adverse). Due to the significance of these effects in isolation, this effect interaction is deemed **Significant**.

Residential Properties at 18A and 18B Rye Lane

- 15.28

Residents at 18A and 18B Rye Lane have been identified as having the potential to experience in-combination effects, in relation to daylight and sunlight. Once the Proposed Development is complete and operational, 18A

and 18B Rye Lane will experience a reduction in daylight amenity (Minor Adverse) and sunlight amenity (Minor Adverse). Given the scale and nature of these effects in isolation, this effect interaction is deemed **Not Significant**.

Residential Properties at 112 Peckham High Street

- 15.29** Residents at 112 Peckham High Street have been identified as having the potential to experience in-combination effects, in relation to daylight and sunlight. Once the Proposed Development is complete and operational, 112 Peckham High Street will experience a reduction in daylight amenity (Moderate Adverse) and sunlight amenity (Moderate Adverse). Due to the significance of these effects in isolation, this effect interaction is deemed **Significant**.

Residential Properties at 114 Peckham High Street

- 15.30** Residents at 114 Peckham High Street have been identified as having the potential to experience in-combination effects, in relation to daylight and sunlight. Once the Proposed Development is complete and operational, 114 Peckham High Street will experience a reduction in daylight amenity (Minor Adverse) and sunlight amenity (Moderate Adverse). Therefore, due to at least one of these effects being significant in isolation, this effect interaction is deemed **Significant**.

Residential Properties at 116 Peckham High Street

- 15.31** Residents at 116 Peckham High Street have been identified as having the potential to experience in-combination effects, in relation to daylight and sunlight. Once the Proposed Development is complete and operational, 116 Peckham High Street will experience a reduction in daylight amenity (Minor Adverse) and sunlight amenity (Minor Adverse). Given the scale and nature of these effects in isolation, this effect interaction is deemed **Not Significant**.

Residential Properties at Dunstall House

- 15.32** Residents at Dunstall House have been identified as having the potential to experience in-combination effects, in relation to daylight and sunlight. Once the Proposed Development is complete and operational, Dunstall House will experience a reduction in daylight amenity (Minor Adverse) and sunlight amenity (Minor Adverse). Given the scale and nature of these effects in isolation, this effect interaction is deemed **Not Significant**.

SUMMARY AND CONCLUSION

- 15.33** This ES chapter has highlighted the potential for effect interactions between residual effects presented throughout the ES in **ES Volume 1, Chapters 6 to 14**. In summary the following **Significant** effect interactions have been identified during the demolition and construction of the Proposed Development:
- A **Significant Adverse** temporary effect interaction to non-motorised users on-site due to combined traffic and transport (severance and delay) effects;
 - A **Significant Adverse** temporary effect interaction to residential properties on Peckham High Street due to combined noise and vibration effects during Phase 2 of the demolition and construction works;
 - A **Significant Adverse** effect interaction to residential properties at 112 and 114 Peckham High Street due to noise and vibration during Phase 2 of the demolition and construction works combined with daylight and sunlight effects;
 - A **Significant Adverse** temporary effect interaction to residential properties above commercial units along Rye Lane due to combined noise and vibration effects; and
 - A **Significant Adverse** temporary effect interaction to residential properties at 43 Rye Lane due to combined noise and daylight effects.

- 15.34** The **Significant Adverse** effect interactions during demolition and construction are based on worst-case assumptions which represent high periods of construction activity over the course of the working day, with all plant being operational during the assessed period (as set out in **ES Volume 1, Chapter 9: Noise and Vibration**). In reality, demolition and construction impacts will be mitigated through the Demolition and Construction Environmental Management Plan as far as practically possible to reduce the impact on neighbours.

- 15.35** The following **Significant** effect interactions have been identified once the Proposed Development is complete and operational:

- A **Significant Beneficial** effect interaction to non-motorised users on-site due to combined traffic and transport (severance, delay, amenity, fear and intimidation) effects;
- A **Significant Adverse** effect interaction to residential properties at 81 Hanover Park due to combined daylight and sunlight effects;
- A **Significant Adverse** effect interaction to residential properties at 112 Peckham High Street due to combined daylight and sunlight effects; and
- A **Significant Adverse** effect interaction to residential properties at 114 Peckham High Street due to combined daylight and sunlight effects.

- 15.36** The **Significant Adverse** effect interactions once the Proposed Development is completed and operational relate to daylight and sunlight effects. The Proposed Development has been designed with careful consideration of neighbouring daylight and sunlight amenity to existing residential receptors. The low-level and under-developed site condition in the existing situation means that larger proportional changes in amenity are inevitable in the event that the site is meaningfully redeveloped. Where neighbouring windows currently overlook a low-level and partially clear site, they will enjoy high levels of daylight and sunlight which are not necessarily characteristic of an urban setting.

- 15.37** A significant beneficial effect interaction will occur as a result of the enhancement of existing through routes across the site, providing access between Hanover Park to the south and Peckham High Street.