Gatwick Airport Northern Runway Project

Environmental Statement
Chapter 20: Cumulative Effects and Inter-Relationships

Book 5

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20.1. Introduction

20.1.1 This chapter of the Environmental Statement (ES) presents the findings of the Environmental Impact Assessment (EIA) work concerning the potential effects of the proposal to make best use of Gatwick's existing runways and infrastructure (referred to within this report as 'the Project') on cumulative effects and inter-relationships.

20.1.2 This chapter considers the effects arising from the Project that may occur at the same time as effects from other developments on environmental receptors (cumulative effects), as well as the combined effects of the environmental topics covered in Chapters 7 to 19 of this ES (Doc Ref. 5.1) on single receptors or receptor groups (inter-relationships).

20.1.3 The Cumulative Effects Assessment (CEA) element of this chapter considers effects on environmental receptors from two or more developments which could occur at the same time and which could result in greater effects than if the Project occurred on its own. The inter-related effects assessment considers effects on receptors or receptor groups, such as local residents, users of local rights of way or services, which may be affected by different environmental effects generated by the Project only. These effects could occur simultaneously or concurrently and may result in a greater effect than when considered on a topic by topic basis. This assessment therefore includes consideration of particular locations where several effects, for example noise, air quality and visual change, may all occur at the same time or one after another. Further information on the methodology can be found at Section 20.4 of this chapter.

20.1.4 In particular, this ES chapter considers:

- the effects of one or more other developments alongside the effects from the Project on a single receptor;
- the assessment of effects that occur throughout more than one period of the Project (construction and operation) to potentially create a more significant effect on a receptor than if assessed in isolation; and
- the receptor-led effects which result as a combination of multiple environmental effects on a single receptor or receptor groups.

20.2. Legislation and Policy

Legislation

20.2.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (hereafter referred to as 'the EIA Regulations') require the EIA process to consider cumulative and inter-related effects. Cumulative effects result from multiple actions on receptors and resources over time and are generally additive or interactive (synergistic) in nature.

20.2.2 The EIA Regulations state in Schedule 4 paragraph 5(a) that an assessment should provide a description of the likely significant effects, including cumulative effects, that could occur as a result of the Project in combination with other developments:

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

…

The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary…effects of the development'.

20.2.3 The EIA Regulations (Regulation 5(2)(e)) also require that the EIA process should identify, describe and assess the significant effects in relation to:

'(e) the interaction between the factors referred to in sub-paragraphs (a) to (d) [population and human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage and the landscape]'.

Planning Policy Context

National Policy Statements

20.2.4 As set out in **ES Chapter 2: Planning Policy Context** (Doc Ref. 5.1), the Airports National Policy Statement (NPS) (Department for Transport, 2018), although primarily provided in relation to a new runway at Heathrow Airport, remains an important and relevant consideration for other applications for airport infrastructure in London and the south east of England.

20.2.5 The NPS for National Networks[1] (Department for Transport (DfT), 2014) sets out the need for development of road, rail and strategic rail freight interchange projects on the national networks and the policy against which decisions on major road and rail projects will be made. This has been taken into account in relation to the highways improvements proposed as part of the Project.

20.2.6 Table 20.2.1 provides a summary of the relevant requirements of these NPSs in relation to the assessment of cumulative effects and inter-relationships and how these are addressed within the ES.

Table 20.2.1: Summary of NPS Information Relevant to this Chapter

Summary of NPS Requirement	How and where considered in the ES
Airports NPS and NPS for National Networks	
In considering any proposed development, the examining authority will take into account its potential adverse impacts including any longer term and cumulative adverse impacts as	The cumulative effects of the Project with other developments and intra-related effects are considered in Chapters 7 – 19

[1] The Department for Transport published a revised draft National Policy Statement for National Networks (''NPSNN'') for consultation on 14 March 2023. The draft NPSNN confirms in paragraph 1.16 that the existing NPSNN remains the relevant government policy and has full force and effect in relation to any applicable applications for development consent accepted for examination before designation of the updated NPSNN. The draft NPSNN further notes in paragraph 1.17 that the emerging draft NPSNN is capable of being an important and relevant consideration in the Secretary of State's decision making process. As such, the Applicant will continue to monitor the progress of the NPSNN review process and incorporate any updates to the Project's application documentation where considered appropriate in due course.

Summary of NPS Requirement	How and where considered in the ES
well as measures to avoid, reduce or compensate for any adverse impacts (paragraphs 4.4 in Airports NPS and 4.3 and 4.15 - 4.17 in NPS for National Networks). Any environmental statement should describe any cumulative effects (paragraphs 5.176 in Airports NPS and 5.223 in NPS for National Networks). Paragraph 4.4.14 of the Airports NPS refers to the cumulative effects of airport expansion on quality of life impacts.	of this ES and summarised in this chapter.
When considering significant cumulative effects, any environmental statement should provide information on how the effects of an applicant's proposal would combine and interact with the effects of other development (including projects for which consent has been granted, as well as those already in existence if they are not part of the baseline) (paragraphs 4.13 in Airports NPS and 4.16 in NPS for National Networks).	The cumulative effects of the Project with other developments are considered in ES Chapters 7 – 19 of this ES and summarised in this chapter. Other developments, including those applications which have been granted but not yet implemented and those recently constructed and not forming part of the baseline, have been considered in the cumulative 'long list' (**ES Appendix 20.4.1: Short and Long List of Other Developments** (Doc Ref. 5.3)).
The Examining Authority should consider how significant cumulative effects, and the interrelationship between effects, might as a whole affect the environment, even though they may be acceptable when considered on an individual basis or with mitigation measures in place (paragraphs 4.15 in Airports NPS and 4.17 in NPS for National Networks).	The cumulative and inter-related effects are considered and presented within this chapter of the ES.

National Planning Policy Framework

20.2.7 The National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2021) sets out the planning policies for England. In relation to various specific environmental topics, the NPPF states that the consenting authority should take cumulative effects into account when making a decision.

20.2.8 The National Planning Practice Guidance (NPPG) (Ministry of Housing, Communities and Local Government, 2019) supports the NPPF and provides guidance across a range of topic areas. The NPPG states that:

> *'Each application (or request for a screening opinion) should be considered on its own merits. There are occasions, however, when other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a proposed development. The local planning authorities should always have regard to the possible cumulative effects arising from any existing or approved development'.* (Paragraph 024, updated May 2020).

20.2.9 For individual environmental topics, the NPPF reiterates the need to consider cumulative and inter-related effects.

20.3. Consultation and Engagement

20.3.1 In September 2019, Gatwick Airport Limited (GAL) submitted a Scoping Report to the Planning Inspectorate, which described the scope and methodology for the technical studies being undertaken to provide an assessment of any likely significant effects and, where necessary, to determine suitable mitigation measures for the construction and operational periods of the Project. It also described those topics or sub-topics which are proposed to be scoped out of the EIA process and provided justification as to why the Project would not have the potential to give rise to significant environmental effects in these areas. The Scoping Report is provided in **ES Appendix 6.2.1: Scoping Report** (Doc Ref. 5.3).

20.3.2 Following consultation with the statutory bodies, the Planning Inspectorate (on behalf of the Secretary of State) provided a Scoping Opinion on 11 October 2019 (Planning Inspectorate, 2019a). The Scoping Opinion is provided in **ES Appendix 6.2.2** (Doc Ref. 5.3).

20.3.3 Key issues raised during the scoping process specific to cumulative effects and inter-relationships are listed in Table 20.3.1, together with details of how these issues have been addressed within this ES.

Table 20.3.1: Summary of Scoping Responses from the Planning Inspectorate

Details	How/where taken into account in ES
The Inspectorate recognises that a number of the ES aspect chapter study areas are yet to be fully defined for the purposes of the assessment (and by extension, the cumulative assessment). The ES should specifically justify the definition of each of these ZoIs (Zone of Influence), particularly where subjective judgements are made based on local knowledge (which should be fully explained in each case). For example, the ZoI for European designations will need to be established in light of transport and air quality modelling work which may require it to be extended beyond the 20 km currently stated.	The ZoIs used in the CEA are based on the study areas presented within each topic chapter. The justification for the selection of each study area is outlined in ES Chapters 7 to 19 of this ES.
The implications of Heathrow's expansion should be fully identified and explored in terms of potential for significant cumulative effects across relevant aspect chapters for both construction and operation. Although the project at Heathrow is outside of the 15 km ZoI, the Inspectorate considers that an increase in night flights associated with the Proposed Development (combined with Heathrow expansion and any airspace change) could impact residential amenity (and other aspects) of communities and other receptors adjacent to Gatwick Airport. The Inspectorate also expects there will be a degree of overlap in the strategic level transport modelling for both projects which will also need to be addressed within the ES (including construction Heavy Goods Vehicles (HGVs)).	Due to uncertainty around the Heathrow Third Runway Project this has not been included in the main cumulative effects assessment (**ES Appendix 4.3.1: Forecast Data Book** (Doc Ref. 5.3)). However, a separate sensitivity test has been included in the chapter in the event this development does come forward (Table 20.7.2).

Details	How/where taken into account in ES
Where new 'other development' comes forward following the Applicant's stated assessment cut-off date (3 months prior to submission), the Examining Authority may request additional information during the Examination in relation to effects arising from such development. The Applicant should be aware of the potential need to conduct further assessments and provide more information.	The long list of other developments was reviewed and updated up until three months prior to submission of the application for development consent (**ES Appendix 20.4.1: Short and Long List of Other Developments** (Doc Ref. 5.3)). Any applications for other developments submitted after this cut off will be considered, where required, by the Planning Inspectorate post submission.
Crawley Borough Council and West Sussex County Council have highlighted the need for the Homes England "West of Ifield" development (10,000 homes) to be considered as part of the cumulative assessment, as a receptor of and a contributor towards potential cumulative effects of the Proposed Development.	The 'West of Ifield' development is included in the short list of other developments considered in this assessment (**ES Appendix 20.4.1: Short and Long List of Other Developments** (Doc Ref. 5.3) and **ES Figure 20.4.3** (Doc Ref. 5.2)).
Surrey County Council highlight a number of recently permitted minerals developments and allocated minerals sites (which would qualify as 'major development' against the Applicant's criteria). The Applicant should consider inclusion of these developments in the 'long list' of other developments or otherwise justify their exclusion.	Allocated mineral sites and permitted mineral developments for both Surrey and Sussex have been included in the long list (**ES Appendix 20.4.1: Short and Long List of Other Developments** (Doc Ref. 5.3)).
The ES should consider the potential for cumulative effects of the Horley Business Park as well as any influence of the Business Park scheme on the design of the Proposed Development, with particular regard to assessment assumptions around: ▪ proposed end uses of the site (in the absence of a masterplan for the Business Park); and ▪ construction phasing (given that construction is estimated to take place over a twenty-year period).	The Horley Business Park is included in the long list of other developments considered in this assessment (**ES Appendix 20.4.1: Short and Long List of Other Developments** (Doc Ref. 5.3)).

20.3.4 The PEIR was issued to inform the statutory consultation carried out on the Project in Autumn 2021. It presented the preliminary findings of the EIA process for the Project at that time. The consultation responses specific to the CEA and assessment of inter-relationships and the way in which they have been addressed in this ES chapter are set out in Table 20.3.2. Further detail about the consultation process for the Project and the way the consultation responses have been addressed is provided in the separate **Consultation Report Annex B – Autumn 2021 Consultation: Consultee Response Summaries** (Doc Ref. 6.1).

Table 20.3.2: Summary of Consultation (in response to the PEIR)

Consultee	Key Themes	How/ where taken into account in ES
Local Authority Working Groups	A clear methodology should be defined to explain the approach to both the CEA and the inter-relationships assessment. Specifically, the ES should explain the approach to identify the long list and short list of other developments provided by the local authorities. A ZoI should be identified for each topic area.	The approach to the cumulative and inter-relationships assessment is provided in Section 20.4. The long list of other developments is provided within **ES Appendix 20.4.1: Short and Long List of Other Developments** (Doc Ref. 5.3). The ZoI for each topic area is provided within Table 20.4.2 and shown on **ES Figure 20.4.1** (Doc Ref. 5.2). **ES Figure 12.4.3** to **ES Figure 12.4.5** (Doc Ref. 5.2) depict the ZoI in relation to the road network.
Charlwood Parish Council	The CEA should consider the combined and cumulative effects on the health of the population of Hookwood and Charlwood in terms of noise disturbance and air quality arising from the construction and operation of the Project.	This is assessed in Section 20.8, 'Receptor-led Inter-related Effects'.
Horsham District Council	The Council is keen to understand the impact of the Project on water resources and biodiversity, in cumulation. The Council believes the CEA has several omissions and errors in relation to the Land North of Horsham and expresses concern that this key strategic development site with planning permission for at least 2,500 homes, a business park, and community infrastructure, has been excluded from the assessment despite its proximity to the airport.	The assessment of inter-related effects is integral to the assessment of potential impacts on ecological receptors and has been assessed within **ES Chapter 9: Ecology and Nature Conservation** (Doc Ref. 5.1). This topic has drawn from other chapters such as **ES Chapter 11: Water Environment** (Doc Ref. 5.1). Land North of Horsham has been assessed in the CEA. The outline and reserved

Consultee	Key Themes	How/ where taken into account in ES
		matter applications are described in Table 20.4.5.
Kent County Council	Kent County Council requests analysis of the cumulative demand for temporary construction workers and welcomes the development of a package of construction training, upskilling, and apprenticeship opportunities. It recommends further consideration be given to the areas where temporary construction workers will be housed, suggesting sustainable travel plans are implemented to ensure workers can get to the site with minimal impact on the existing network.	The cumulative effect on the construction workforce is summarised in Table 20.7.1 (from **ES Chapter 17: Socio-Economics** (Doc Ref. 5.1)) and an employment strategy is presented in **ES Appendix 17.8.1: Employment Skills and Business Strategy** (Doc Ref. 5.3)
Mid Sussex District Council	The Council states that the traffic and transport assessments should take account of the impacts of other nearby large development sites such West of Ifield, Gatwick Green, and Horley Business Park. It believes these sites will have a cumulative impact on the transport network and the methodology for cumulative assessments should therefore take them into account.	Wider strategic traffic modelling has been undertaken including these developments, as summarised within Table 20.7.1.
Tandridge District Council	The Council welcomes that a sensitivity test will be undertaken of the Project with Heathrow R3.	This is set out within Table 20.7.2.
West Sussex County Council	Emerging large development sites in the local area should be taken into account for the CEA, including West of Ifield, Gatwick Green, and Horley Business Park.	Refer to Table 20.4.5 which identifies these developments within the short list of other developments.

20.3.5 In June 2022 an additional consultation was undertaken to update stakeholders and the local community on the ongoing work and refinement to the Project proposals, which included a targeted, statutory consultation on the design changes to the proposed highway improvement changes. As these changes to the Project could lead to new or materially different significant environmental effects compared to those reported in the PEIR, an updated PEI was issued as part of this additional consultation. However, there were no consultation responses specific to the CEA and assessment of inter-relationships.

20.4. Assessment Methodology

Relevant Guidance

20.4.1 A range of guidance is available on CEA and the assessment of inter-relationships but at present there is no single, agreed industry standard method. The following guidance documents have been taken into consideration for the assessment presented in this chapter.

Planning Inspectorate Advice Notes

20.4.2 Planning Inspectorate Advice Note Seventeen (Planning Inspectorate, 2019b) provides guidance on '*cumulative effects assessment relevant to nationally significant infrastructure projects*'. It seeks to provide:

- a brief description of the legal context and obligations placed on an applicant, with respect to cumulative effects under national planning policy and the EIA Regulations;
- an overview of the CEA process that applicants may wish to adopt for Nationally Significant Infrastructure Projects (NSIP); and
- advice regarding a staged approach and the use of consistent template formats for documenting the CEA within the ES.

20.4.3 At paragraph 1.4, the Advice Note states that the need to consider cumulative effects in planning and decision making is set out in planning policy. It refers to the requirement in the EIA Directive and Regulations to assess the cumulation of effects with other '*existing and/or approved projects*' and advises that this is '*taken to include existing developments and existing plans and projects that are 'reasonably foreseeable*''. It then goes on present a four-stage approach to CEA that applicants may wish to adopt, as has been adopted for this Project and outlined in more detail in Table 20.4.1.

20.4.4 The Advice Note anticipates that for a CEA to be carried out (Stage 4), information captured (Stage 3) should include the '*proposed design and location information; the proposed programme of construction and operation; and environmental assessments that set out baseline data and effects arising from the 'other existing development and/or approved development''*.

20.4.5 The Advice Note also confirms (paragraph 2.5) that the recommended process should not be confused with the assessment of interrelationships between aspects for the proposed NSIP. This chapter has regard to the process set out in the Advice note as explained further below.

20.4.6 In relation to the assessment of inter-relationships, the Planning Inspectorate Rochdale Envelope Advice Note Nine (Planning Inspectorate, 2018), states that the assessment should:

'…ensure that the assessment of the worst case scenario(s) addresses impacts which may not be significant on their own but could become significant when they inter-relate with other impacts alone or cumulatively with impacts from other development (including those identified in other aspect assessments)'.

Design Manual for Roads and Bridges

20.4.7 The Design Manual for Roads and Bridges (DMRB) provides guidance on cumulative effects and inter-relationships. Although directly relevant to the assessment of road schemes/new highways infrastructure, it is widely recognised as useful in the context of other types of major infrastructure

projects. The DMRB (LA 104) (Highways England *et al.,* 2020) provides useful definitions and assessment methodologies for inter-related effects, and therefore this document has been taken into consideration in this assessment. The DMRB defines the following two types of effects:

'1) a single project (eg numerous different effects impacting a single receptor); and
2) different projects (together with the project being assessed)'.

20.4.8 The guidance sets out that the assessment of cumulative effects should report on:

'1) roads projects which have been confirmed for delivery over a similar timeframe;
2) other development projects with valid planning permissions or consent orders, and for which EIA is a requirement; and
3) proposals in adopted development plans with a clear identified programme for delivery'.

20.4.9 In addition, it states that the assessment of cumulative effects shall:

'1) establish the zone of influence of the project together with other projects;
2) establish a list of projects which have the potential to result in cumulative impacts; and
3) obtain further information and detail on the list of identified projects to support further assessment'.

European Commission

20.4.10 Consideration has also been given to Guidance on the Preparation of the Environmental Impact Assessment Report, Sections 1.4.3 to 1.4.4 (European Commission, 2017) which provides a useful explanation of the types of cumulative and inter-related effects that can occur as a result of development. The report emphasises the need for a thorough scoping process so that the CEA and inter-relationships assessment focuses on specific effects which have not already been assessed in other areas. The guidance states that the coexistence of impacts may increase or decrease their combined impact. Impacts that are considered to be insignificant, when assessed individually, may become significant when combined with other impacts. It notes the need to identify the temporal and geographical overlap of effects as well as future and historical effects.

Study Area

20.4.11 The study area, or Zone of Influence (ZoI), for the CEA and assessment of inter-relationships is based primarily on the study areas for each topic area for the Project as well as the study areas for each of the other developments. Further information on the ZoIs used in this assessment is presented below.

Methodology

Cumulative Effects Assessment

20.4.12 As mentioned above, the CEA methodology is primarily based on the process set out in the Planning Inspectorate Advice Note Seventeen (Planning Inspectorate, 2019) which consists of a four stage process. The four stage process and how this has been progressed is outlined in Table 20.4.1.

Table 20.4.1: Summary of the Four Stage Approach to CEA

CEA Stage	Activity
Stage 1	Identify a long list of other developments using the tiered approach (see Table 20.4.4). In order to do this the ZoI for each topic area has been identified which forms the basis of the search area. The developments included in the long list have been included along with important information and the assigned tier.
Stage 2	From the long list, develop a short list of other developments which are considered within the CEA. Inclusion/exclusion criteria outlined below used to define the short list. The short list has been consulted upon with statutory and non-statutory consultees during the EIA process.
Stage 3	A desk study has been undertaken to gather the appropriate environmental information (if available) for the identified 'other developments' in the short list.
Stage 4	An assessment of the likely cumulative effects. The apportionment of effect between the Project and the other developments is considered, eg whether the contribution to the effect is demonstrably related to one development or whether there is an equal contribution from either development.

Stage 1

20.4.13 The ZoI for each topic area has been identified primarily based on the extent of likely effects. Each topic area has used topic-specific guidance along with professional judgement and knowledge of the local area to define the geographical ZoI. These ZoIs were reviewed and updated in July 2022. The identified ZoIs are presented in Table 20.4.2 below and shown on **ES Figure 20.4.1** (Doc Ref. 5.2). **ES Figures 12.4.3** to **12.4.5** (Doc Ref. 5.2) depict the ZoI for traffic and transport.

Table 20.4.2: Zone of Influence for Cumulative Effects Assessment

Topic	Zone of Influence
Historic Environment	Built heritage: 3 km. Buried archaeology: 1 km. Noise-sensitive designated heritage assets as a result of change in air noise: where there would be an average summer daytime change of +/- 1dB.
Landscape, Townscape and Visual Resources	Landscape, townscape and visual receptors: 5 km within ZTV (zone of theoretical visibility). Cumulative developments have been considered up to 10 km from the Project site boundary. Landscape tranquility study area: overflights from aircraft at up to 7,000 feet above local ground level (see **ES Appendix 14.9.2: Air Noise Modelling** (Doc Ref. 5.3)).
Ecology and Nature Conservation	European statutory designated sites: within 20 km. Nationally and locally designated sites records: within 5km. Nationally and locally designated sites: within 200 metres of significant surface access routes or where other pathways exist. Protected species records: 2 km (and 10 km for bats).

Topic	Zone of Influence
	Great crested newts: water bodies within 500 metres of Project site boundary unless significant barrier to movement onto Project site present (ie a major road). Otter and water vole surveys: 500 metres up and down stream of major water resources entering the Project site. Other protected/notable species surveys: within the Project site boundary.
Geology and Ground Conditions	Geology and ground conditions: buffer of up to 500 metres.
Water Environment	General: 2 km (may be extended if a hydrological pathway is identified). Geomorphology: the catchments and channels of the receptors that could be directly impacted by the Project (River Mole upstream of Horley, River Mole (Horley to Hersham), Tilgate Brook and Gatwick Stream at Crawley, and Burstow Stream). Flood risk: areas within hydraulic and morphological connectivity of receptors. Wastewater: Gatwick's supporting infrastructure. A 12 km by 12 km area is identified as the overall ZoI to reflect Water Framework Directive (WFD)/Hydromorphology.
Traffic and Transport	Road network: affected road network modelled to result in a greater than 30% increase of vehicles (or the number of heavy good vehicles (HGVs) to increase by 30%) or greater than 10% in a sensitive area (or HGVs increase by 10% in a sensitive area). Refer to **ES Figures 12.4.3** to **12.4.5** (Doc Ref. 5.2). Rail network: affected rail network (all services between Gatwick Airport and Victoria/London Bridge, North Downs Line and Arun Valley Line). Cycling network: 5 km. Walking routes: 2 km.
Air Quality	Construction dust emissions: 350 metres from construction activities or 50 metres for ecological effects. Trackout: 500 metres along construction traffic routes from site entrance(s). Construction and operation emissions: Airport Dispersion Modelling Software (ADMS) of study area, which includes the 10 km by 11 km domain centred on the airport and the extent of the road traffic model based on traffic screening to 200 metres from the affected road network.
Noise and Vibration	Air noise: the ZoI extends more than 20 km from the airport (as shown in **ES Figure 20.4.1** (Doc Ref. 5.2)). Ground noise: only the nearest receptors around the airport have been assessed.
Climate Change	In-combination climate change impact: dependent on related topic, eg flood risk. Climate change resilience: the Project itself.
Greenhouse Gases (GHG)	The location of the GHG emissions source is not relevant to the impact arising from it, ie it is not feasible to identify a ZoI for GHG emissions at any

Topic	Zone of Influence
	geographic scale other than the global scale. GHG emissions are assessed in the context of UK national GHG targets.
Socio-Economic Effects	Cumulative socio-economic effects: 8 km from the Project site boundary covering and extending beyond the Local Study Area. This is the area where receptors are most likely to be impacted upon by the Project and contain the other developments that are also most likely to impact upon the receptors.
Health and Wellbeing	The cumulative effects assessment for health and wellbeing depends on the determinant of health therefore the ZoI is informed by the ZoIs for the topics of air quality, noise, transport and socio-economics.
Agricultural Land Use and Recreation	Agriculture: agricultural land within the Project site and the wider land holdings. Recreation: the Project site boundary and any resources that lie immediately adjacent to the Project site or link to it.

20.4.14 The overarching criteria used in the desk study for long-listing potentially relevant other developments are:

- other developments with the potential for overlap with the Project in terms of impacts on sensitive receptors; or
- other developments that introduce new sensitive receptors that could be impacted by the Project, where existing receptors assessed are not adequately representative of effects.

20.4.15 These overarching criteria generally exclude minor household applications and business applications (such as extensions or changes of use), of which there are very large numbers at any given time and which are not likely to result in significant cumulative effects. Nevertheless, minor applications have been reviewed within 1 km of the Project site and a judgement taken as to whether they could result in any significant cumulative effects. Following review of all minor applications, it can be confirmed that there are no such applications together that could result in significant cumulative effects.

20.4.16 Applications that introduce new receptors have been identified and considered within each topic chapter, where appropriate.

20.4.17 Table 20.4.3 provides a summary of the search criteria used to identify other developments for the long list informed by the ZoIs identified above. These search criteria (as well as the ZoIs) were reviewed in July 2022. Known other developments located outside of the search radius have been considered on a case by case basis as to whether they are likely to result in cumulative effects. These have been included in the long list as appropriate.

Table 20.4.3: Search Criteria for Developments to be Included in the Long List

Development/plan		Search timescale	Search radius[1]	Screening criteria			
				Housing unit (no)	Housing land (ha)	Non-residential (m^2)	Non-residential (ha)
Nationally Significant Infrastructure Projects		5 years previous from May 2023	10 km	Screened in			
Transport and Works Act Orders (TWAO)				Screened in			
Hybrid Bills				Screened in			
"Major applications" to LPA	Large Scale		10 km	200+	4+	10,000+	2+
	Small Scale			10-199	0.5-4	1,000 – 10,000	1-2
Other applications to LPA			1 km	Considered on a case by case basis.			
Local Development Plan allocations			10 km	Screened in with less weight given to emerging plans.			

Notes:
[1] Residential developments. Two areas have been identified to the west and east that extend outwards from the 10 km area (around 5 km each). This reflects the Lowest Observable Effect Levels (LOAEL) contours that would change due to the Project. Within these two areas, large housing developments have been identified (both applications and allocations) as residential is the key concern regarding aircraft noise.

20.4.18 The types of other development considered in the CEA are set out in Table 20.4.4 (adapted from Table 2 of Planning Inspectorate Advice Note Seventeen (Planning Inspectorate, 2019b). The key difficulties in any CEA relate to the level of detail available in relation to other developments and the reliance that needs to be made on environmental assessment carried out by others. For those applications at earlier stages of development or those for which EIA has not been undertaken, professional judgement and knowledge of the study area have been employed to consider the receptors or resources that may be affected by the Project and the other developments in question.

Table 20.4.4: Other Developments for Inclusion in the CEA

Tier	Description	
Tier 1	Under construction (however, where projects are expected to be completed before construction of the Project and the effects of those projects are fully determined, effects arising from them should be considered as part of the baseline).	Decreasing level of detail likely to be available as you move down the tiers.
	Permitted application(s) but not yet implemented.	
	Submitted application(s) but not yet determined.	
Tier 2	Planning application(s) where a scoping report has been submitted.	
Tier 3	Projects on the planning register where a scoping report has not yet been submitted.	
	Sites identified in the relevant Local Development Plans (and emerging Local Development Plans – with appropriate weight being given as they move closer to adoption) recognising that much information on any relevant proposal will be limited.	
	Other plans and programmes (as appropriate) which set the framework for future development consent/approval, where such development is reasonably likely to come forward.	

20.4.19 The long list identified using the above method is presented in **ES Appendix 20.4.1: Cumulative Effects Assessment Long and Short List** (Doc Ref. 5.3)**.** Each development on the long list has been assigned a tier based on Table 20.4.4.

20.4.20 This list has been updated periodically during the EIA process, informed by consultation and modelling confirming the extent of study areas, and has been finalised approximately three months prior to the submission of the application for development consent (see also paragraph 20.5.1).

Stage 2

20.4.21 The following criteria have been used to screen developments on the long list to identify a shortlist. This is in order to support a proportionate CEA that focuses on only other development that could result in significant cumulative effects with the Project. These criteria, however, are not exhaustive or wholly prescriptive; expert judgement by the EIA team has also been applied throughout the CEA process.

- EIA developments or those where an un-determined EIA screening or scoping request indicated the possibility of significant environmental effects was foreseen.
- 'Major developments', where identified as such on the planning register, or which have the potential to result in cumulative effects (based on professional judgement).
- Developments whose scale, nature or location suggests potential for particular cumulative effects - eg an industrial or combustion process as a source of air or water pollutant or noise emissions, a potential large traffic generator such as distribution warehouse or retail park, or a development in proximity to a designated site or other asset.
- Completed developments that may not be captured in baseline studies (eg due to very recent start of operation).

- Developments that introduce sensitive receptors for which the assessment of effects on existing sensitive receptors identified through baseline study and included in the assessment of a particular environmental impact would not be representative.
- All long listed Nationally Significant Infrastructure Projects, Transport and Works Act project and Hybrid Bill schemes.

20.4.22 The identified short listed developments are highlighted in green in **ES Appendix 20.4.1: Short and Long List of Other Developments** (Doc Ref. 5.3), including the reasons for excluding developments from the short list, and summarised in Table 20.4.5. The locations of these developments are shown in **ES Figures 20.4.2**, **20.4.3** and **20.4.4** (Doc Ref. 5.2). Developments not meeting these inclusion criteria and/or not considered to have potential for cumulative effects have been screened out of the short list.

Stage 3

20.4.23 A desk study search of the environmental information available for each of the other developments listed in the short list has been undertaken. This comprised gathering information, where available, on aspects such as design and location, construction and operation dates and environmental information such as from any environmental assessments. This included searching on Local Planning Authorities and the Planning Inspectorate websites. The information gathered is presented within **ES Appendix 20.4.1: Short and Long List of Other Developments** (Doc Ref. 5.3) and is summarised in Table 20.4.5. It has been used to identify the likely significant cumulative effects.

Table 20.4.5: Summary of Short List of Other Developments Identified for CEA

Reference Number	Application Number	Brief Description	Distance from Project Site Boundary (km)
Tier 1			
1	WA/2017/1466	Extraction of clay from an area of 43.2 hectares plus other works at land at Ewhurst Brickworks Horsham Road, Ewhurst, GU6 7SW	14.00
5	20/02988/OUT	Outline application for the erection of 340 dwellings, including affordable housing near land North of Town Station Cottages Forge Croft Edenbridge, Kent, TN8 5LR	17.00
19	WSCC/015/18/NH APP/P3800/W/18/3218965	Recycling, Recovery and Renewable Energy Facility and Ancillary Infrastructure at former Wealden Brickworks (Site HB), Langhurstwood Road, Horsham, RH12 4QD	9.60
38, 39, 40, 44, 45	2017/0175, 2019/0188,	The extraction and screening of sand from Mercers South Quarry, Nutfield	10.00

Reference Number	Application Number	Brief Description	Distance from Project Site Boundary (km)
	2018/0129, 2022/0095, 2022/0094		
51	2022/0113	Clockhouse Quarry, near Clockhouse Brickworks, Horsham Road, Dorking, Surrey - Importation of around 740,000 m^3 of inert waste materials	7.50
52	2022/0091	Land at Woodhatch Place, 11 Cockshot Hill, Woodhatch, Reigate, RE2 8EF - The erection of a part one, part two and part three storey building	7.00
53	2022/0093	Horse Hill Well Site, Horse Hill, Hookwood, Horley, Surrey RH6 0RB	2.10
62	CR/2017/0810/FUL	Temporary use (for a period of 5 years) of the site as a Park and Ride Car Park, comprising 892 car parking spaces (814 long stay) and associated infrastructure	1.21
65	CR/2015/0718/ARM	Allocation within Crawley Local Plan 2021-2037. Reserved Matters for Phase 2B for 169 dwellings and associated works	1.60
66	CR/2016/0858/ARM	Persimmon Homes Ltd application for Approval for Reserved Matters for Phase 3 Employment Building and facilities	1.61
68	CR/2016/0083/ARM	Persimmon Ltd & Taylor Wimpey Ltd application for approval of Reserved Matters for Phase 2c - 249 dwellings	2.10
70	CR/2012/0134/OUT	Part of the Manor Royal Main Employment Area Site Allocation under Local Plan	2.39
73	CR/2017/0997/OUT	Allocation within Crawley Local Plan 2021-2037 (Regulation 19). Hybrid application for construction of a new town hall and offices, associated car parking, 182 residential units and commercial space	3.30
92	CR/2017/0128/ARM	Persimmon Homes Thames Valley application for approval of Reserved Matters for Phase 4B - 434 Dwellings	1.09
96	CR/2018/0894/OUT	Allocation within Crawley Local Plan 2021-2037 (Regulation 19). Outline Application for up to 185 residential dwellings (all matters reserved except access)	0.70
97	CR/2019/0322/FUL	Demolition of Existing Buildings and Structures and Comprehensive Redevelopment to Provide a New	1.38

Reference Number	Application Number	Brief Description	Distance from Project Site Boundary (km)
		Care Home with Associated Landscaping and Access Works	
102	CR/2021/0174/FUL	Land at Farday Road and Manor Royal, Crawley - Construction of a new warehouse building with ancillary works	1.70
110	CR/2018/3002/EIA	Clarion housing group application for screening opinion for proposed mixed-use residential-led redevelopment providing up to 315 flats	3.56
120	CR/2019/0542/FUL	Moka, Station Way, Northgate, Crawley - Redevelopment of site providing 152 apartments	4.00
187	20/02017/S73	Saxley Court 121 - 129 Victoria Road Horley Surrey RH6 7AS - to provide total 43 apartments	1.53
228	22/01989/F	Land At Laburnum and No 50 Haroldslea Drive Horley RH6 9DU - Demolition of existing buildings and erection of 33 homes	1.00
230	22/01743/F	Land Parcel known as Hillsbrow Nutfield Road Redhill Surrey - Development of a Sustainable Urban Extension at Land at Hillsbrow, comprising the erection of 161 new residential dwellings (Use Class C3)	8.12
232	22/02450/F	Saxley Court 121 - 129 Victoria Road Horley Surrey RH6 7LT - Construction of a 6-storey building for residential use (Class C3)	1.33
233	22/01796/CON	Land At Woodhatch Place 11 Cockshot Hill Reigate Surrey RH2 8EF - The erection of a part one, part two and part three storey building to provide a 5-form entry junior school and other facilities	7.08
234	22/02783/F	Land Parcel at Reigate Road, Sidlow Surrey - the proposed development comprises the installation and operation of a ground-mounted solar farm and energy storage system	3.93
235	22/02450/F	Construction of a 6-storey building for residential use (Class C3) connected to the existing building at 121-129 Victoria Road	2.28
237	22/02772/F	Full planning application for the demolition of existing buildings and structures and the erection of a 39-unit retirement living scheme at 115 Brighton Road Redhill Surrey RH1 6PS	8.54

Reference Number	Application Number	Brief Description	Distance from Project Site Boundary (km)
246	2019/548/EIA	Request for screening opinion for the proposed development of circa 360 residential units	1.50
281	2022/1407	Cherrywood, 71, Crawley Down Road, Felbridge - Erection of 61 dwellings and associated infrastructure	9.94
282, 434	2023/482, SA19	Land South Of Crawley Down Road, Felbridge. Demolition of existing structures and erection of 200 homes	7.5
284	DC/16/1677/OUT	Horsham Strategic Location, allocated in the 2015 Local Plan. Outline planning application for a mixed use development for up to 2,750 dwellings	9.80
286	DC/18/2687	Outline planning application for the erection of up to 300 dwellings at former Novartis Site Parsonage Road Horsham West Sussex	10.58
288	DC/10/1612/OUT	Kilnwood Vale - Holmbush Farm landfill site Crawley Road Faygate West Sussex - outline approval for the development of approximately 2,500 dwellings including access and infrastructure	5.29
289	DC/17/2481/OUT; DC/20/2223/REM;	Kilnwood Vale - Colgate Reserved Land Phase 6 - Permitted Outline for up to 250 units. Reserved matters for 168 units	5.30
290	DC/21/2246/FUL	Kilnwood Vale - Erection of 116 dwellings with associated parking, landscaping and drainage infrastructure - Phase 6B Kilnwood Vale Faygate Horsham RH12 0AQ	5.30
294	DC/22/1494/REM	Land North of Horsham. Reserved matters application for the erection of 170 residential dwellings with associated infrastructure	10.38
296	DC/20/2047/REM	Land North of Horsham. Reserved matters application for 193 dwellings	10.40
297	DC/21/0066/REM	Land North of Horsham. Reserved matters application for 197 dwellings	10.40
298	DC/21/1427/REM	Land North of Horsham. Reserved matters application for 221 dwellings	10.40
299	DC/23/0183/REM	Novartis, Horsham. Reserved Matters Application for 123 dwellings	10.60
300	DC/19/1508/REM	Kilnwood Vale. Reserved matters application for 101 dwellings Phase 3C	5.80

Reference Number	Application Number	Brief Description	Distance from Project Site Boundary (km)
301	DC/16/1677	Kilnwood Vale. Reserved matters application for 280 dwellings Phases 3 D, E, G & G (280 units)	8.72
305	MO/2022/1698	Proposed EIA application at Clockhouse Quarry, Horsham Road, Capel, Dorking, Surrey for proposed importation and deposit of 740,000 cubic metres of inert waste materials to restore the former quarry	7.73
307	DM/21/0644	Land West of Copthorne, West Sussex – Reserved Matters Planning Application for 197 dwellings	3.50
312	DM/20/4127	Outline application for an expansion of the existing commercial estate with up to 7,310 sq. m of new commercial space.	7.30
326	DM/19/1067	Reserved matters following outline consent (DM/15/0429) relating to the appearance, landscaping, layout and scale for 200 new dwellings including	9.80
334	DM/18/4321	Land West of Copthorne - Reserved Matters application for Phase 1 - 303 residential dwellings	2.50
337	DM/19/3549	Land West of Copthorne - Reserved matters application for 9,290 sqm B8 warehouse building pursuant to condition 1	6.70
339	DM/19/5175	Land West of Copthorne - construction of a 6,016 sqm B8 building	2.51
340	DM/18/3874	Land West of Copthorne - reserved matters application for 9,290 sqm B8 warehouse building pursuant to condition 1 (reserved matters) of outline planning permission 13/04127/OUTES	2.51
341	DM/19/4636	Land east of Brighton Road Pease Pottage phase 3 under construction - reserved matters application for approval of the appearance, layout, scale and landscaping of phases 4 and 5 pursuant to outline planning permission DM/15/4711 comprising a total of 277 dwellings (136 homes in Phase 4 and 141 homes in Phase 5)	6.37
345	DM/22/3214	Demolition of existing structures and erection of 61 no 1, 2, 3 and 4 bedroom homes located land South Of Crawley Down Road Felbridge East Grinstead West Sussex RH19 2PP	8.02

Reference Number	Application Number	Brief Description	Distance from Project Site Boundary (km)
346	DM/23/0007	Outline application for redevelopment of existing single dwelling house and erection of care home for up to 85 bedrooms, with all matters reserved except for access. Located at Highfields West Hill East Grinstead West Sussex RH19 4DL	10.73
Tier 2			
352	EIA/20/0004	EIA Scoping for Land West of Ifield - allocated site. The proposed development is on a site of 194 hectares in size with a minimum of 3,250 homes and up to 4,000 homes along with social infrastructure, green infrastructure and highway links.	1.50
Tier 3			
355	Land North of Horsham, comprising the area north of the A264 (between Langhurst Road and Wimlands Road)	Land North of Horsham, comprising the area north of the A264 (between Langhurst Road and Wimlands Road) - strategic Site allocated for mixed use strategic development to accommodate at least 2,500 homes and a business park. (781 of the 2,500 homes have been given reserved matters consent and have been assessed under Tier 1).	8.72
377	Land at Steers Lane, Forge Wood	185 dwellings (subject to implementation of outline planning permission of CR/2018/0894/OUT, or any amendment thereof, and associated reserved Matters approval(s))	0.68
378	Land to the south east of Heathy Farm, Balcombe Road	Part of the Forge Wood Key Housing Site Allocation under Local Plan, identified as "Residual Land at Forge Wood"	2.17
379	Tinsley Lane	Key Housing Site Allocation for 120 dwellings and community uses under Local Plan. Outline application CR/2018/0544/OUT for 150 units	2.25
380	Land East of London Road, Northgate	Land East of London Road, Northgate identified as broad location for housing development circa 171 net dwellings	2.27
382	Former GSK Site, Manor Royal	Part of the Manor Royal Main Employment Area Site Allocation under Local Plan. The site has an extensive planning history. Outline PP	2.39

Reference Number	Application Number	Brief Description	Distance from Project Site Boundary (km)
		CR/2012/0134/OUT was granted for a mixed use employment park. Reserved matters CR/2015/0286/ARM was approved in 2015. Applications for the approval of the design for the spine road, linking Crawley Avenue to Manor Royal, and details required by some of the conditions attached to this Outline Planning Permission, and in particular the Landscape Master Plan, have also been approved under references CR/2012/0134/ARM, CR/2012/0134/CC1 and CR/2012/1034/CC2. The spine road is complete. Reserved matters were approved last year for the remainder of the site under reference CR/2014/0415/ARM. This permission is partially built out. A new application (CR/2021/0249/FUL) has been received seeking permission for the erection of three B8 warehouse units	
383	Land east of Balcombe Road and South of the M23 Spur - 'Gatwick Green'	Allocated for an industrial-led strategic employment location that will provide as a minimum 24.1 ha new industrial land, predominantly for B8 storage and distribution use	2.50
386	Land to the southeast of Heathy Farm, Balcombe Road	Housing allocation for 150 dwellings at land to the southeast of Heathy Farm, Balcombe Road	4.10
390	Crawley College	Town Centre Key Opportunity Site - Housing allocation for 400 dwellings	4.70
392	Telford Place/ Haslett Avenue	Town Centre Key Opportunity Site - Housing allocation for 300 dwellings	5.00
396	Land adjacent to Desmond Anderson	Housing allocation for 150 dwellings	6.60
403	Forge Wood, Pound Hill (1,900 dwellings)	Land identified as being "deliverable" within the first five years of the Crawley Local Plan (2015/16-2019/20). A number of applications made by Persimmon Homes at Forge Wood which have been approved	0.70
404	Forge Wood Masterplan Area, Pound Hill	Forge Wood Masterplan Area, Pound Hill - 1,083 dwellings outstanding in April 2020	0.70

Reference Number	Application Number	Brief Description	Distance from Project Site Boundary (km)
435	SA20: Land south and west of Imberhorne Upper School, Imberhorne Lane, East Grinstead	SA20: Land south and west of Imberhorne Upper School, Imberhorne Lane, East Grinstead - Housing allocation (550) with Local Centre and Care Community	8.40
447	DP10: Strategic allocation to the east of Pease Pottage	DP10: Strategic allocation to the east of Pease Pottage - Strategic development is allocated to the east of Pease Pottage for: approx. 600 new homes	7.32
448	DPSC3: Land at Crabbet Park	DPSC3: Land at Crabbet Park - Site is capable of delivering 2,300 new homes but is estimated that only 1,500 will be deliverable within the Plan period.	4.61
450	DPH13: Land to west of Turners Hill Road, Crawley Down	DPH13: Land to west of Turners Hill Road, Crawley Down - Housing allocation of 350 dwellings	7.10
451	Land west of Balcombe Road, Horley Strategic Business Park	Horley Business Park - Strategic Employment Site – 83 ha with 200,000 sqm office space.	0.40
452	Land off the Close and Haroldslea Drive	Land off the Close and Haroldslea Drive - Residential allocation, up to 40 new homes, 2.4 hectare site.	1.15
482	Land at Plough Road and Redehall Road, Smallfield	Land at Plough Road and Redehall Road, Smallfield - 160 residential units, 5 hectare site under proposed plan	3.65
484	Land North of Plough Road, Smallfield	Land North of Plough Road, Smallfield - 120 residential units, 9.2 hectare site under proposed plan	4.01
498	Land at Lambs Business Park, Terra Cotta Road, South Godstone	Allocated for a small, medium or large scale thermal treatment facility	10.90
499	DS42 Land at Povey Cross Farm, Hookwood	Land at Povey Cross Farm, Hookwood - Site identified in Reg 19 consultation draft local plan for 84 dwellings	0.40
500	DS41 Land west of Reigate Road, Hookwood	Land west of Reigate Road, Hookwood - Site identified in Reg 19 consultation draft local plan for 446 dwellings	0.50

Reference Number	Application Number	Brief Description	Distance from Project Site Boundary (km)
501	DS43 Land adjacent to Three Acres, Hookwood	Land adjacent to Three Acres, Hookwood - Site identified in Reg 19 consultation draft local plan for 20 dwellings	0.70
502	DS44 Land south of Kennel Road, Hookwood	Land south of Kennel Road, Hookwood - Site identified in Reg 19 consultation draft local plan for 13 dwellings	0.80

Stage 4

20.4.24 The CEA aims to identify where there is the potential for cumulative effects to occur and to provide details of whether cumulative effects are likely to be significant or not. A statement is made as to whether the cumulative effect would be worse or better than the effects predicted for the Project alone, whether the cumulative effects have the potential to be more significant than the effects of the Project alone and, if so, whether this would be adverse or beneficial.

20.4.25 Each topic assessed as part of the EIA process has considered the other developments from the short list which could result in significant effects. The level of detailed assessment will vary due to differing levels of information and therefore certainty about each development. There will be more certainty associated with those that fall within Tiers 1 and 2 whereas assessments with any relevant Tier 3s will be very high level due to the low levels of certainty. Each topic has based this selection on the location, nature and status of each development and provided a table justifying the inclusion of each development in their assessment and in the interests of achieving a proportionate assessment. ES Chapters 7 to 19 provide an assessment on the likely significant cumulative effects. This chapter provides a summary of these assessments.

Inter-relationships

20.4.26 The study areas or ZoI for the assessment of inter-related effects have been informed by the study areas used in the topic specific assessments. The ZoI used in the assessment of inter-related effects is the same as those used in the CEA, outlined in Table 20.4.2.

20.4.27 The approach to assessing inter-related effects will also follow a four stage process, albeit different stages to the CEA, as summarised in Table 20.4.6 and discussed in the following paragraphs.

Table 20.4.6: Summary of the Approach for Assessment of Inter-related Effects

Stage	Description
1	Assessments undertaken for individual EIA topic areas within the ES.
2	Review of the likely receptor(s)/resource(s) affected by more than one impact through analysis of the assessment of effect sections undertaken for individual EIA topic areas.

Stage	Description
3	Identification of potential combined effects on these receptor groups through review of the topic-specific assessments in the ES chapters.
4	Assessment undertaken on how individual effects may combine to create inter-related effects on each receptor group for 'Project lifetime effects' and 'receptor led effects'.

Stage 1: Topic-specific Assessments

20.4.28 The first stage of the assessment of inter-related effects has been presented in each of the individual topic chapters (ES Chapters 7 to 19 of this ES) and comprises the individual assessments of effects on receptors across the construction and operational periods of the Project.

Stage 2: Identification of Receptor Groups

20.4.29 Stage 2 involves a review of the assessments undertaken in the topic-specific chapters to identify 'receptor groups' requiring assessment within the inter-related effects assessment. The term 'receptor group' is used to highlight that the approach taken for the inter-related effects assessment does not assess every individual receptor assessed during the EIA process, but rather potentially sensitive groups of receptors. The receptor groups assessed can be broadly categorised as follows:

- landscape and visual resources: designated sites; landscape character; visual receptors (residents, users of public rights of way, other visual receptors);
- historic environment: buried archaeology; designated heritage assets; settings of heritage assets;
- land use and recreation: agricultural land; farm businesses; users of recreational facilities (eg Public Rights of Way (PRoW));
- socio-economics: employment levels; housing and other local services; tourism;
- ecology and nature conservation: ecologically designated sites; important habitat features; protected species;
- traffic and transport: road users; residents; pedestrians/cyclists; sensitive local uses (eg schools, hospitals, local facilities);
- noise and vibration: residents; users of other land uses (eg places of work);
- air quality: residents; places of public amenity/public attractions; places of work; schools/hospitals; species/habitats;
- health: residents in the local area;
- climate change: global climate;
- water environment: surface water bodies; flood risk (residents, other land uses); and
- geology and ground conditions: geologically designated sites; land/soils; groundwater (including aquifers and Source Protection Zones).

Stage 3: Identification of Potential Inter-related Effects on Receptor Groups

20.4.30 Consideration has been given to the potential for inter-related effects to arise for each of the identified receptor groups across the Project periods (ie Project lifetime effects) as well as the interaction of multiple effects on a receptor (ie receptor-led effects), as defined below.

- Project lifetime effects – assessment of the scope for effects that occur throughout more than one period of the Project (construction and operation) to interact to potentially create a more significant effect on a receptor than if assessed in isolation.
- Receptor-led effects – assessment of the scope for multiple effects to interact, spatially and temporally, to create inter-related effects on a receptor or receptor group. As an example, multiple effects on a given receptor, such as local residents, could include construction dust and noise, increased traffic and visual change which may interact to produce a greater effect on this receptor than when the effects are considered in isolation. Receptor-led effects might be short term, temporary, or incorporate longer term effects.

Stage 4: Assessment of the Inter-related Effects on Each Receptor

20.4.31 Individual effects on each of the receptor groups identified above have been considered. A descriptive assessment of the scope for these individual effects to interact to create a different or greater effect has then been undertaken. Professional judgement has been used to identify the likely inter-related effects that could occur at these receptor locations. The assessment is qualitative and a statement has been made as to whether the inter-related effects would be worse or better than the effects considered alone, and if so, whether this would be adverse or beneficial.

20.5. Assumptions and Limitations of the Assessment

Cumualtive Effects Assessment

20.5.1 The assessment of cumulative effects is based on the short listed developments and publicly available information. The short list of developments has been updated during the course of the EIA process. However, as set out in Table 20.3.1, an appropriate cut-off was applied prior to publication of the ES to allow the assessment to be finalised and all local planning authorities provided updates by 16 May 2023. Any applications for other developments submitted after this cut off will be considered, where required, during the examination period.

20.5.2 As with any assessment of cumulative effects, the outcome is based on the amount of information available for each of the other developments on the short list. The level of information available depends on which stage in the planning process the development is at: ie those for which an application has been submitted will have more information available compared to allocations in a local development plan. Similarly, the likelihood of a development coming forward is also highly dependent on the corresponding stage in the planning process. To overcome this, greater weight is given to those developments for which more information is available and is more likely to come forward. Any mitigation measures presented in planning applications or other planning documents for the other developments are assumed to be brought forward in an application (if the application hasn't yet been submitted) and implemented by the applicant (should planning permission be granted).

Inter-related Effects

20.6. Mitigation and Enhancement Measures Adopted as Part of the Project

20.6.1 The assessment of cumulative and inter-related effects is based on the mitigation measures presented in ES Chapters 7 to 19 of the ES. No further mitigation measures have been identified.

20.7. Cumulative Effects Assessment

20.7.1 As stated in paragraph 20.6.1, the assessment of cumulative effects has been undertaken in each of the topic chapters of this ES (Chapters 7 to 19). A summary of these effects is presented in Table 20.7.1. A separate qualitative discussion is also provided about the potential for cumulative effects with Heathrow third runway in the event this was to come forward by the early/mid-2030s in Table 20.7.2 and the current DCO proposals at Luton Airport.

Table 20.7.1: Summary of Cumulative Effects Assessment

Assessment Year	Summary	Potential for Significant Effects?
ES Chapter 7: Historic Environment, Section 7.11 (Doc Ref. 5.1)		
Initial Construction Period: 2024-2029 2030-2032 2033-2038 Design year: 2038	No cumulative effects have been identified.	No significant effects considered likely.
ES Chapter 8: Landscape, Townscape and Visual Resources, Section 8.11 (Doc Ref. 5.1)		
Initial Construction Period: 2024-2029	Nineteen developments have been assessed in the CEA and include predominantly residential developments and some commercial developments. **Landscape and Townscape Character** North East Crawley High Woodland Fringes, Horsham Upper Mole Farmlands, Low Weald, Mole Valley Open Weald, Mid Sussex District High Weald Plateau Character Areas The addition of residential, industrial and commercial cumulative developments into the rural/urban fringe landscapes extending up to the edge of Gatwick would form more developed character areas. This would result in a high magnitude of change, leading to a major adverse level of cumulative landscape effect in the day and at night, which would be significant. The Project (primarily the deposit of spoil at Pentagon Field, the construction and operation of the temporary contractor's compound for the South Terminal roundabout), in the context of the other CEA developments, would make a negligible contribution to this cumulative effect on the North East Crawley High Woodland Fringes, Horsham Upper Mole Farmlands and Mid Sussex District High Weald Plateau Character Areas; a medium contribution on the Low Weald Character Area; and a low contribution on the Mole Valley Open Weald Character Area. **Visual Receptors**	Landscape and townscape: significant effects considered likely across all character areas. The Project would make a negligible to medium contribution to the significant cumulative effect. Visual: significant effects considered likely on mid to long distance views from elevated locations.

Assessment Year	Summary	Potential for Significant Effects?
	PROW 362a Horley, Meadowcroft House, occupiers of vehicles using the A23/M23 spur and trains on the railway, people with distant views from elevated locations There would be visual overlap between the Horley Business Park development west of Balcombe Road and the contractor's compound for the South Terminal roundabout improvements as they occupy, at least in part, the same parcel of land. Effects as follows: ▪ No cumulative visual effects on users of the PROW (due to the CEA development screening views of the Project). ▪ Minor adverse cumulative effects during the day and night for people working in Meadowcroft House, for the medium or long term, which would not be significant. Views of the Project would make a low contribution to this cumulative effect. ▪ Occupiers of vehicles and passengers on trains are receptors of low sensitivity to a high magnitude of temporary change resulting in moderate adverse effects during the day and night, for the medium or long term, which would not be significant. Views of the Project would make a medium contribution to this cumulative effect. ▪ People with distant views from elevated locations are medium to high sensitivity receptors who would experience a largely temporary change in view of negligible to medium magnitude, leading to negligible to major adverse cumulative effects in the medium term, during the day and at night, which would be significant for some receptors. Views of the Project would make a negligible contribution to this cumulative effect.	The Project would make a negligible to medium contribution to the significant cumulative effect.
2030-2032	**Landscape and Townscape Character** North East Crawley High Woodland Fringes, Horsham Upper Mole Farmlands, Low Weald, Mole Valley Open Weald, Mid Sussex District High Weald Plateau Character Areas Following completion of the relevant developments, the urban fringe characteristics of the surrounding character areas would be considerably intensified. In the long term the character of the area would be changed to residential development within a framework of woodland and hedgerows or urban fringes would be intensified. The completed CEA developments, together with the Project, would result in a high magnitude of change, leading to a major adverse level of cumulative landscape effect in the day and at night, which	Significant effects remain as for 2024-2029

Assessment Year	Summary	Potential for Significant Effects?
	would be significant. The Project would make a negligible contribution to the overall cumulative effect on Horsham Upper Mole Farmlands and Mid Sussex District High Weald Plateau Character Areas; a low contribution on the North East Crawley High Woodland Fringes and Mole Valley Open Weald Character Areas; and medium contribution on the Low Weald Character Area. **Visual Receptors** The cumulative effects would remain as per the initial construction period: 2024-2029.	
2033-2038	**Landscape and Townscape Character** The cumulative effects would remain as per the 2030-2032 assessment with the exception of the Project making a negligible contribution to the cumulative effect on the Low Weald and Mole Valley Open Weald Character Areas. **Visual Receptors** The cumulative effects would remain as per the initial construction period: 2024-2029.	Significant effects remain as for 2024-2029
Design year: 2038 and beyond	**Landscape and Townscape Character** Contractor compounds would be removed, some land would be restored to its former use and the site would include extensive landscape planting proposals that would be reaching maturity. The completed CEA developments, together with the influence of the Project would result in a high magnitude of change, leading to moderate to major adverse levels of cumulative landscape effect in the day and at night, which would remain significant. However, the Project's contribution to cumulative landscape effects would be negligible across all character areas. **Visual Receptors** ▪ workers at Meadowcroft House – cumulative effect would remain minor adverse, with the Project making a negligible contribution to this effect.	Landscape and townscape: significant effects considered likely across all character areas. The Project would make a negligible contribution to the significant cumulative effect.

Assessment Year	Summary	Potential for Significant Effects?
	▪ occupiers of vehicles and passengers on trains – cumulative effect would reduce to minor adverse during the day and night, for the medium or long term, which would not be significant. The views of the Project would make a low contribution to this cumulative effect. ▪ people with distant views from elevated locations – cumulative effect remains negligible to major adverse cumulative effects in the long term, during the day and at night, which would be significant for some receptors. The Project would continue to make a negligible contribution to this cumulative effect.	Visual: significant effects considered likely on mid to long distance views from elevated locations. The Project would make a negligible contribution to the significant cumulative effect.
ES Chapter 9: Ecology and Nature Conservation, Section 9.11 (Doc Ref. 5.1)		
Initial Construction Period: 2024-2029	Two Tier 1 developments would result in the potential to have cumulative effects with the Project (ie temporary park and ride car park and mixed use development at Roundabouts Farm, Copthorne). Such effects would relate to the permanent loss of existing habitats and effects on protected and notable species, although losses would be compensated for. Construction of these developments could give rise to disturbance impacts, which have potential to result in greater disturbance to species if construction overlaps with the construction of the Project. The other developments have recorded the presence of breeding birds, grass snake, great crested newt, common toad, badger, bats, harvest mouse and hedgehog. As such, the cumulative effects are as follows: ▪ breeding birds, grass snake, bat species – overall decrease in nesting sites and increased competition to win suitable territories, the loss of habitat and potential stress caused to individual grass snakes, loss of foraging habitats could result in a medium magnitude, medium-term impacts resulting in minor adverse cumulative effects (not significant). ▪ great crested newt, common toad – negligible. ▪ badgers – no cumulative effects. ▪ harvest mouse and hedgehog – no change to the effect that the Project would have in isolation.	No significant effects considered likely.
2030-2032		

Assessment Year	Summary	Potential for Significant Effects?
2033-2038	The two developments within 2 km of the Project (described above) would be potentially under construction during the first full year of operation when parts of the Project would still be under construction. A number of developments would be operational and any habitat creation would be complete thereby compensating for any construction period cumulative effects and potentially offering additional habitats to more mobile species. No detailed ecology assessments have been undertaken for these other developments, without which it is not possible to determine cumulative effects at this stage.	A detailed assessment cannot be undertaken due to the lack of ecological information for the other developments.
Design year: 2038	It is not possible to determine cumulative effects at this stage.	
ES Chapter 10: Geology and Ground Conditions, Section 10.11 (Doc Ref. 5.1)		
Initial Construction Period: 2024-2029	The only developments which could result in cumulative effects are the Horley Business Park and the Hookwood site, allocated for new dwellings. Both developments would result in the permanent sealing of the soil resource, however the soil is considered to be of low sensitivity and any cumulative effect with the Project is considered to be not significant. No surface or groundwater bodies link any of the other developments with the Project. Any contamination found on the site of the other development would be mitigated. Horley Business Park is not in an area designated for mineral safeguarding; therefore, no effects are considered likely in relation to mineral resources.	No significant effects considered likely.
2030-2032	No further cumulative effects have been identified.	
2033-2038		
Design year: 2038		
ES Chapter 11: Water Environment, Section 11. 11 (Doc Ref. 5.1)		
Initial Construction Period: 2024-2029	**Surface Water (Geomorphology, Water Quality), Groundwater, Flood Risk and Surface Water Drainage** It is assumed that approved developments within the ZoI would include appropriate drainage and flood risk measures to prevent the increase in flood risk off site. Measures embedded in the design of other developments would also ensure there is no deleterious impact upon the water environment. Therefore, no cumulative effects are anticipated for all assessment years.	No significant effects considered likely on surface water, groundwater, flood risk and surface water drainage.
2030-2032		
2033-2038		
Design year: 2038		

Assessment Year	Summary	Potential for Significant Effects?
	Water Infrastructure (Wastewater and Water Supply) The combination of the Project and other developments could result in increased pressure on the public sewerage and treatment facilities and the potable water supply (although no significant effects have been identified with the Project in isolation). Liaison is ongoing with Thames Water regarding wastewater and Sutton and East Surrey Water for water supply, to confirm the impacts on their infrastructure but to date neither have indicated they could not meet the additional demand.	Liaison is ongoing with Thames Water and Sutton and East Surrey Water in relation to cumulative effects on water infrastructure.
ES Chapter 12: Traffic and Transport, Section 12.11 (Doc Ref. 5.1)		
Assessment year: 2029	Cumulative traffic and transport effects are inherently included in the future baseline scenarios. Cumulative developments have been considered as part of the strategic transport modelling process[1] (highways and rail) and in accordance with DfT guidance. The highways modelling reported in **ES Chapter 12: Traffic and Transport** (Doc Ref. 5.1) includes background traffic growth based on the latest TEMPro growth factors with adjustments to consider cumulative development. There are three developments that are considered 'reasonably foreseeable' which are expected to generate noticeable trips on the highway and rail networks, as well as a range of other developments which are within the wider strategic modelling area (Horley Business Park, West of Ifield and Gatwick Green). In the absence of any construction methodology for the three schemes and the limited cumulative effects identified in the 2029 and 2032 with Project scenarios, it is not considered necessary to include a cumulative assessment of the Project and the three developments during their construction periods. **Severance** ▪ six links will experience a change of more than 30% in traffic and one link would be expected to have an increase of 60% to 90% which would result in a minor adverse cumulative effect ▪ two links are expected to have a reduction in traffic of 30% to 60% resulting in a minor beneficial cumulative effect. ▪ for pedestrians and cyclists the overall effect of severance is considered to be minor adverse.	No significant effects considered likely.

Assessment Year	Summary	Potential for Significant Effects?
	Driver delay ▪ with mitigation[2], the residual cumulative effect on driver delay at all junctions ranges from negligible to minor adverse. **Pedestrian and cyclist delay** ▪ the effect on pedestrian and cyclist delay is expected to be negligible adverse. **Pedestrian and cyclist amenity** ▪ the threshold for an effect on pedestrian and cyclist amenity is when the traffic flows have doubled. None of the links show a doubling in traffic flow as a result of the cumulative developments. ▪ traffic composition can also affect pedestrian and cyclist amenity. The highest increase in HGVs is expected on Rusper Road and the effect would be minor adverse. The effect on all other roads is also considered to be minor adverse. **Accidents and safety** ▪ the risk of accidents and safety for all road users is considered to be negligible adverse. **Hazardous loads** ▪ no changes to traffic routes are known as a result of the other developments and therefore the effect on hazardous loads is considered to be 'no change'. **Public transport amenity** ▪ any effects to changes in crowding levels for 2029 are anticipated to be minor adverse.	
Assessment year: 2032	**Severance** ▪ six links will experience a change of more than 30% in traffic and one link would be expected to have an increase of 60% to 90% which would result in a minor adverse cumulative effect	

Assessment Year	Summary	Potential for Significant Effects?
	▪ one link (Jarvis Road, Croydon) is expected to have an increase of more than 90%, but with mitigation offered by the promoters of the cumulative schemes, the residual cumulative effect would be minor adverse. ▪ for pedestrians and cyclists the overall effect of severance is considered to be minor adverse. **Pedestrian and cyclist amenity** ▪ Jarvis Road, Croydon is expected to experience a doubling or more in flows, but with mitigation provided by promoters of the cumulative schemes, the residual effect is considered to be minor adverse. ▪ the highest increase in HGVs is expected on A2011 Crawley Avenue Slipper Road, Balcombe Road-Crawley Avenue but as the sensitivity of the receptors is low, the effect would be negligible. ▪ for all other roads, the sensitivity of the receptors is considered to be negligible to high and the effect is considered to be minor adverse. **Driver delay, pedestrian and cyclist delay, accidents and safety, hazardous loads and public transport amenity** ▪ the cumulative effects would remain as per the assessment year 2029.	
Assessment year: 2047	**Severance** ▪ seventeen links will experience a change of more than 30% in traffic and one link (of negligible sensitivity) would be expected to have an increase of 90% (A23 London Road to North Terminal Roundabout) which would result in a minor adverse cumulative effect. ▪ for pedestrians and cyclists the overall effect of severance is considered to be minor adverse. **Pedestrian and cyclist amenity** ▪ A23 London Road to North Terminal Roundabout is expected to experience a doubling or more in flows, but the sensitivity of this link is considered as negligible in terms of pedestrians and cyclists so the effect of the cumulative development on pedestrian and cyclist amenity can be considered to be negligible. ▪ the highest increase in HGVs is expected on A2011 Crawley Avenue Slipper Road, Balcombe Road-Crawley Avenue but as the sensitivity of the receptors is low, the effect would be negligible.	

Assessment Year	Summary	Potential for Significant Effects?
	▪ For all other roads, the magnitude of impact is negligible to low and sensitivity of the receptors is considered to be negligible to high, the effect is considered to be minor adverse. **Driver delay, pedestrian and cyclist delay, accidents and safety, hazardous loads and public transport amenity** ▪ The cumulative effects would remain as per the assessment year 2029.	
Air Quality		
Initial Construction Period: 2024-2029	Road/air/surface traffic data used in the assessment include known future developments and the assessment therefore incorporates cumulative impacts. The ADMS model takes into account all sources of pollution either as modelled sources or included in the background concentrations. No further cumulative effects, than those included in the assessment, are likely to occur in the construction period 2024 to 2029 in terms of air quality and to summarise: ▪ negligible to high impact on human receptors and property as a result of dust deposition and increases in suspended particulate matter. However, measures to reduce the impact of dust during construction would be implemented at the Project and it is assumed that the other developments would also implement suitable measures, following Institute of Air Quality Management (IAQM) best practice. ▪ slight beneficial (at Gatwick Ambulance Station) to negligible impact on human receptors as a result of increases in pollutant concentrations. ▪ no change to negligible impact on ecological receptors from increases in pollutant concentrations and deposition rates.	No significant effects considered likely.
First Full Year of Opening: 2029	▪ negligible impact on human receptors from an increase in pollutant concentrations. ▪ no change to negligible impact on ecological receptors from increases in pollutant concentrations and deposition rates.	
Interim Assessment Year: 2032	▪ negligible to slight adverse impact on human receptors from an increase in pollutant concentrations. ▪ no change to negligible impact on ecological receptors from increases in pollutant concentrations and deposition rates.	
Design year: 2038	▪ negligible impact on human receptors from an increase in pollutant concentrations.	

Assessment Year	Summary	Potential for Significant Effects?
	▪ no change to negligible impact on ecological receptors from increases in pollutant concentrations and deposition rates.	
2047	▪ The impact of the increase in pollutant concentrations on human and ecological receptors was not modelled. The trade-off between vehicle emissions reductions and the conservative aircraft emissions increases result in an increase in emissions of 4% between 2038 and 2047 (for NO_x). Road traffic is the main source of emissions likely to result in a significant impact from the project due to the proximity of road sources to sensitive receptors, compared with aircraft emissions. Therefore, despite the uncertainty of predicting emissions for a future year of 2047, it has been concluded that the 2047 future year is not at risk of resulting in a significant impact to air quality.	
ES Chapter 13: Noise and Vibration, Section 13.11 (Doc Ref. 5.1)		
Initial Construction Period: 2024-2029	At this stage it is not possible to consider the timing of construction works on adjacent developments in detail. However, a review of the Tier 1[3] developments indicates none are sufficiently close and concurrent with the main Project work sites. Therefore, overlap of noisy construction works sufficiently nearby to sensitive receptors to add significantly to the predicted (construction and road traffic) noise levels are unlikely and hence cumulative effects are unlikely.	No significant effects considered likely.
First Full Year of Opening: 2029	The traffic data used in the traffic noise assessment includes known future developments and the assessment therefore incorporates cumulative impacts. The majority of the development sites, particularly Tier 1, are to the South of the airport. In most cases, they fall within the lower air noise contours bands, and in areas where the Project would slightly reduce air noise levels. Nonetheless, there is potential for noise impacts on the future residents of these developments as a result of Gatwick's operations which in some cases would increase or decrease due to the Project. The West of Ifield development (EIA/20/0004) is a large site that could introduce 3,250 to 4,000 homes to an area partly within Gatwick's LOAEL noise contours, although it is noted that the part of the site with the highest air noise levels with the Project is zoned for car park and sports use that are less sensitive to noise.	
Interim Assessment Year: 2032		
Design year: 2038		
2047		

Assessment Year	Summary	Potential for Significant Effects?
	In seeking permission to develop sites for residential use in noisy areas, in accordance with the NPPF and other policy, developers are required to consider the potential for noise impacts on future residents and to design the developments with suitable mitigation accordingly. Local planning authorities have a duty to enforce this requirement through the local planning application process. Professional Planning Guidance on Planning and Noise (2017), local plans (including supplementary planning guidance, eg the Draft Crawley Borough Local Plan 2021-2037 Noise Annex) and other guidance give guidance on the process and mitigation that should be used to ensure good acoustics design mitigates noise impacts. **ES Chapter 14: Noise and Vibration** (Doc Ref. 5.1) provides forecasts of air noise, ground noise and road traffic noise that will assist in designing for future conditions to ensure adverse effects are minimised and significant effects are avoided.	
ES Chapter 15: Climate Change and **ES Chapter 16: Greenhouse Gases**, Section 15.11 and Section 16.11 (Doc Ref. 5.1)		
Initial Construction Period: 2024-2029 First Full Year of Opening: 2029 Interim Assessment Year: 2032 Design year: 2038 2047	The climate change resilience assessment presented in **ES Chapter 15: Climate Change** (Doc Ref. 5.1) requires consideration of the resilience of the design of an individual project to climate change. Therefore, an assessment of cumulative effects is not relevant. The in-combination climate change impacts assessment considers the exacerbation of climate change on existing effects. As the climate change projections have been included within each aspect's primary assessment and are therefore carried through to the aspect-specific CEA, a separate climate change CEA is not required. Greenhouse gas emissions are inherently cumulative and therefore a cumulative assessment is not considered to be required for this Project. Further justification is provided in **ES Chapter 16: Greenhouse Gases** (Doc Ref. 5.1).	No cumulative assessment required.
ES Chapter 17: Socio-economics, Section 17.11 (Doc Ref. 5.1)		
Initial Construction Period: 2024-2029	It can be expected that the construction activity generated by the Tier 1 developments is likely to overlap with the initial construction period (refer to **ES Chapter 17: Socio-economics**, Table 17.11.1 (Doc Ref. 5.1)). To some degree, this would increase the construction activity taking place within the local study area (LSA).	No significant effects considered likely.

Assessment Year	Summary	Potential for Significant Effects?
	However, labour supply issues are not anticipated due to the general scale and mobility of the construction workforce. Furthermore, most of the other developments relate primarily to housing and some commercial developments which by their nature may require construction workforce comprising different skills and trades compared to the profile of workers likely to be demanded by the Project. Considering the above, it is expected that the impact assessment linked to the construction employment of the Project during the initial construction period would remain the same when considered in the context of the other developments (ie no new significant cumulative effects).	
First Full Year of Opening: 2029	**Construction (2029 to 2032)** It is expected that by 2032 all the remaining schemes in Tier 1 (ie those currently awaiting decision) would have commenced, and potentially completed. It is also likely that some of the schemes in Tier 2 and Tier 3 would also commence. On this basis, the construction activity during the 2029 to 2032 period would be further increased. However, it is not anticipated that there would be impacts on the availability of construction labour supply due to the Project being constructed in parallel with these schemes, and no significant cumulative effects are expected. **Operation (2029)** The assessment for the operational cumulative effects of the 2029 first full year of the Project's operation is based on projections of future population, jobs, labour supply and housing. For the purposes of the assessment, it is assumed that all the approved Tier 1 schemes would be operational by 2029. The potential effect of the other developments on the future population, jobs, labour supply and housing in combination with the Project is smaller than the demographic projections assessed in detail in the Assessment of Population and Housing Effects report (**ES Appendix 17.9.3** (Doc Ref. 5.3)). In particular, it is expected that these schemes would result in the provision of c. 2,100 new homes equivalent to an additional population of 5,020 new residents. The commercial schemes would result in the generation of c. 200 jobs across a variety of occupations.	

Assessment Year	Summary	Potential for Significant Effects?
	Compared to the future baseline position in the LSA based on ONS forecasts (**ES Chapter 17: Socio-economics** (Doc Ref. 5.1), Table 17.6.1) as well as on the Northern West Sussex Functional Economic Market Area projections based on the dwelling trajectories (**ES Chapter 17: Socio-economics** (Doc Ref. 5.1), Table 17.6.2), the future baseline expects a population and labour supply increase higher than that resulting from the other developments to 2029 (ie these increases would be within (ie smaller than) the increases projected within its future baseline).	
Interim Assessment Year: 2032	**Construction (2032 to 2037)** It is expected that between 2032 and 2037 the schemes that would potentially be under development are those in Tier 2 and Tier 3. Similar to above, it is expected that the increase in the construction activity during this period would not be of a scale to change the findings of the Project's assessment for the interim assessment year, and no significant cumulative effects are anticipated. **Operation (2032)** For the purposes of the CEA, it is assumed that all the Tier 1 schemes awaiting decisions would be operational by 2032. The potential effect of the other developments on the future population, jobs, labour supply and housing in combination with the Project is smaller than the demographic projections assessed in detail in the Assessment of Population and Housing Effects report (**ES Appendix 17.9.3** (Doc Ref. 5.3)) in 2032. In particular, it is expected that the remaining Tier 1 schemes would result in the provision of c. 3,300 new homes, 7,900 new residents and 70 new jobs to 2032. As a result, all the Tier 1 schemes cumulatively would generate a population of 12,900 people and 270 new jobs to 2032, which compared with the future baseline (**ES Chapter 17: Socio-economics** (Doc Ref. 5.1) Table 17.6.1 and Table 17.6.2) is lower than what has been assessed by the population and housing effects assessed in ES Chapter 17: Socio-economics. On this basis, it is considered unlikely that there would be any significant cumulative impacts on the economy, labour market, businesses, housing and community facilities that would change the findings of the assessment at this period.	

Assessment Year	Summary	Potential for Significant Effects?
Design year: 2038	For the purposes of the CEA, it is assumed that all the Tier 2 schemes would be operational resulting in up to 4,000 new homes and 9,600 new residents. These are below the increase expected by the dwelling trajectories set out in the future baseline for the same period (**ES Chapter 17: Socio-economics** (Doc Ref. 5.1), Table 17.6.2) highlighting that much higher population and housing impacts have been assessed in ES Chapter 17: Socio-economics. Therefore, it is considered unlikely that there would be any significant cumulative impacts on the economy, labour market, businesses, housing and community facilities that would change the findings of the assessment at this period.	
2047	For the purposes of the CEA, it is assumed that all the Tier 3 schemes would be operational resulting in a generation of c. 4,600 new homes, c. 20,500 new residents and c. 12,400 new jobs (including 11,000 new jobs at Horley Business Park[4]). Similar to the above analysis, this level of growth is lower than that assessed by **ES Chapter 17: Socio-economics** (Doc Ref. 5.1). As such, it is considered unlikely that there would be any significant cumulative impacts on the economy, labour market, businesses, housing and community facilities that would change the findings of the assessment of the Project alone to 2047.	
ES Chapter 18: Health and Wellbeing, Section 18.11 (Doc Ref. 5.1)		
Initial Construction Period: 2024-2029	No new or materially different magnitude or significance conclusions in relation to air quality, noise, transport nature and flows, lifestyle factors, socio-economic factors, exposure to light, pollution releases, or local healthcare capacity on population health effects are expected due to other developments. This conclusion applies to all assessment years.	No significant effects considered likely.
2030-2032		
2033-2038		
Design year: 2038		

Assessment Year	Summary	Potential for Significant Effects?
ES Chapter 19: Agricultural Land Use and Recreation, Section 19.11 (Doc Ref. 5.1)		
Initial Construction Period: 2024-2029	**Agricultural Land Use** The quality of the land affected by the Project comprises lower quality Subgrade 3b land and therefore would not contribute to any cumulative loss of the best and most versatile Grades 1, 2 or Subgrade 3a land. Whilst the other developments would affect areas of agricultural grassland and limited areas of arable cropping to support mixed farming enterprises, it is not considered that these losses together with those limited areas of grassland affected by the Project would affect agricultural productivity in the local area. **Recreation** The development of the Horley Business Park could result in impacts to public footpath 362a (Sussex Border Path) and pedestrian/cycle routes from the Business Park to Horley town centre and Gatwick Airport station. As required by planning policy[5], measures expected to be implemented as part of the development would reduce the effects on the users of these paths. Taking these policy requirements into account it is not anticipated that there would be any significant cumulative effects on the Sussex Border Path or other pedestrian/cycle routes.	No significant effects considered likely.
2030-2032	No further cumulative effects have been identified.	
2033-2038		
Design year: 2038		

Notes:

[1] The cumulative development scenarios have only been assessed in the strategic model against the core scenarios (2029 (first full year of opening/highway construction period), 2032 (anticipated opening of the highway improvement scheme), and 2047 (15 years from the anticipated opening of the highway improvement scheme as required by National Highways)).

[2] The promoters of the cumulative schemes would be expected to review and assess the impacts of their schemes in more detail, engage with National Highways and local authorities to determine whether mitigation is required and where necessary provide that mitigation to ensure their development is acceptable as part of the planning process.

[3] Only residential developments of at least 50 units and other noise sensitive developments have been included in the noise and vibration CEA assessment. Projects are Tier 1 unless included as major housing application sites.

Assessment Year	Summary	Potential for Significant Effects?
[4] Reigate and Banstead (2021) Business Strategic Development Brief SPD (Accessed via https://reigate-banstead.moderngov.co.uk/documents/s17274/Annex%201%20Draft%20Horley%20Business%20Park%20SPD%20for%20Consultation.pdf, last visited March 2023) [5] Policy HOR9 'Horley Strategic Business Park' of the adopted Reigate and Banstead Development Management Plan 2018-2027.		

Heathrow Third Runway

20.7.2 National policy, as set out in the Airports NPS (Department for Transport, 2018), supports the construction of a third runway at London Heathrow Airport (Heathrow R3). When the NPS was published it was expected that Heathrow R3 would be operational by 2030. Whilst work had commenced on the Heathrow R3 DCO application, as a result of the COVID-19 pandemic, work was suspended in 2020. There is uncertainty about the timeframe for recommencing this process and there is no indication that work will be recommencing in the short term. If it does restart, it is considered unlikely that Heathrow R3 could be operational much before the early/mid-2030s (**ES Appendix 4.3.1: Forecast Data Book** (Doc Ref. 5.3)).

20.7.3 Due to the uncertainty around the status of the Heathrow R3 project, it is not considered that it falls within the scope of 'existing and/or approved development' which is required to be considered cumulatively under the EIA Regulations (paragraph 5(e) of Schedule 4). Even to the extent that the Planning Inspectorate Advice Note Seventeen (Planning Inspectorate, 2019b) indicates that cumulative assessment should take into account 'reasonably foreseeable' projects (including those which are not approved), given the project pause in 2020 and the ongoing uncertainty as to any restart to the consenting work, it is not considered to require consideration as part of any cumulative assessment (see also paragraph 20.4.3).

20.7.4 However, without prejudice to this position, and recognising that Heathrow R3 remains government policy, it has been considered as a potential sensitivity for possible cumulative effects with the Project. As confirmed in Table 20.7.2, there is insufficient available information on any Heathrow R3 project to allow for a cumulative assessment. To the extent that the possibility of cumulative effects may, however, be regarded as falling for consideration, Table 20.7.2 includes, as far as possible, a qualitative assessment of whether such effects may occur.

20.7.5 It should be emphasised that the details of any future proposals for Heathrow R3 will come forward as part of a DCO application which would be subject to its own environmental impact assessment. However, in very general terms, expansion of Heathrow Airport, approximately 37 km from Gatwick, was proposed to enable at least 740,000 air traffic movements (ATM) per annum (Heathrow Airport Limited, 2019) and include:

- a new 3,500m long runway to the north west of the existing airport and around the end taxiways;
- supporting airfield, terminal and transport infrastructure;
- works to the M25, M4, local roads and rivers;
- alternative routes added to the active travel network (walking and cycling);
- realignment of the existing Colnbrook branch line railhead area;
- temporary construction works, and
- mitigation works and other associated development.

20.7.6 The entries in Table 20.7.2 have been prepared on this broad basis and on the assumption that Heathrow R3 were to come forward around the later assessment years for the Project. Therefore, the assessment years of 2038 and 2047 have been used. In general terms, it has been considered that in circumstances that Heathrow R3 were to become operational by the mid 2030s, air traffic levels at Gatwick would likely decline in the period immediately following the opening of Heathrow R3, by comparison to the scenario where Heathrow R3 were not operational. In the longer-term, even with Heathrow R3, it is forecast that Gatwick's traffic would subsequently return to the levels forecast without Heathrow R3 (see also **ES Appendix 4.3.1:**

Forecast Data Book, Section 4 (Doc Ref. 5.3)). This has been reflected in the entries within Table 20.7.2.

Table 20.7.2: Qualitative Cumulative Assessment of the Project with Heathrow R3

Topic	Qualitative Assessment (assessment years: 2038 and 2047)
Historic Environment	No cumulative effects on account of the distance of Heathrow R3 from Gatwick.
Landscape (Tranquility within Nationally Designated Landscapes)	In the event that Heathrow R3 becomes operational in the 2030s, the cumulative change in overflights with the Project and non-Gatwick flights will be different to that described in **ES Chapter 8: Landscape, Townscape and Visual Resources**, Section 8.9 (Doc Ref. 5.1). However, Heathrow R3 can only go ahead with airspace change and as there is a great degree of uncertainty regarding overflights (given the need for reorganisation of all airports' flight routes and numbers of aircraft), an overflight density map cannot be produced and therefore a cumulative assessment undertaken.
Ecology and Nature Conservation	Heathrow R3 is 37 km from Gatwick, and thus there is unlikely to be cumulative effects on protected species at this distance away and no cumulative effects on habitats (refer to section on 'Traffic and Transport', below). Any DCO application for Heathrow R3 would include a package of measures to ensure that any effects from the development in isolation would be mitigated along with a commitment to biodiversity net gain to enhance habitats.
Geology and Ground Conditions	No cumulative effects on account of the distance of Heathrow R3 from Gatwick.
Water Environment	No cumulative effects have been identified on flood risk on account of the distance of Heathrow R3 from Gatwick.
Traffic and Transport	Due to the uncertainty around when, or if, Heathrow R3 will come forward, the traffic modelling work assumes growth at Heathrow with the existing two runways. This is taken from Heathrow's future baseline as published during its DCO consultation in 2019. If Heathrow R3 were to come forward, air passenger demand at Gatwick would be likely to decline in the period immediately following the opening of Heathrow R3. This would lead to lower traffic flows to and from Gatwick than have been assessed when considering the effects of the Project in **ES Chapter 12: Traffic and Transport** (Doc Ref. 5.1) and consequently the effects on the highway network in the vicinity of Gatwick would not be worse than those already identified in that ES Chapter. However, by 2047 there would be little difference in air passenger demand at Gatwick with or without Heathrow R3 and therefore flows on the highway network would be similar to those assessed for 2047 in ES Chapter 12: Traffic and Transport.

Topic	Qualitative Assessment (assessment years: 2038 and 2047)
	The Heathrow R3 surface access narrative is predicated on no more traffic (Airports NPS, paragraph 5.38 (Department for Transport, 2018)), which is to say that total car traffic to Heathrow is to be maintained at broadly existing levels, albeit with variation in passenger and employee travel and therefore the distribution and timing of trips (which are not possible to assess in the absence of more detailed information regarding the development). Despite local variations, given the overall strategy of no more traffic at Heathrow, it is not envisaged that there would be a material impact on the performance of the highway network should both proposals come forward (following the initial reduction in traffic levels described above). In terms of public transport, the network and catchments serving the two airports are different and therefore the cumulative effects of additional runways at Gatwick and Heathrow are unlikely to be materially different to those described in **ES Chapter 12: Traffic and Transport** (Doc Ref. 5.1) and Table 20.7.1.
Air Quality	The air quality assessment uses traffic data presented in **ES Chapter 12: Traffic and Transport** (Doc Ref. 5.1) and thus similar general considerations arise in respect of air quality effects as set out above regarding traffic. It should also be noted that Heathrow R3 aviation emissions would not have a cumulative effect due to the distance and height at which aircraft movements would be taking place.
Noise and Vibration	The design of the airspace required to facilitate Heathrow R3 is not developed to a stage that allows cumulative assessment because noise levels cannot be modelled without defined air traffic routes. It seems unlikely that that LOAEL noise contours from the two projects would overlap, but a cumulative assessment will be undertaken by others to accompany the Airspace Change Proposal that would be required of the Heathrow R3 project if/when this is brought forward. It is considered that the ATM forecasts for Gatwick with Heathrow R3 would be lower, at least in the early years, than assumed in this ES and noise impacts would be lower.
Climate Change and Greenhouse Gases	For reasons set out in Table 20.7.1, a cumulative assessment on climate change resilience is not relevant and in-combination climate change impacts are included within each aspect's primary assessment. As set out in **ES Chapter 16: Greenhouse Gases** (Doc Ref. 5.1), such emissions are inherently cumulative and therefore a cumulative assessment (including with Heathrow R3) is not considered to be required for this Project. In any event, an appraisal of emissions from aviation has been carried out based on comparison with the Jet

Topic	Qualitative Assessment (assessment years: 2038 and 2047)
	Zero strategy (DfT, 2022) and its underlying datasets and analysis. The exercise undertaken by UK Government in preparation of the Jet Zero strategy is, in fact, a cumulative sectoral assessment for the aviation sector in the UK.
Socio-economics (labour supply and housing demand)	The implications of Heathrow expansion regarding labour supply and housing demand have been assessed as part of the Assessment of Population and Housing Effects (**ES Appendix 17.9.3**, Section 5.4, p36 (Doc Ref 5.3)). This outlines that there is only one local authority which falls within both the impact zones of Heathrow R3 and the Project defined for assessing these effects, namely Elmbridge Borough in Surrey. The comparison of the labour supply generated by current housing trajectories and the labour supply needed to support the Cambridge Econometrics forecast of job growth (with the Project) for Elmbridge and the north east Surrey housing market area is shown in Diagram 5.2.2 of **Appendix 17.9.3** (Doc Ref. 5.3). This shows that in Elmbridge specifically, there is expected to be a fluctuating shortfall in the labour supply until 2042, after which there is expected to be a growing surplus. Looking across the housing market area as a whole, the labour supply is expected to be broadly balanced in the late-2020s, although it has a fluctuating shortfall until 2040, after which there is expected to be a labour surplus. This is in the context of an overall surplus across the study area of 20-30,000 throughout the early 2030s and rising to c. 100,000 in the long-term (2047). The Project is not the determinative factor as to whether Elmbridge has a shortfall or surplus of labour in any of the assessment years under this scenario; Elmbridge would be expected to have a labour shortfall even in the absence of the Project or Heathrow R3. Rather, the inclusion of the Project affects the scale of the shortfall, slightly increasing the shortfall (in 2029, an increase in the shortfall from -80 to -147 [an increase of 67], and in 2038 from -899 to -1,107 [an increase of 208]). In the context of a labour force of approximately 80,000 in Elmbridge, these increases in the shortfall equate to 0.08% and 0.26% of the labour force in each year respectively. Based on the magnitude criteria applied elsewhere in **ES Chapter 17: Socio-economics** (Doc Ref. 5.1), this represents a 'very low' magnitude resulting in negligible impacts associated with the Project and Heathrow R3. On this basis, the cumulative effects with Heathrow R3 would not change the findings of the assessment across all the phases.
Health and Wellbeing	As set out within **ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1), the potential for other projects to cumulatively affect site-specific populations is relatively limited, reflecting that localised impacts require close proximity to

Topic	Qualitative Assessment (assessment years: 2038 and 2047)
	affect the same populations. At the local and regional spatial levels, effects tend to be diluted, limiting the extent to which the same people experience multiple effects. Due to the distance of the Project from Heathrow R3, it is expected that there would not be any materially different magnitude or significance conclusions in relation to population health and wellbeing cumulative effects between the Project and Heathrow R3 (also refer to Table 20.7.1). This conclusion takes account of the other assessment findings presented in this table, including effects to: landscape (tranquility within nationally designated landscapes); geology and ground conditions; the water environment; traffic and transport; air quality; noise and vibration; socio-economics (labour supply and housing demand); and agriculture and recreation.
Agriculture and Recreation	Due to the distance of the Project from Heathrow R3, there would be no cumulative effects on agriculture and recreation.

London Luton Airport Expansion

20.7.7 A DCO application was submitted in March 2023 for the proposed expansion of London Luton Airport (Luton), approximately 80 km north of Gatwick. It is seeking consent to increase its current passenger cap of 18 million people per annum (mppa) to 32 mppa in 2037 when the main terminal infrastructure is assumed to open (although modest increases are assumed over the period 2027-2032 to 19 mppa and then 21.5 mppa). Luton has been considered as part of the long list of other developments but has been screened out for inclusion on the short list for the CEA (see **ES Appendix 20.4.1: Cumulative Effects Long and Short List,** ID No 347 (Doc Ref. 5.3)) for the following reasons:

- Estimates of any impact on Gatwick prior to 2037 are considered relatively minor given the limited overlap in catchments between the two airports and the lack of capacity in the wider London market until the early-mid 2030s.
- The ZoI in relation to aircraft air noise is approximately 20 km from the Project site boundary and therefore does not overlap with Luton.
- Whilst there is an overlap between Luton and Gatwick's traffic catchments, they are relatively limited. Luton's catchment was found to overlap much more widely with Stansted and Heathrow airports (**Appendix 4.3.1: Forecast Data Book** (Doc Ref. 5.3)).

20.8. Inter-relationships

Scoping of Receptors/Receptor Groups

20.8.1 This assessment considers receptors or receptor groups, such as local residents, users of local rights of way or services, that may be affected by different environmental effects generated from the Project simultaneously or concurrently. This may include, for example, particular locations where noise, air quality and visual change may all occur at the same time. All of these effects would be derived from the Project alone (ie not in combination with any other development).

20.8.2 The majority of the ES topic assessments consider the effects of the Project on receptors or receptor groups and, as such, many of the inter-related impacts on those receptors are considered within the topic chapters. For example, effects on ecological receptors arising from

noise, visual disturbance, air quality impacts and water quality impacts are assessed within **ES Chapter 9: Ecology and Nature Conservation** (Doc Ref. 5.1). As such, the potential for inter-related effects is inherent within some topic assessments and these effects are not repeated in this chapter. A summary of the inter-relationships that exist between topics is presented in Table 20.8.1 below, wherein the cells coloured blue represent an inter-relationship. The section numbers within the cells are references with the ES chapters where impact assessments have been carried out.

20.8.3 A scoping exercise to identify which topic areas could result in inter-related effects which have not already been considered in the topic chapter has been undertaken. Table 20.8.2 presents a summary of the scoping process and identifies the inter-related effects which are scoped out of this chapter as the effects have already been assessed in the topic chapters. All other topics are considered within this chapter.

20.8.4 The inter-relationship assessment comprises a qualitative approach and the assessment is used to identify where there is the potential for Project lifetime and receptor-led inter-related effects. The Project lifetime effects include the assessment of the scope for effects that occur throughout more than one period of the project (construction and operation) to interact to potentially create a more significant effect on a receptor than if assessed in isolation; whereas receptor-led inter-related effects include assessment of the scope for multiple effects to interact, spatially and temporally, to create inter-related effects on a receptor or receptor group. For the topics scoped in a statement is provided as part of the assessment as to whether the inter-related effects would be worse or better than the effects considered alone, and if so, whether this could be adverse or beneficial.

Table 20.8.1: Summary of Relationship Between Topics and Reference to the Location of Relevant Assessment Sections Within the ES Chapters

Topic	Historic Environment	Landscape, Townscape and Visual	Ecology and Nature Conservation	Geology and Ground Conditions	Water Environment	Traffic and Transport	Air Quality	Noise and Vibration	Climate Change	Greenhouse Gases	Socio-economics	Health and Wellbeing	Agriculture and Recreation
Historic Environment		Section 7.9 & 8.9	Section 7.9 & 9.9			Section 7.9 & 12.9		Section 7.9 & 14.9	Section 7.9 & 15.9			Section 7.9 & 18.9	Section 7.9 & 19.9
Landscape, Townscape and Visual			Section 8.9 & 9.9			Section 8.9 & 12.9		Section 8.9 & 14.9	Section 8.9 & 15.9			Section 8.9 & 18.9	Section 8.9 & 19.9
Ecology and Nature Conservation					Section 9.9 & 11.9	Section 9.9 & 12.9	Section 9.9 and 13.9		Section 9.9 & 15.9			Section 9.9 & 18.9	
Geology and Ground Conditions					Section 10.9 & 11.9		Section 10.9 &13.9		Section 10.9 & 15.9			Section 10.9 & 18.9	
Water Environment						Section 11.9 and 12.9			Section 11.9 & 15.9			Section 11.9 & 18.9	Section 11.9& 19.9
Traffic and Transport							Section 12.9 & 13.9		Section 12.9 & 15.9		Section 12.9 & 17.9	Section 12.9 & 18.9	

Topic	Historic Environment	Landscape, Townscape and Visual	Ecology and Nature Conservation	Geology and Ground Conditions	Water Environment	Traffic and Transport	Air Quality	Noise and Vibration	Climate Change	Greenhouse Gases	Socio-economics	Health and Wellbeing	Agriculture and Recreation
Air Quality									Section 13.9 & 15.9	Section 13.9 & 16.9	Section 13.9 & 17.9	Section 13.9 & 18.9	
Noise and Vibration									Section 14.9 & 15.9		Section 14.9 & 17.9	Section 14.9 & 18.9	
Climate Change													Section 18.9 & 19.9
Greenhouse Gases													
Socio-economics												Section 17.9 & 18.9	Section 17.9& 19.9
Health and Wellbeing											Section 18.9 &17.9		Section 17.9& 19.9
Agriculture and Recreation											Section 19.9 &17.9	Section 18.9 &19.9	

Table 20.8.2: ES Topics Scoping Summary for Inter-related Effects Assessment

Topic receptor / resource	Scoped in to the Project lifetime assessment?	Scoped in to the receptor led assessment?	Justification for exclusion/inclusion within Inter-related Effects Assessment
Historic Environment	No	No	The assessment of effects on historic environment is provided in **ES Chapter 7: Historic Environment** (Doc Ref. 5.1). This assessment considers all potential effects on the relevant receptors, namely heritage assets. This topic has also drawn from other topics such as landscape and visual and noise assessment for consideration of potential impacts on the significance of heritage assets as a result of change within their setting. No further inter-related effects are considered likely.
Landscape, Townscape and Visual	Landscape and Townscape: No Visual: Yes	Landscape and Townscape: No Visual: Yes	The landscape resource is assessed in **ES Chapter 8: Landscape, Townscape and Visual Resource** (Doc Ref. 5.1). This assessment includes the consideration of all potential impacts on landscape character and landscape quality; therefore, no additional inter-related effects are considered likely to occur beyond those identified within the chapter. Some of the landscape resources are also of heritage value, which has been considered in **ES Chapter 7: Historic Environment** (Doc Ref. 5.1) and does not require further assessment. The assessment also considers the impact on additional overflights drawing on the overflights modelling results presented in **ES Chapter 14: Noise and Vibration** (Doc Ref. 5.1). There is the potential for inter-related effects on visual resources to arise and therefore it has been considered in the inter-related effects assessment.
Ecology and Nature Conservation	Yes	No	The assessment of inter-related effects is integral to the assessment of potential impacts on ecological receptors and the integrity of designated sites and, as such, has already been assessed within **ES Chapter 9: Ecology and Nature Conservation** (Doc Ref. 5.1) and no additional effects are therefore considered likely to occur beyond those identified in the assessment. This topic has drawn from other chapters such as **ES Chapter 11: Water Environment** (Doc Ref. 5.1), **ES Chapter 12: Traffic and Transport** (Doc Ref. 5.1), **ES Chapter 13: Air Quality** (Doc Ref. 5.1), **ES Chapter 14: Noise and Vibration** (Doc Ref. 5.1) and **ES Chapter 15: Climate Change** (Doc Ref.

Topic receptor / resource	Scoped in to the Project lifetime assessment?	Scoped in to the receptor led assessment?	Justification for exclusion/inclusion within Inter-related Effects Assessment
			5.1) to understand the variety of impacts on ecological receptors.
Geology and Ground Conditions	No	No	All the potential impacts on geology and ground conditions related receptors have been assessed within **ES Chapter 10: Geology and Ground Conditions** (Doc Ref. 5.1). No further inter-related effects are considered likely.
Water Environment	No	No	All the potential impacts on the water environment are assessed in **ES Chapter 11: Water Environment** (Doc Ref. 5.1). All potential impacts are mitigated to a level which is not considered significant for surface water (comprising geomorphology and water quality); groundwater; flood risk (including surface water drainage); and water infrastructure (comprising wastewater and water supply). The impacts to the water environment over the construction, operation and maintenance periods have been assessed in **ES Chapter 11: Water Environment** (Doc Ref. 5.1), therefore are scoped out of the Project lifetime assessment. Potential interactions with groundwater and contaminated runoff are considered within **ES Chapter 11: Water Environment** (Doc Ref. 5.1) as well as **ES Chapter 10: Geology and Ground Conditions** (Doc Ref. 5.1). Inter-related ecological impacts such as fish passage, improved water quality, highway sustainable urban drainage ponds and the re-naturalisation of River Mole have been assessed in **ES Chapter 11: Water Environment** (Doc Ref. 5.1) and across the Project lifetime and a further assessment is not required. Additive effects between assessment years are not expected and no further inter-related effects are considered likely and therefore scoped out.
Traffic and Transport	Yes	Yes	The effects presented in **ES Chapter 12: Traffic and Transport** (Doc Ref. 5.1) take into account all likely contributions to traffic on the surrounding road network and highway changes as a result of the Project. No additional traffic associated with the Project is considered likely. The traffic and transport effects will occur throughout more than one period of the Project, ie during

Topic receptor / resource	Scoped in to the Project lifetime assessment?	Scoped in to the receptor led assessment?	Justification for exclusion/inclusion within Inter-related Effects Assessment
			construction and operation. Therefore, traffic is scoped into the Project lifetime assessment. The effect of traffic in combination with other topics could result in inter-related effects on receptor groups, therefore traffic and transport is scoped into the receptor led assessment. The traffic flows have informed the assessments of other topics, and the inter-related effects are contained within the respective chapters.
Air Quality	Yes	Yes	The **ES Chapter 13: Air Quality** (Doc Ref. 5.1) assessed the significance of potential effects on air quality at human and ecological receptors. Human and ecological receptors could be exposed to air quality effects at the same time as effects from other topics or effects across the Project lifetime, which could result in inter-related effects. Therefore, air quality is scoped into the Project lifetime and receptor led assessments.
Noise and Vibration	Yes	Yes	Human receptors could be exposed to noise effects at the same time as effects from other topics or effects across the Project lifetime, which could result in inter-related effects. Therefore, noise and vibration is scoped into the Project lifetime and receptor led assessments. The health effects of noise and vibration are considered in **ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) and the noise assessment has also informed the Landscape and Visual, Historic Environment and Socio-Economic assessments.
Climate Change	No	No	**ES Chapter 15: Climate Change** (Doc Ref. 5.1) assesses the combined effects of the Project and its potential climate change impacts on the receiving environment and community in the In-combination Climate Change Impacts (ICCI) assessment. This assessment inherently includes Project lifetime and receptor led effects and therefore no further assessment is required. The resilience of the project in relation to climate change has also been assessed across the Project lifetime and a further assessment is not required.
Greenhouse Gases	No	No	GHG emission are by nature inter-related, with all activities emitting emissions and the receptor being the

Topic receptor / resource	Scoped in to the Project lifetime assessment?	Scoped in to the receptor led assessment?	Justification for exclusion/inclusion within Inter-related Effects Assessment
			global atmosphere. **ES Chapter 16: Greenhouse Gases** (Doc Ref. 5.1) presents GHG emissions over the Project's lifetime and contextualises these with respect to the UK's and other relevant carbon budgets which itself is an assessment of inter-related effects. The assessment of GHG emissions has taken into account data from a range of emissions sources which are related to other environmental topics (eg construction processes, transport impacts, air quality assessment). Beyond these links there are no further inter-related effects between the assessment of GHG emissions arising from the Project and effects on other environmental topics.
Socio-economics	Yes	Yes	The socio-economic receptors including residents, businesses and the economic activity during construction and operation, labour market, housing supply and community facilities could be exposed to effects from a number of different topics or effects across the Project lifetime. Therefore, this topic is scoped into the inter-relationships assessment for both the Project lifetime and receptor-led effects. The Project lifetime assessment considers only effects in the Project site boundary and the local study area. This is due to the wider effects being so widespread over a large area that it is not likely that effects would be greater than those considered in the chapter. For receptor led assessment, the effects are considered for identified long term receptors, ie residents and businesses of the LSA - disrupted due to the construction works and the increased traffic and noise around the area, and short term receptors including users of PRoWs and other recreational routes in the immediate vicinity of the Project site and potentially the users of the wider local network and public transport.
Health and Wellbeing	Yes	Yes	The inherent cross-cutting nature of the health and wellbeing assessment presented in **ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) draws from all environmental and socio-economic topics that have the potential for likely significant effects on population health.

Topic receptor / resource	Scoped in to the Project lifetime assessment?	Scoped in to the receptor led assessment?	Justification for exclusion/inclusion within Inter-related Effects Assessment
			While **ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) includes a receptor led assessment of the inter-related effects of different determinants of health on the same population groups, further assessment is carried out in this chapter that includes consideration of inter-related effects across the lifetime of the Project. This determines if the conclusions of **ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) change when considering effects across the assessment years.
Agricultural Land Use and Recreation	Agricultural Land Use: No Recreation: No	Agricultural Land Use: No Recreation: Yes	The effects on land use and agriculture are considered in **ES Chapter 19: Agricultural Land Use and Recreation** (Doc Ref. 5.1). The effects on agricultural land and farm holdings are likely to be permanent and occur during the 2024 – 2029 construction period. Therefore, further inter-related effects with other topic areas are unlikely to result in any greater effect than those already assessed within ES Chapter 19: Agricultural Land Use and Recreation. The **ES Chapter 19, Agricultural Land Use and Recreation** (Doc Ref. 5.1) includes the inter related visual amenity effects on public open space and public rights of way during the construction of the highway improvements, where significant visual effects on public open space are identified in **ES Chapter 8: Landscape, Townscape and Visual Resources** (Doc Ref. 5.1) at limited locations during the 2030-2032 period. No additional inter-related effects are considered likely to occur beyond those identified within the ES Chapter 19: Agricultural Land Use and Recreation.

Identification of Receptors/Receptor Groups

20.8.5 A review was undertaken within the topic-specific and cumulative chapters to identify 'receptor groups' requiring assessment within the inter-related effects chapter. The term 'receptor group' is used to highlight that the approach taken for the inter-related effects assessment does not assess every individual receptor assessed in the ES, but rather potentially sensitive groups of receptors.

20.8.6 The receptor groups have been broadly categorised topic wise in Table 20.8.3.

20.8.7 The potential for inter-related effects (other than those already inherently forming part of the topic-specific assessments) where specified in Table 20.8.2, is limited to the ZoI presented in Table 20.4.2. Inter-related effects have been considered where the study areas of the respective assessments are shared.

Project Lifetime Effects

20.8.8 The 'Project lifetime effects' is the assessment of the scope for effects that occur throughout more than one period of the Project, ie during construction and operation, to interact to potentially create a more significant effect on a receptor than if assessed in isolation.

20.8.9 Table 20.8.3 lists the lifetime inter-related effects that are predicted to arise during construction and operation of the Project. A discussion on how the identified effects could change over the lifetime of the Project is also presented in Table 20.8.3.

Table 20.8.3: Assessment of Project Lifetime Effects

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
Landscape, Townscape and Visual Resources	Receptors using public rights of way and pavements	2024-2029: Moderate to Negligible adverse 2030-2032: Moderate to Negligible adverse 2033-2038: Moderate to Minor beneficial 2038 and beyond: Moderate adverse to Neutral	The visual effects considered in **ES Chapter 8: Landscape, Townscape and Visual Resources** (Doc Ref. 5.1) relate to a number of different receptors and the effects vary widely depending on the distance from the development and the sensitivity of the receptor. The greatest effects are likely to be realised during construction by occupiers of the Hilton Hotel at South Terminal where vegetation and green space would be replaced by large scale buildings in close proximity, people using public open space at Church Meadows where Longbridge roundabout would be extended into the rural landscape, and occupiers of a single residential property at Horley where clearance of vegetation and surface access improvements would be in close proximity. The largest adverse effects are likely to be temporary in nature and felt during the construction period (which spans over the first three assessment periods). The majority of adverse visual effects would be experienced in the context of the existing airport and/or highway infrastructure. Overall, is it not likely that the Project lifetime effects would be greater than those assessed in the ES for each of the assessment years.
	Receptors using public open space	2024-2029: Moderate to Negligible adverse 2030-2032: Major to Negligible adverse 2033-2038: Moderate to Negligible adverse 2038 and beyond: Moderate adverse to Minor beneficial	
	Occupiers of airport hotels and restaurants (outside of terminals)	2024-2029: Major to Minor adverse 2030-2032: Major to Minor adverse 2033-2038: Moderate to Negligible adverse 2038 and beyond: Moderate to Negligible adverse	

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
	Employees (on and off airport) and visitors	2024-2029: Moderate to Negligible adverse 2030-2032: Minor to Negligible adverse 2033-2038: Moderate to Negligible adverse 2038 and beyond: Moderate to Negligible adverse	
	Vehicle occupiers	2024-2029: Minor to Negligible adverse and beneficial 2030-2032: Moderate to Negligible adverse 2033-2038: Minor to Negligible adverse 2038 and beyond: Neutral	
	Residents	2024 to 2029: Moderate to Minor adverse 2030 to 2032: Major to Minor adverse 2033 to 2038: Major to Minor adverse 2038 and beyond: Minor to Negligible adverse	
Ecology and Nature	Statutory designated Sites	All assessment years: No Change	No effects are considered likely to statutory designated sites; therefore, no inter-related effects are considered likely.

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
Conservation	Non-statutory Designated Sites and ancient woodland	All assessment years: Minor adverse to No Change	The effects assessed in **ES Chapter 9: Ecology and Nature Conservation** (Doc Ref. 5.1) consider the combined effects during construction and operation of the Project. The effects are not likely to be greater when considered over the lifetime of the Project.
	Habitats and flora	2024 to 2029: Moderate beneficial to Moderate adverse 2030 to 2032: Moderate beneficial to Moderate adverse 2033 to 2038: Moderate beneficial to Minor adverse 2038 and beyond: Moderate beneficial to Minor adverse	An assessment of the overall net gain or loss of habitats as a result of the Project has been undertaken. This identifies there will be no net habitat loss overall and some habitats would experience a betterment. Some habitats, such as woodland, would take longer to establish; however, habitat creation would be implemented early in the construction programme. The long term effect on international designated sites has been considered through the Habitats Regulations Assessment process. Therefore, no further Project lifetime inter-related effects are considered likely.
	Breeding birds and wintering birds	2024-2029: Moderate to negligible adverse 2030-2032: Moderate to negligible adverse 2033-2038: Minor to negligible adverse 2038 and beyond: Negligible	The assessment on breeding birds presented in **ES Chapter 9: Ecology and Nature Conservation** (Doc Ref. 5.1) has taken into account the overall loss and creation of habitat as a result of the Project. During construction, loss of habitat would occur in different places at different times. Birds using these areas could experience, over time, prolonged loss and disruption. The reduction in habitat could reduce the overall size of the breeding bird population due to increased competition for territory. The creation of habitat in the west of the site would mitigate this effect, however this would take time to mature in order to be attractive for breeding. Collision risk could increase over the lifetime of the Project; however, this is considered in the assessment in **ES Chapter 9: Ecology and Nature Conservation** (Doc Ref. 5.1).

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
			Therefore, no further Project lifetime inter-related effects are considered likely.
	Grass snake, great crested newt, common toad, otter, harvest mouse and hedgehog	2024-2029: Minor adverse to negligible 2030-2032: Minor beneficial to Minor adverse 2033-2038: Minor beneficial to Minor adverse 2038 and beyond: Minor beneficial to negligible	Effects on these species are only likely to occur during the construction periods of the Project when habitat losses would occur. The habitat creation would mitigate effects on these species. Therefore, no further Project lifetime inter-related effects are considered likely.
	Bats and badgers	2024-2029: Moderate to minor adverse 2030-2032: Moderate to minor adverse 2032-2038: Moderate to minor adverse 2038 and beyond: Negligible	Effects on bats and badgers are related to habitat loss and collision risk. Habitat loss effects would only occur during the construction period and would be mitigated by habitat creation. Collision risk could increase over the lifetime of the Project, however this is considered in the assessment in **ES Chapter 9: Ecology and Nature Conservation** (Doc Ref. 5.1). The overall Project lifetime effects on these species are not likely to be greater than those considered in ES Chapter 9: Ecology and Nature Conservation.
Traffic and Transport	Pedestrians and cyclists	2024-2029 (airfield construction): Negligible to minor adverse 2029: Negligible adverse 2029 (highway construction): Negligible to minor adverse 2032: Minor adverse (severance, and pedestrian and cycle amenity), negligible to minor beneficial	**ES Chapter 12: Traffic and Transport** (Doc Ref. 5.1) assesses the effects of traffic and highway changes on pedestrians and cyclists, including severance, delay, amenity and safety. These types of effects would not increase in significance due to the duration of the impact. The effects are likely to be felt in a transient nature only as pedestrians or cyclists move through the area. Therefore, the Project lifetime effects would not be greater than those assessed within ES Chapter 12: Traffic and Transport.

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
		(pedestrian and cycle delay, and accidents and safety) 2047: Negligible to Minor Adverse / Beneficial. Moderate adverse for severance on two links but this is identified as model noise and not associated with the Project.	
	Public transport users	2024-2029 (airfield construction): Negligible adverse 2029: Minor adverse for rail crowding, negligible adverse for station crowding 2029 (highway construction): Negligible adverse 2032: Minor adverse for rail crowding, negligible adverse for station crowding 2047: Minor adverse	**ES Chapter 12: Traffic and Transport** (Doc Ref. 5.1) assesses the effects on public transport users in terms of rail crowding and crowding at Gatwick Airport Station. These types of effects would only be experienced at the time of the effect occurring and would not increase in significance due to the duration of the impact. Therefore, the Project lifetime effects would not be greater than those assessed within ES Chapter 12: Traffic and Transport.
	Car drivers and passengers	2024-2029 (airfield construction): Minor to moderate adverse (driver delay), negligible adverse (accidents and safety, hazardous loads) 2029: Minor to moderate adverse (driver delay), negligible adverse (accidents and safety), no change (hazardous loads)	The effects on car drivers and passengers include driver delay, safety and hazardous loads. These types of effects would only be experienced at the time of the effect occurring and would not increase in significance due to the duration of the impact. Therefore, the Project lifetime effects would not be greater than those assessed within **ES Chapter 12: Traffic and Transport** (Doc Ref. 5.1).

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
		2029 (highway construction): Minor to moderate adverse (driver delay), minor adverse (accidents and safety), negligible adverse (hazardous loads) 2032: Minor to moderate adverse (driver delay), negligible to minor beneficial (accidents and safety), negligible beneficial (hazardous loads) 2047: Minor to moderate adverse (driver delay), negligible to minor beneficial (accidents and safety), negligible beneficial (hazardous loads)	
Air Quality	Human receptors and property (construction dust)	2024 – 2029 (airfield construction): Not significant 2029 – 2032 (surface access construction): Not significant	**ES Chapter 13: Air Quality** (Doc Ref. 5.1) assessment considers construction-related activities on sensitive receptors that are likely to experience a change in pollutant concentrations and/or dust nuisance due to the construction and operation of the Project. Taking into consideration the dust emission magnitude and the sensitivity of the area, the dust soiling risks for all Project elements were determined for the construction periods. Following the implementation of appropriate mitigation, the effects of construction-related activities on dust soiling and human health would be negligible and the effects would therefore be not significant. Based on this, the significance conclusions would not be greater when considered across the lifetime of the project.

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
	Human receptors (increase in pollutant concentrations)	2024 – 2029 (airfield construction): Not significant 2029 – 2032 (surface access construction): Not significant 2029 (first full year of opening): Not significant 2032 (interim assessment year): Not significant 2038 (design year): Not significant 2047 (future year): Not significant	**ES Chapter 13: Air Quality** (Doc Ref. 5.1) assessment considers magnitude of impact at human receptors by taking into account the change in predicted concentrations as a result of the Project, the predicted concentrations relative to the air quality standard and the existing and future air quality. Based on this concept, the Project lifetime effects are inherently included in the changes to background concentration levels across the assessment years. The assessment also takes into consideration the duration of exposure for each receptor. Therefore, the Project lifetime effects would not be greater than those assessed within Chapter 13: Air Quality.
	Human receptors (odour from operational activity)	2029 (first full year of opening): Not significant 2032 (interim assessment year): Not significant 2038 (design year): Not significant 2047 (future year): Not significant	**ES Chapter 13: Air Quality** (Doc Ref. 5.1) assessment considers odour from operational activity and the qualitative assessment identified potential for odour effects at community areas around the airport due to the pathway effectiveness, distance to receptor and source of emissions. Whilst it is possible that local communities may experience occasional short-term odour under specific weather conditions as a result of airport activity, the odour effects are considered to be not significant due to the low frequency of the necessary meteorological conditions and odour source potential. This takes into account exposure across the assessment years and ongoing exposure. The significance conclusions would not be greater when considered across the lifetime of the project.
	Ecological receptors	2024 – 2029 (airfield construction): Not significant	**ES Chapter 13: Air Quality** (Doc Ref. 5.1) assessment considers magnitude of impact at ecological receptors by taking into account the change in predicted concentrations as a result of the Project, the predicted concentrations relative to

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
		2029 – 2032 (surface access construction): Not significant 2029 (first full year of opening): Not significant 2032 (interim assessment year): Not significant 2038 (design year): Not significant 2047 (future year): Not significant	the air quality standard and the existing and future air quality. Based on this concept, the Project lifetime effects are inherently included in the changes to background concentration levels across the assessment years. The assessment also takes into consideration the duration of exposure for each receptor. Therefore, the Project lifetime effects are not likely to be greater than those assessed within Chapter 13: Air Quality.
Noise and Vibration	Residential	**Construction noise** 2024-2029: Moderate Adverse 2030-2038: Moderate adverse	The assessment of noise across all assessment years covers the likely sources of noise occurring at each particular time. The combined effects from different types of noise (ie construction, air, ground and traffic) have been assessed in **ES Chapter 14: Noise and Vibration** (Doc Ref. 5.1) and the Project lifetime effects are not likely to be greater than those assessed within the chapter. The Project lifetime effects relating to the effect of continued noise exposure on the health of residents are considered in **ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1).
		Air noise 2029: Less than 2032 2032: Minor and moderate adverse 2038: Less than 2032	
		Ground noise 2029: Less than 2032 2032: Moderate adverse 2038: Less than 2032	
		Traffic noise 2032: Minor adverse 2047: Negligible and minor adverse	

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
Socio-economic (Project site and LSA only)	Construction employment and enterprises Construction Labour Market Labour market Business and commercial activity Residents/Population Housing Supply Community facilities and services Access to sports facilities and open space	2024-2029 Initial Construction Period: All effects Minor to Moderate Beneficial apart from the effects in relation to business disruption and displacement, residents' disruption, housing supply and community facilities which are Negligible to Minor Adverse. 2029 First Full Year of Opening (Operational): All effects Negligible to Minor Beneficial apart from the effects in relation to resident and business disruption which are Negligible to Minor Adverse. 2030-2032 During Construction: All effects Minor to Moderate Beneficial apart from the effects in relation to business disruption and displacement, residents' disruption, housing supply and community facilities which are Negligible to Minor Adverse.	The socio-economic effects likely to be experienced across the local study as defined in **ES Chapter 17: Socio-economic** (Doc Ref. 5.1) include those on employment, labour market, population, housing, disruption to businesses and residents, and impacts on community infrastructure and community cohesion. Over the lifetime of the Project similar effects associated with construction and operation are likely to be felt across all the assessment years. Additional construction jobs will be generated through the project which can be fulfilled by the existing and projected construction labour supply within the relevant labour market. Moreover, the Project is expected to generate some disruption to business and residents (eg through changes to traffic and noise levels); however, no significant adverse effects are expected in any cases. In addition, the Project is not expected to increase the need for housing above what is already planned for by neighbouring local authorities. The effects on the business and local economy have been assessed to be beneficial during the Project lifetime. There is in particular, a significant beneficial effect identified on the labour market during the operation of the Project from 2032 to 2047. No significant adverse effects have been identified through the socio-economic assessment. The combined effect over the lifetime of the Project is not likely to be higher than what has been assessed within **ES Chapter 17: Socio-economic** (Doc Ref. 5.1).

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
		2033-38 Construction: All effects Negligible to Minor Beneficial apart from the effects in relation to business and residents' disruption, housing supply and community facilities which are Negligible to Minor Adverse. 2032 Interim Assessment Year: (Operational) - All effects Negligible to Minor Beneficial apart from the effects in relation to resident and business disruption which are Negligible to Minor Adverse and the effects to Labour Market which are Moderate Beneficial. 2038 Design Year (Operational): All effects Negligible to Minor Beneficial apart from the effects in relation to resident and business disruption which are Negligible to Minor Adverse and the effects to Labour Market which are Moderate Beneficial.	

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
		2047 The Long-term Forecast Year (Operational): All effects Negligible to Minor Beneficial apart from the effects in relation to resident and business disruption which are Negligible to Minor Adverse and the effects to Labour Market which are Moderate Beneficial.	
Health and Wellbeing	Health and wellbeing effects from changes in air quality	2029-2032 (initial construction): Minor adverse 2029 (first full year of opening): Minor adverse 2032 (interim assessment year): Minor adverse 2038 (Design year): Minor adverse 2047 (future year): No separate assessment, see 2032 and 2038 conclusions of minor adverse. As there was no detailed dispersion assessment for 2047 in **ES Chapter 13: Air Quality** (Doc Ref. 5.1), there is no prediction of air quality concentrations included for this scenario.	**ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) assessment considers changes in annual average concentrations of air pollutants. While there would be incremental increases in exposure to the changes predicted, the absolute level of change is low and concentrations remain within statutory air quality objective thresholds set to be protective of health, including vulnerable groups. The level of change is unlikely to measurably affect population health outcomes. Quantitative analysis of health outcomes supports this conclusion. Long-term exposure across the Project lifetime to the changes has been considered. This takes into account exposure across the assessment years and ongoing exposure. The significance conclusions of the main health and wellbeing assessment would not be greater for the affected population when considered across the lifetime of the Project.
	Health and wellbeing	2024-2029 (construction noise): Minor adverse	**ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) assessment considers changes in noise exposure, including from air noise, ground noise and traffic

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
	effects from changes in noise exposure	2024-2029 (road traffic noise): Negligible 2029 (construction noise, air noise): Minor adverse 2029 (road traffic noise): No separate assessment, see 2024-2029 conclusion of negligible. As stated in **ES Chapter 14: Noise and Vibration** (Doc Ref. 5.1), construction-related road traffic noise would continue into 2029 but the impacts of this have been considered in the initial construction period assessment 2024-2029. 2032 (air noise, ground noise, traffic noise): Minor adverse 2038 (air noise, ground noise, traffic noise): Minor adverse 2047 (air noise, traffic noise): Minor adverse 2047 (ground noise): Minor adverse	noise. Consideration has been given to a very small minority exposed to levels of noise above the SOAEL for whom the Project's noise insulation scheme (**ES Appendix 14.9.10: Noise Insulation Scheme (NIS)** (Doc Ref. 5.3)) would mitigate against potentially significant indoor effects. Consideration has also been given to a larger minority exposed to noise between the LOAEL and SOAEL where there would be incremental increases in exposure due to the Project, albeit the absolute level of change is very small and unlikely to measurably affect population health outcomes. Quantitative analysis of health outcomes supports this conclusion. Long-term exposure across the Project lifetime to the changes has been considered. This takes into account exposure across the assessment years and ongoing exposure. **ES Chapter 14: Noise and Vibration** (Doc Ref. 5.1) includes a WebTAG assessment that considers health effects across a 60 year period, so already accounts for affects across the assessment years of the Project. The significance conclusions of the main health and wellbeing assessment would not be greater for the affected population when considered across the lifetime of the Project.
	Health and wellbeing effects from	2024-2029 (initial construction): Minor adverse	**ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) assessment considers changes in road traffic affecting road safety, travel times, accessibility and active/sustainable travel. Whilst there would be increases in traffic, the Project

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
	changes in transport nature and flow rate	2029: Minor adverse and Minor beneficial Highway Construction Period (no year): Minor adverse 2032: Minor adverse 2047: Minor adverse	includes substantive highway improvements that manage the additional traffic volumes and enhance the active and sustainable transport routes to, and around, the airport. The long-term effects on population health across the Project lifetime due to the changes has been considered. This takes into account influences on accident risk, healthcare journey times and behavioural change (eg walking and cycling for travel) across the assessment years. The significance conclusions of the main health and wellbeing assessment would not be greater for population health. The individual assessment year findings reflect a relatively stable, not increasing, level of population health effect. Additive or synergistic effects between assessment years are not expected.
	Health and wellbeing effects from changes in lifestyle factors	2024-2029: Minor beneficial and minor adverse 2030-2032: Minor beneficial and minor adverse 2033-2038: Minor beneficial and minor adverse 2038: Minor beneficial and minor adverse 2047: Minor beneficial and minor adverse	**ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) assessment considers changes in availability of public areas of open space and public rights of way for walking and cycling. While there would be some disruption and reduction of existing spaces used for leisure and recreation, there would also be additional new open space created of a greater extent and enhancements to active travel routes. The potential for sustained behavioural change due to long-term changes in these amenities across the Project lifetime has been considered. This takes into account the quality and accessibility of open space and routes and of the duration and signposting of temporary diversions and areas of reduced access. It is concluded that the significance conclusions of the main health and wellbeing assessment would not be greater for population health. The individual assessment year findings reflect a programme of works with different routes and areas affected at different times, and a characterisation of

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
			change where adverse effects are temporary disruptions and beneficial effects are permanent enhancements.
	Health and wellbeing effects from changes in socio-economic factors	2024-2029: Minor beneficial 2029 (construction employment): Minor beneficial 2029 (operational employment): Minor beneficial 2032 (construction employment): Negligible beneficial 2032 (operational employment): Moderate beneficial (significant). 2038 (operational employment): Moderate beneficial (significant). 2047 (operational employment): Moderate beneficial (significant)	**ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) assessment considers changes in population health due to increased employment and economic impacts. The benefits of employment are greatest when there is good quality stable employment. Long-term socio-economic effects across the Project lifetime to the changes has been considered. This takes into account employment and economic effects across the assessment years. Although the ongoing opportunity is likely to be beneficial, including locally, as the main health and wellbeing assessment already accounts for long-term employment and upskilling opportunities, the significance conclusions would not be greater for the Project lifetime assessment.
	Health and wellbeing effects from changes in exposure to light	2024-2029: Negligible 2030-2032: Negligible 2033-2038: Minor adverse 2038: Minor adverse	**ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) assessment considers changes in community exposure to night lighting due to the Project changes. Transitory night lighting for construction would vary by location and, although there may be some overlap between assessment years, is not considered to result in a greater significance effect level for population health in the Project lifetime assessment than the individual assessment years. This includes that there would be a very low level of change to very few people. There would be some greater exposure to highway related lighting effects in operational years following vegetation clearance. Long-term exposure to changes across the

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
			Project lifetime has been considered. This takes into account exposure across the assessment years and ongoing exposure. The significance conclusions of the main health and wellbeing assessment would not be greater for the affected population. The level of change is small and to a small minority of the population. The trend is of declining, not increasing levels of exposure, as planting matures. Therefore, the significance conclusions would not be greater for the Project lifetime assessment.
	Health and wellbeing effects from changes to water quality and flood risk and ground conditions	2024-2029: Minor adverse 2029-2032: Minor adverse 2032-2038: Minor adverse 2038: Minor adverse (contamination, water capacity, surface water flood risk), and negligible beneficial (fluvial flood risk) 2047: Minor adverse	**ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) assessment considers the potential for pollution of water or soils to affect community populations, including associated with flood events. All potential impacts on water quality and flood risk are mitigated to a level which is not considered significant. All mitigation measures offer long-term approaches to the management of water quality and flood risk. Therefore, there is no risk of an additive impact over the lifetime of the project and consequent health and wellbeing effects. With regard to ground contamination, all complex land remediation activities would occur during the initial construction period. Exposure to contamination would need to be ongoing in order to manifest any health or wellbeing outcome across the assessment years; this is not the case due to remediation activities and spill management protocols in the CoCP (**ES Appendix 5.3.2: Code of Construction Practice** (CoCP) (Doc Ref. 5.3)). As a result, no additive impacts on health and wellbeing over the lifetime of the Project are anticipated. Long-term exposure has been considered across the assessment years and the

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
			significance conclusions of the main health and wellbeing assessment would not be greater for the affected population.
	Health and wellbeing effects from changes in healthcare capacity	2024-2029: Minor adverse 2029: Minor adverse (construction workforce, operational workforce, passengers requiring emergency healthcare) and negligible (port health) 2032: Minor adverse (construction workforce, operational workforce, passengers requiring emergency healthcare) and negligible (port health) 2038: Minor adverse (operational workforce, passengers requiring emergency healthcare) and negligible (port health) 2047: Minor adverse (operational workforce, passengers requiring emergency healthcare) and negligible (port health)	**ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) assessment considers potential implications for NHS routine service planning from changes due to the Project, including the healthcare needs of workers and passengers. Peak construction workforce numbers are used in the assessment to consider a reasonable worst case across assessment years. As set out in the CoCP (**ES Appendix 5.3.2: Code of Construction Practice** (CoCP) (Doc Ref. 5.3)), in order to avoid any potential adverse impact on the local health care system, on-site health care would be provided for construction workers. Additive or synergistic effects across assessment years are therefore not expected and the significance conclusions of the main health and wellbeing assessment would not be greater. In relation to passenger number growth there is expected to be a corresponding increase in ambulance callouts due to a very small proportion of people falling ill whilst at the airport. The great majority of such persons would be expected to have existing NHS entitlements or appropriate healthcare insurance. The main assessment provides data to support routine NHS service planning that would effectively mitigate against both unexpected demand and unmet demand accumulating across assessment years. Changes to long-term healthcare and Port Health demand across the Project lifetime has been considered. This takes into account supporting routine NHS service planning and Port Health planning across the assessment years. Consequently, the significance conclusions of the main health and wellbeing assessment would not be greater for the affected population.

Topic Area	Receptor or Receptor Group	Significance of Individual ES Effect with Mitigation	Project Lifetime Inter-related Effects
	Health and wellbeing effects from understanding of risk (risk perception)	2024-2029: Minor adverse 2029: Minor adverse 2032: Minor adverse 2038: Minor adverse 2047: Minor adverse	**ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1) assessment considers the potential for public understanding of risk linked to Project changes to adversely affect the mental health and wellbeing of the local population. Issues include electromagnetic fields (EMF), extended operational hazards and pests. Whilst the actual risks on these issues are appropriately addressed through existing design and management measures of the Project, the assessment considers how the potential for widespread concern could nonetheless influence population health. Long-term community concern across the Project lifetime has been considered. This takes into account mental health and wellbeing effects across the assessment years and beyond. The significance conclusions of the main health and wellbeing assessment would not be greater for the affected population. This reflects that effects are likely to reduce over time as people's concerns are responded to and resolved to their satisfaction, including through non-technical information on the safeguards in place.

Receptor-led Inter-related Effects

20.8.10 Receptor-led inter-related effects is the assessment for multiple effects to interact, spatially and temporally, to create inter-related effects on a receptor or receptor group. As an example, multiple effects on a given receptor group such as local residents – construction dust and noise, increased traffic and visual change, etc may interact to produce a greater effect on this receptor than when the effects are considered in isolation. Receptor-led effects might be short term, temporary, or incorporate longer term effects.

20.8.11 Table 20.8.2 considers the potential for inter-relationships to occur for each receptor group and considers whether any potential effects have already been assessed within the individual topic chapters of the ES. The topics that could result in additional inter-related effects (that have not been already assessed) are:

- visual resources;
- traffic and transport (construction only);
- air quality;
- noise and vibration;
- socio-economics; and
- recreation (construction only)

20.8.12 The effects identified for these topics have the potential, when occurring at the same time, to affect the same receptors, which could result in a greater effect than if they occurred on their own. An inter-related effect is likely to occur when the effects of two or more topics overlap either spatially or temporally. Due to the long term duration of the construction period, it is likely that both construction and operational effects from different topics would overlap temporally. Therefore, for the commentary presented in this ES it is assumed there all potential inter-related effects that could occur at the same time.

20.8.13 The receptor groups that are likely to experience multiple effects are limited to the receptors located in the ZoIs identified in Table 20.4.2. Based on the assessments included in ES Chapters 7 to 19, the following receptor groups have been identified which could experience effects from multiple environmental topic areas.

- **Long term receptors** (residents, users of schools and community facilities, places of work). These are likely to be long term receptors in that they are likely to experience the effects over a longer period of time.
- **Short term receptors** (traveller, pedestrians/cyclists and users of PRoWs). These are likely to be short term or intermittent receptors as they are only likely to experience effects for a short period of time during a journey.

20.8.14 For each receptor group, Table 20.8.4 lists the potential effects on these receptors.

Table 20.8.4: Receptor Groups and Potential Impacts

Receptor Group	Potential Impact
Long term receptors: people living at dwellings	Potential impacts include changes in the level of traffic (including HGVs and air traffic) which would lead to an increase in noise and emissions. The combination of an increase in noise from surface and air sources, and the perception of more

Receptor Group	Potential Impact
and users of schools and work places	traffic could result in a greater impact than when assessed alone. Receptors could also experience a change in views with more built infrastructure in certain areas and additional aircraft.
Short term or intermittent receptors: people using PRoWs and local road network	Users of PRoWs in proximity to the airport could experience a combination of increased noise, emissions and frequency of aircraft taking off. Views on some routes would change from agricultural fields to built development.

Long Term Receptors

20.8.15 A number of communities representing long term receptors have been identified in the ZoI for the Project. These are presented in the list below and in **ES Figure 20.8.1** (Doc Ref. 5.2). The identified communities are based on the parish boundaries within 5 km of the Project site boundary. The communities include all residential receptors, users of schools and places of work. Communities based outside of the 5 km are not likely to experience effects from more than one topic based on the ZoIs identified for the topics scoped into the assessment.

- Crawley;
- Rusper;
- Charlwood;
- Newdigate;
- Salfords and Sidlow;
- Horley;
- Outwood;
- Burstow;
- Horne;
- Felbridge; and
- Worth.

20.8.16 The main long term receptors within the extent of the traffic model (indicating receptors that could be impacted by different topic areas) would be members of staff working at the airport or in proximity to it. Residential receptors in closer proximity to the eastern part of the airport could also be considered as long term receptors. These receptors are likely to experience an increase in traffic close to their place of work/home, a potential increase in vehicle emissions as well as an increase in noise and visual disturbances.

20.8.17 More distant from the airport, receptors are only likely to experience a combination of noise and visual effects. The socio-economic effect of the Project is likely to be felt across all community groups and it is not possible to assign a particular parish which is likely to experience greater or lesser effects than others. **ES Chapter 8: Landscape, Townscape and Visual Resources** (Doc Ref. 5.1) uses representative viewpoints to assess the visual effects of the Project on receptors. These are based on the areas which are likely to result in visual effects and have been assessed in the following sections. Visual effects on other parishes are likely to be negligible or no greater than those assessed for the representative viewpoints and therefore are not considered further. Due to the lack of spatial overlap between topic areas, the remaining parishes are not likely to result in inter-related effects.

20.8.18 Of the above eleven communities, long term receptors in Crawley, Charlwood, Burstow, Horne, Newdigate and Horley could experience a noise increase from air noise sources. Below paragraphs provide assessment of inter-related effects on long term receptors on a topic by topic basis.

20.8.19 **Health and Wellbeing** – During construction and operation periods, the inter-related effects on long term receptors in Crawley, Charlwood and Horley could be felt as a combination of changes in traffic, air pollutant emissions, noise and visual disturbances, light exposure, flood risk, ground and water conditions, physical activity and active travel opportunity and employment opportunity. The combination of these effects are taken into account in the assessment outlined in **ES Chapter 18: Health and Wellbeing** (Doc Ref. 5.1). Significant effects are not likely to occur with the exception of long term significant beneficial effects in relation to socio-economic factors. It can be concluded that due to the nature of the inter-related effects (many of which would be intermittent and would occur at a distance from the receptors), further significant inter-related effects are not considered likely.

20.8.20 **Visual -** The largest visual impacts during the construction period are likely to be experienced by occupiers of residential properties on Longbridge Road Horley, where residents would gain near views of vegetation removal and construction activities associated with the surface access improvements. These receptors would experience effects up to Major adverse, which is significant. Members of Gatwick staff would gain near open views during the construction period of various elements of the Project within the airport. These receptors would experience temporary effects up to Moderate adverse, which is not significant. During the operational period, the largest visual effects during Year 1 are likely to be experienced by the same receptor groups and would initially result in the same level of significance. In the longer term, when planting proposals included as mitigation measures have matured, the level of effect would reduce to a level that is no longer significant and therefore no further inter-related effects are considered likely.

20.8.21 **Socio-Economics:** During the construction and operational periods, the inter-related effects on the surrounding communities and local businesses (as listed in paragraph 20.8.15) could be felt as a combination of changes in traffic and noise disturbances during primarily construction but also during operation. The combination of these effects is taken into account in the assessment outlined in **ES Chapter 17: Socio-Economics** (Doc Ref. 5.1). Significant effects are not likely to occur in this respect. Moreover, the workforce and/or businesses that either relate to the construction sector or those people who wish to have a job in construction are likely to be significantly benefitted particularly during the initial construction period. In addition, the residents who are either unemployed or who wish to have a job are likely to be significantly benefitted by the Project during the 2032 and 2038 assessment years where the Project would result in a significant increase in employment opportunities across a range of occupations on-site but also in the wider economy. No significant impacts are anticipated in terms of housing availability and the provision of community services based on the Socio-Economic Assessment during both the lifetime of the Project and combined with the other impacts assessed across the inter-related topics presented in paragraph 20.8.11; therefore it is unlikely that significant receptor led inter-related adverse effects will occur in the identified long term receptors.

20.8.22 **Air Quality**: During construction and operation, **ES Chapter 13: Air Quality** (Doc Ref. 5.1) assessment predicted pollutant concentrations at discrete sensitive human and ecological receptors within the wider study area. The air quality effects likely to contribute to long term receptor led inter-related effects are likely to be constrained to emissions from road traffic.

Therefore, air quality effects are also only likely to be felt locally to the airport. The sensitive receptors included in the model have been selected as representative of worst case (most sensitive) locations along modelled roads, junctions or airport sources. Further significant inter-related effects in addition to those identified in the air quality and other topic assessments are not considered likely.

20.8.23 **Traffic and Transport**: The extent of the strategic highway model includes the areas listed long term in paragraph 20.8.15. Strategic traffic modelling work shows that the majority of traffic (69% to 75%) access the airport via the M23 spur road and the remaining traffic is dissipated on the local road network. The Project will result in an increase in traffic movements during construction and operation. There will also be some improvements as part of the highway works associated with the Project. **ES Chapter 12: Traffic and Transport** (Doc Ref. 5.1) shows that no significant traffic and transport effects are identified in these areas. The traffic flows have informed the assessment of other topics (as set out in Table 20.8.1) and the inter-related effects have been considered and are contained in the respective chapters and above sections. It is unlikely any further significant receptor led inter-related adverse effects with respect to traffic and transport will occur in the identified long term receptors.

Short Term Receptors

20.8.24 A number of short term receptors have been identified in the ZoI for the Project. These are presented in the list below and on **ES Figure 20.8.2** (Doc Ref. 5.2).

- Users of PRoW and other recreational routes in the immediate vicinity of the Project site boundary or directly linking to it;
- Users of the local road and rail network; and
- Passengers of the airport.

20.8.25 The recreational resources most likely to experience inter-related effects are Riverside Garden Park, Church Meadows, National Cycle Route 21, the Sussex Border Path (PRoW 346Sy, 346-2Sy, 347Sy and 355-1Sy) and the PRoW at Pentagon Field. Due to their proximity to the airport these receptors would experience a change in visual amenity, noise, traffic and vehicle emissions. The extent to which these effects would be felt would vary between each individual human receptor. It would depend on their reason for using the recreational facility, how often they use it and the extent of the change.

20.8.26 Those receptors using these resources for recreational purposes are deemed to be more sensitive to changes compared with those using them for commuting or access. The assessment undertaken in **ES Chapter 19: Agricultural Land Use and Recreation** (Doc Ref. 5.1) determines that there would be no significant effects on users of PRoW in the long term. The conclusions reported in the chapter would remain as stated when taking into account additional factors such as noise, visual amenity and emissions.

20.8.27 Other short term receptors include users of the road and rail network around the airport and passengers using the airport itself. These users would experience a change in traffic flows, visual amenity and noise. As with users of recreational facilities, the extent of the effect would depend on their purpose for using the road/rail network, however most receptors are likely to be passing through for travel purposes, rather than recreation. Therefore the changes in traffic flows, visual amenity and noise would result in a lower effect. Effects greater than those presented in the ES

are not considered likely due to the low sensitivity of these receptors. Below paragraphs provide assessment of inter-related effects on short term receptors on a topic by topic basis.

20.8.28 **Visual:** The largest visual impacts during the construction period are likely to be experienced by occupiers of the Hilton Hotel due to the construction of large scale development in close proximity, and people using the public open space at Riverside Garden Park and Church Meadows Horley due to vegetation removal and construction activities associated with the surface access improvements. These receptors would experience temporary effects up to Major adverse, which is significant. Occupiers of other hotels within Gatwick Airport, people using the McDonalds and KFC, walkers using public rights of way at Pentagon Field, Tinsley Green and Horley, cyclists using NCR 21, pedestrians using pavements at Balcombe Road, Longridge roundabout and North Terminal roundabout and occupiers of vehicles travelling on Lowfield Heath Road, Balcombe Road, Ifield Road and the A23 would experience a change in view due to vegetation removal and construction activities associated with buildings and infrastructure in close proximity. These receptors would experience temporary effects up to Moderate adverse, which is not significant. The largest visual effects during Year 1 of the operational period are likely to be experienced by the same receptor groups and would initially result in the same level of significance. In the longer term, when planting proposals included as mitigation measures have matured, the level of effect would reduce to a level that is no longer significant. It is unlikely that the short term Receptors would experience increased significance of effects than that which has already been reported in **ES Chapter 8: Landscape, Townscape and Visual Resources** (Doc Ref. 5.1). Therefore further inter-related effects on the short term receptors are not considered likely.

20.8.29 **Air Quality**: No locations on site where receptors relevant to the air quality short-term objectives are located exceed a concentration of 60µg/m^3 during operation. Therefore, following the relevant guidance, the impact is considered to be not significant for all operational years and further inter-related effects on the short term receptors are not considered likely.

20.8.30 **Traffic and Transport:** No significant effects are identified in **ES Chapter 12: Traffic and Transport** (Doc Ref. 5.1) for rail users, who may experience an increase in crowding as the result of additional passengers on rail services. No significant effects are identified for local road users during operation. During highway construction, traffic management associated with the works will lead to a reduction in the number of lanes within the vicinity of the airport. This will lead to increased delays but the effect is temporary as the works take place to improve capacity, and the effect will be managed through measures set out in the **ES Appendix 5.3.2: Code of Construction Practice Annex 3 - Outline Construction Traffic Management Plan** (Doc Ref. 5.3), **ES Appendix 5.3.2: Code of Construction Practice Annex 5 - Construction Resources and Waste Management Plan** (Doc Ref. 5.3) and **ES Appendix 5.3.2: Code of Construction Practice Annex 2 - Outline Construction Workforce Travel Plan** (Doc Ref. 5.3). The traffic flows have informed the assessment of other topics and further inter-related effects on the short term receptors are not considered likely.

20.9. Summary

20.9.1 This chapter considers the cumulative and inter-related effects arising from the Project during the construction and operational periods. The cumulative assessment uses a short list of other developments which could result in cumulative effects on the same receptors as the Project. The assessment of inter-relationships uses the assessments in each of the topic chapters of the ES

and considers whether additional effects over the lifetime of the Project or from multiple topics on the same receptor could occur. A separate sensitivity test has been undertaken to consider the potential for cumulative effects of Heathrow R3 with the Project. This has been undertaken in the event that this were to come forward around the later assessment years for the Project.

20.9.2 The CEA concludes that significant effects are not likely in relation to many of the topic areas. Significant cumulative effects could occur in relation to the High Woodland Fringes, Low Weald, Horsham Upper Mole Farmlands and Mole Valley Open Weald Character Areas when considered with other developments. However, the contribution of the Project to these significant effects is considered to be medium to negligible. Significant cumulative effects are also considered likely on mid to long distance views from elevated locations. No further significant effects are considered likely.

20.9.3 This chapter has considered the potential for inter-related effects arising from the construction and operational stages of the Project. It draws from the assessments of individual effects presented in the topic-specific ES chapters. The identification of potential inter-related effects has been based on a largely qualitative assessment using expert judgement, noting that inter-related effects have already been accounted for, in many instances, within the assessments in the topic chapters.

20.9.4 As stated in the introductory sections, the inter-related effects could occur in two ways: a single impact extended over the lifetime of the Project (Project lifetime effects), and a combination of effects from a number of different topic areas (receptor led effects). The Project lifetime inter-related effects during construction and operation periods mainly arises due to noise, visual impacts and health and wellbeing. However, significance of effects that are reported for each of these periods is not considered to increase beyond what has already been reported in individual chapters.

20.9.5 With regard to receptor-led inter-related effects, ie the combination of multiple environmental effects on a single receptor group, the combined impact of environmental pathways on ecology, heritage and landscape receptors and human health is inherently considered in the topic-specific assessments. However, inter-related effects have been further considered in this chapter for human receptors and identified and assessed within two main receptor groups: long term and short term receptors. These relate to communities (identified using parish boundaries) and users of the local PRoW and road/rail network. The inter-related effects on these receptors are limited to noise, air quality, visual, traffic and transport and socio-economic effects.

20.9.6 While additional adverse inter-related effects may arise at some locations from noise, traffic and visual effects during construction, these are considered unlikely to alter the significance of effects predicted individually within relevant topic chapters and would be managed through measures set out in **ES Appendix 5.3.2: Code of Construction Practice** (CoCP) (Doc Ref. 5.3). During operation, the main inter-related effects are likely to result from visual, noise and traffic. However, it is unlikely that receptors would experience increased significance of effects than that which has already been reported in the individual chapters for those receptors.

20.11. References

Legislation

Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

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20.12. Glossary

Table 20.11.1: Glossary of Terms

Term	Description
ADMS	Air Dispersion Modelling Software
ATM	Air Traffic Movements
CEA	Cumulative Effects Assessment
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
ES	Environmental Statement
GAL	Gatwick Airport Limited
GHG	Greenhouse gases
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
LOAEL	Lowest Observed Adverse Effect Level
LSA	Local Study Area
NPPF	National Planning Policy Framework
NPPG	National Planning Practice Guidance
NPR	Noise Preferential Route
NPS	National Policy Statement
ONS	Office for National Statistics
PRoW	Public Right of Way
SAC	Special Area of Conservation
TEMPro	Trip End Presentation Program (Department for Transport, V7.2)
ZoI	Zone of Influence
ZTV	Zone of Theoretical Visibility