



YOUR LONDON AIRPORT
Gatwick

*Our northern runway:
making best use of Gatwick*

**Preliminary Environmental Information Report
Chapter 20: Summary of Effects**

September 2021

Table of Contents

20	Summary of Effects	20-1
20.1.	Introduction	20-1
20.2.	Summary of Effects	20-1
20.3.	References	20-33
20.4.	Glossary	20-33

20 Summary of Effects

20.1. Introduction

- 20.1.1 This chapter provides a summary of the findings of the environmental assessment work undertaken to date concerning the potential effects (adverse and beneficial) of the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). Full details of the findings of the Environmental Impact Assessment (EIA) process undertaken to date are provided in the individual topic chapters (Chapters 7 to 19) of this Preliminary Environmental Information Report (PEIR).
- 20.1.2 This summary and the table provided at the end of this chapter (Table 20.2.1) focus on the significant effects identified for each phase of the Project on a topic by topic basis. Details of all adverse and beneficial effects (including the effects predicted not to be significant) are provided in the summary table at the end of each topic chapter).

20.2. Summary of Effects

Historic Environment

Initial Construction Phase: 2024 to 2029

- 20.2.1 Chapter 7: Historic Environment of the PEIR, concludes that the majority of effects as a result of the Project during the initial construction phase (2024-2029) would not be significant. However, construction of some contractor compounds (in previously undeveloped areas), some of the excavation required for the flood compensation works and environmental mitigation and the placement of spoil and construction of parking at Pentagon Field could result in effects of up to **major adverse** significance. This would occur only in the event that buried archaeological remains are present in these locations and that the features are of a high levels of sensitivity to development. Further archaeological investigation will review the value of the existing resource, if any, and therefore, the assessment is a worst case. In some cases, with appropriate mitigation measures in place, the significance of effect would reduce to **negligible or minor adverse**. Where it is not possible to apply any mitigation measures, the effects would be offset by a programme of further archaeological investigation.
- 20.2.2 The relocation of Pond A and the diversion of the River Mole could impact on possible palaeochannels, while the construction of the replacement 'Purple Parking' at the western end of Crawler's Field could affect buried archaeological resources, where present. These activities could lead to an effect of up to **moderate adverse** significance. As above, this is a worst case assessment and the effect would be offset by a programme of geoarchaeological investigation.
- 20.2.3 Other effects would not be significant. These include a predicted **minor adverse** effect on the character of the historic landscape at Pentagon Field and a **minor adverse** effect arising from the demolition of the former air traffic control tower (which would represent an effect that would be offset by recording of the building prior to its demolition).

Ongoing Construction and Operation: 2030 to 2032

- 20.2.4 During the period 2030-2032, there could be effects arising from impacts on buried archaeological remains during the establishment of the surface access satellite compound north

of Longbridge Roundabout and environmental mitigation works required in the northern part of car park B. These effects could be up to **major adverse**, as a worst case. With appropriate mitigation measures in place the significance of effect would reduce to **minor adverse**, which would not be significant. Where it is not possible to apply any mitigation measures, the effects would be offset by a programme of further archaeological investigation.

20.2.5 Other effects would not be significant. These include an effect of **minor adverse** significance as a result of the change within the setting of the Church Lane (Horley) Conservation Area. There would also be **minor adverse** effects resulting from changes within the settings of the Grade II* listed Charlwood Park Farmhouse, several Grade II listed buildings at Charlwood and the Conservation Area at Charlwood as a result of the relocation of the CARE facility.

20.2.6 There would be **minor adverse** effects on the significance of the Grade I listed Church of St Nicholas (Charlwood), also The Manor House (Charlwood), Providence Chapel (Charlwood) and Charlwood Park Farmhouse (all Grade II* listed buildings), and **negligible adverse** effects on the significance of the Conservation Area and several Grade II listed buildings at Charlwood.

Ongoing Construction and Operation: 2033 to 2038

20.2.7 During the period 2033-2038, the construction of the flood storage area east of Gatwick Stream would lead to the complete loss or substantial damage of buried archaeological remains resulting from the reduction of ground levels. This would result in up to a **major adverse** effect (as a worst case), which would be offset through a programme of further archaeological investigation.

2038: Operational Phase

20.2.8 No further effects on the historic environment are considered likely during the operational phase of the Project.

Landscape, Townscape and Visual Resources

20.2.9 Chapter 8: Landscape, Townscape and Visual Resources identifies the character and features of the landscape and townscape and assesses the changes that would result as a consequence of the Project. In addition, it considers the potential visual effects arising as a result of the Project.

Initial Construction Phase: 2024 to 2029

20.2.10 In the initial construction phase, the creation of parking at Pentagon Field and replacement Purple Parking at Crawler's Field would result in the loss of relatively large areas of grassland and green infrastructure within the airport leading to **major adverse** and significant effects in relation to the immediate landscape character of Pentagon Field. However, the effects on the wider local Gatwick Airport Character Area would be **minor adverse**, during the day and at night, which would not be significant. Other effects on landscape and townscape character would not be significant.

20.2.11 The works at Pentagon Field would result in visual effects for walkers using public rights of way and the pavement adjacent to Pentagon Field, who would have views of construction works resulting in **major adverse** effects in the short to medium term, which would be significant. These effects would reduce in later phases, as the planting proposed as part of the Project matures and becomes more effective in terms of screening. Other effects on views would not be significant.

Ongoing Construction and Operation: 2030 to 2032

- 20.2.12 During this period, the completed car park at Pentagon Field would continue to give rise to a significant effect on the localised landscape character within Pentagon Field. This effect would be **major adverse** and significant effects in relation to the immediate landscape character of Pentagon Field. However, the effects on the wider local Gatwick Airport Character Area would be **minor adverse**, during the day and at night, which would not be significant. Other effects on landscape and townscape character would not be significant. No other significant effects on landscape or townscape character would occur during this period.
- 20.2.13 In the first full year of operation walkers using public rights of way adjacent to Pentagon Field and pavement along Balcombe Road would have views of construction works, resulting in **major adverse** effects, which would be significant. Occupiers of the Hilton Hotel would gain near open views of the new hotel, office and multi-storey car park initially under construction and then when complete resulting in **major adverse** and significant effects. Other effects on views would not be significant.

Ongoing Construction and Operation: 2033 to 2038

- 20.2.14 During this period, the effects from the car park at Pentagon Field and the Gatwick Airport Character Area would remain as reported above and therefore significant. By this time, visual effects, including those on walkers using public rights of way adjacent to Pentagon Field; pedestrians using the pavement along Balcombe Road; and occupiers of rooms of the Hilton Hotel would not be significant. Such effects would be reduced to some extent through the planting proposed as part of the Project, including enhancement of existing green infrastructure, such as hedgerows, woodland, trees, shrubs, wetland and amenity planting.

2038: Operational Phase

- 20.2.15 During this period, the effects from the car park at Pentagon Field and on the Gatwick Airport Character Area would remain as reported above and therefore significant. The operational elements of the Project, in conjunction with the mature mitigation adjacent to the High Woodland Fringes, Upper Mole Farmlands, Open Weald and Low Weald landscapes would lead to **negligible adverse** effects in the long term and would not be significant.
- 20.2.16 By 2038, walkers using public rights of way adjacent to Pentagon Field, and walkers and cyclists using the National Cycle Route 21 through Riverside Garden Park and the adjacent open space would have views of the operational A23 which would result in **moderate to minor adverse** effects which would not be significant. Other receptors, eg members of Gatwick staff; members of the public using the airport access roads and car parks; occupiers of vehicles travelling along the A23; receptors at north facing windows and outdoor spaces of the KFC and McDonalds; occupiers of residential properties on the southern edge of Horley; and pedestrians using the roadside pavement at Balcombe Road, would have views of the operational elements of the Project, resulting in generally **negligible to moderate** effects which would not be significant.
- 20.2.17 By 2038, other effects would be reduced in significance by the proposed planting and enhancement measures forming part of the Project.

Ecology and Nature Conservation

20.2.18 Chapter 9: Ecology and Nature Conservation assesses the effects of the Project on habitats and species. The Project site was found to largely comprise low value habitats associated with the airport and infrastructure, comprising large areas of hard standing and amenity grassland with areas of ornamental shrub and tree planting. These areas are predominantly located within the centre of the Project site with areas of higher value habitats to the east and west.

20.2.19 The Project includes significant areas of biodiversity enhancement, including:

- creation of a new pond designed to provide a high value habitat for aquatic flora, invertebrates and amphibians within a mitigation area;
- woodland creation and tree and shrub planting;
- diversion of the River Mole to create an increased length of channel with a more natural profile;
- creation of refugia and hibernacula within newly created habitats for great crested newt and grass snake; and
- creation of a south facing mosaic of grassland with occasional scrub to provide suitable habitat for a variety of terrestrial invertebrates and grass snake on the northern bank of the newly diverted section of the River Mole and the area to the north of it.

20.2.20 Effects arising during construction would be controlled through measures set out in the Code of Construction Practice.

Initial Construction Phase: 2024 to 2029

20.2.21 The assessment of effects found that the Project would have no effect on statutory or non-statutory designated sites or areas of ancient woodland at any stage of the Project. The effects on habitats and species were also generally found to be not significant, except where described below.

20.2.22 In terms of effects on habitats, the initial construction phase of the Project would require the removal of species-poor hedgerow and loss of plantation woodland and scrub habitat. The loss of these habitats would result in **moderate adverse** and significant effects. Additional hedgerow planting would be undertaken early in the construction phase on other parts of the Project site, which would enhance habitat connectivity in these areas. This would result in a **moderate beneficial** and significant effect in the longer term.

20.2.23 The above effects on habitats would result in some temporary effects on breeding birds. A loss of suitable breeding sites would result in a **moderate adverse** and significant effect during the initial construction phase. The habitat loss would also result in a temporary **moderate adverse** effect on the bat and invertebrate assemblages. This would be a temporary effect until new tree, grassland and shrub planting had established. Longer term effects would be beneficial, as a result of new planting.

2030 to 2038

20.2.24 The loss of semi-natural broadleaved woodland, broadleaved plantation woodland and mature trees would generate **moderate adverse** temporary significant effects during construction works in the period 2030-2032. This would result in a temporary **moderate adverse** and significant effect on some bat and bird species.

- 20.2.25 Habitat loss associated with the construction work in these areas would be compensated through planting hedgerows, scattered broadleaved trees and broadleaved woodland and creating neutral grassland throughout the mitigation area to the west of the River Mole corridor to strengthen connectivity and the value of the habitats in that area. Although there would be a temporary loss until new planting has established, the mitigation would reduce the duration of the adverse impact of habitat loss. The mitigation would also provide an enhancement due to new, higher value habitats being present and improved habitat connectivity to the west in addition to the restored river corridor once the River Mole had been diverted.
- 20.2.26 No other significant effects would arise during the period 2033 to 2038 and no operational effects from 2038 onwards are predicted.
- 20.2.27 An initial Habitats Regulations Assessment (HRA) has been undertaken to consider the effects on designated sites. There would be no direct habitat loss from any designated site. The HRA does not identify any significant effects on designated sites arising from changes in traffic flows or subsequent changes in air quality. This will be considered in further detail in the Environmental Statement (ES).
- 20.2.28 No permanent adverse significant effects would arise as a result of the Project. Some minor beneficial permanent effects would arise as a result of habitat creation.

Geology and Ground Conditions

- 20.2.29 Chapter 10: Geology and Ground Conditions considers the potential impacts from the Project on the underlying aquifers, surface watercourses, human health (construction workers and future site users) and mineral resources.
- 20.2.30 Effects arising during construction would be controlled through the Code of Construction Practice. This will include measures to facilitate the remediation of areas of existing contamination and measures to prevent runoff and avoid pollution incidents occurring.

Initial Construction Phase: 2024 to 2029

- 20.2.31 The assessment has considered potential impacts on the underlying aquifers, surface watercourses, human health (construction workers and future site users) and mineral resources.
- 20.2.32 This phase would involve the relocation of many existing facilities within the Project site. In most cases, the areas where facilities are to be relocated are already occupied by buildings, structures or hard surfacing. Construction activities such as breaking up of paved areas, earthworks etc. would involve exposure of the soils to rain and the movement of machinery which could lead to erosion and compaction, however, these activities would be temporary.
- 20.2.33 A staged approach is proposed as part of the mitigation strategy to identify the most appropriate course of action for each development area and to target areas where further investigation is required. The scope of the remediation strategy would be agreed with the Environment Agency and Crawley Borough Council prior to its implementation. Validation works would be undertaken on completion of the remediation and a verification report prepared for regulatory sign off.
- 20.2.34 The significance of effects range from temporary **minor adverse** effects with regard to human health during construction where remediation is required, to **no change**.

2030 to 2038

- 20.2.35 Ongoing construction works through to 2038 would not result in any significant effects on underlying aquifers, surface watercourses, human health (construction workers and future site users) and mineral resources.
- 20.2.36 No significant effects would occur during the operational phase from 2038 onwards.

Water Environment

- 20.2.37 Chapter 11: Water Environment assesses the impact of the Project on the water environment comprising: flood risk and surface water drainage; geomorphology; water quality; groundwater resources; water supply and wastewater infrastructure.

Initial Construction Phase: 2024 to 2029

- 20.2.38 During the initial construction phase, works would generally be contained within the airfield with some additional activities taking place beyond the current operational airport boundary. The latter includes proposed surface parking at Pentagon Field (previously greenfield), construction of flood mitigation areas and the establishment of construction compounds. Best practice measures to mitigate the construction impacts (implemented through the Code of Construction Practice) would substantially control impacts.
- 20.2.39 Construction of the diversion of the River Mole would begin in 2024. This would require excavation and earthworks along a 400 metre length in the floodplain adjacent to the existing channel. The existing channel would be infilled along this section, and the upstream and downstream of the diversion channel would be reconnected to the main watercourse. The diversion of the River Mole would have a short-term **minor adverse** but not significant effect on water quality during construction, with longer term beneficial effects due to the naturalisation of the watercourse.
- 20.2.40 Works would also be undertaken on flood compensation areas at Museum Field, an area east of Museum Field and at car park X. This would require ground lowering to create compensation areas. No significant effects on groundwater or surface water are predicted during this phase, with control measures in place.
- 20.2.41 Existing surface water flow paths may be interrupted, diverted or created by construction works, due to increased compaction of ground, increase in impermeable area, or by level changes as a result of temporary works. Therefore, any increase in surface water runoff that could potentially not be conveyed by the existing drainage system would be managed on site or dealt with through temporary drainage. The drainage system would be designed to ensure it has adequate capacity to store any additional surface water runoff at all stages of the construction phase. No significant effects on flood risk are likely. Some **minor beneficial** effects (not significant) are predicted as a result of the creation of flood compensation areas, which would reduce flood risk.

First Full Year of Operation: 2029 (up to 2032)

- 20.2.42 All of the proposed flood mitigation measures (except for the Gatwick Stream flood compensation area) would have been completed by the first full year of opening. After 2029, the main works that could impact on fluvial flood risk would be the proposed surface access improvement works which would include their own mitigation measures.

20.2.43 During this time, there is potential for temporary effects on the watercourses as they adapt and adjust to associated construction works, including the new surface access arrangements at the South Terminal and North Terminal roundabouts. These would not be significant.

20.2.44 Relocation of Pond A could improve the biological quality, and improve habitat functioning, species quality and quantity, as well as water quality indicators. This would result in beneficial effects on the River Mole, which are not considered significant.

Interim Assessment Year: 2032 (up to 2038)

20.2.45 In this phase of the Project, the effects of construction works on the watercourses (undertaken in earlier phases of construction) would have stabilised, and it is not anticipated that there would be any further adverse effects.

20.2.46 The works to create the Gatwick Stream flood compensation area would be undertaken during this period. The works would involve lowering the existing ground level. The flood compensation area would connect to the watercourse by lowering the stream bank. Impacts on the Gatwick Stream could include sediment pollution and a change in bed form over time. However, with the provision of mitigation and best practice measures through the Code of Construction Practice, effects would not be significant.

Design Year: 2038 (Operational Phase)

20.2.47 The following conclusions can be made with regards to flood risk in relation to the Project.

- Fluvial flooding is the principal source of flood risk to the Project. Elements proposed as part of the Project, including new taxiways and stands, would be located as close to existing infrastructure as possible. Therefore, levels of fluvial flood risk to proposed airport infrastructure would be equivalent to existing levels or reduced.
- Surface water flooding is also a significant potential source of flood risk to the Project. However, in most cases surface water flow paths and ponding areas are small in extent and do not encroach on proposed elements of the Project, where they do, surface water drainage will mitigate any risk.
- At this stage, it has not been possible to fully quantify groundwater flood risk to the Project site, however, it is considered that the risk from groundwater flooding at the airport site is low.
- The risk of flooding from other sources, including reservoirs and sewers flooding, is considered medium.

20.2.48 Flood mitigation measures have been proposed as part of the Project, such that the Project would remain safe for its lifetime without increasing flood risk elsewhere. Therefore, the significance of flood risk effects from the Project on all sources of flood risk has been assessed to be (at worst) **negligible or minor adverse** and therefore not significant. For certain receptors, the Project improves fluvial flood risk for third parties.

20.2.49 The diversion of the River Mole has been assessed to have a **minor adverse** effect on water quality. This would be short-term during construction, and the longer term effect is **moderate beneficial** (significant) due to the naturalisation of the watercourse.

20.2.50 From the assessment undertaken of the potential impacts on all elements of the water environment, suitable mitigation has been proposed and it is concluded that there would be no significant effects.

Traffic and Transport

20.2.51 Chapter 12: Traffic and Transport sets out the effects of the Project on the following:

- severance;
- driver delay;
- views from the road;
- pedestrian and cyclist delay and amenity;
- accidents and safety;
- hazardous loads; and
- public transport services and users.

20.2.52 Preliminary traffic modelling shows that highway improvements will be required for the Project to accommodate increased passenger throughput, together with the already consented improvements to Gatwick Station. The proposed highway improvements include changes to the North and South Terminal roundabouts and improvements to the Longbridge Roundabout.

20.2.53 A Travel Plan will target staff travel and encourage more sustainable travel patterns. This will be prepared for the application for development consent. There will also be a Travel Plan for construction workers.

20.2.54 As part of the construction works, a traffic management strategy would be put in place to minimise any negative environmental and community impacts. This would include the following.

- Measures to ensure the transport of construction materials and waste is managed as sustainably as possible, noting the impacts of transporting this by road, including the potential use of rail via facilities close to the airport, where this is appropriate and feasible.
- Scheduling of construction material and logistics traffic movements that need to come by road to use roads and highways outside of peak periods and to use designated routes into construction sites on the airport which are suitable for this type of traffic.
- Delivery Management Zones to consolidate materials onto the least number of vehicles and to hold vehicles away from sensitive areas until deliveries are required.
- Encouraging/incentivising the highest possible public transport use for the construction workforce.
- Timing shift patterns such that those workers who do need to come by road can do so outside of peak periods.

20.2.55 The initial modelling and assessment shows that within the extent of the current traffic model and given the existing high traffic flows on the existing highway network, the Project is not anticipated to generate significant traffic flows beyond the immediate local highway network. However, due to redistribution effects, the strategic modelling work shows that there could be some increases in traffic flows in areas such as Croydon during certain times of day, particular during the interim assessment year 2032.

20.2.56 Based on the methodology, assessment criteria and assignment of significance set out in this chapter, the majority of identified effects would not be significant. However, for a small number of

road links, potentially significant effects on car drivers/passengers (in terms of driver delay) and, in one case, on pedestrians and cyclists (in terms of severance) have been identified. This will be considered further as the EIA process continues and it is anticipated that with further measures in place, long term effects would not be significant.

Air Quality

- 20.2.57 Chapter 13: Air Quality assesses the impact of the Project upon air quality and odour. The air quality studies are concerned with the presence of airborne pollutants in the atmosphere. The main pollutants of concern for local air quality are oxides of nitrogen (NO_x), including nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM_{2.5}) and dust.
- 20.2.58 Air quality mitigation measures are proposed to ensure best practice is followed for all on-site activities during construction. Measures would be implemented through the Code of Construction Practice. These measures will include the development and implementation of a Dust Management Plan, which may include controlling of other emissions, approved by the local planning authority. Dust suppression measures using water spraying, covering of dusty materials and speed limits on-site will be included.
- 20.2.59 Low emission plant will be used during construction of the Project elements. The Decade of Change to 2030 document published in 2021 commits to mobile construction equipment meeting zero or ultra-low emission standards by 2030.
- 20.2.60 Following the implementation of appropriate mitigation, the effects of construction-related activities on dust soiling and human health would be not significant. The mitigation measures are applicable throughout the initial construction phase and until the completion of construction works.
- 20.2.61 The results of the assessment model show that no significant effects for air quality are anticipated as a result of the Project in any phase.
- 20.2.62 The air quality assessment includes an ecological assessment of the change in nitrogen dioxide concentrations and change in nitrogen disposition as a result of the Project for all assessment phases at sensitive ecological receptors. No significant effects to ecological receptors from the predicted increase in nitrogen deposition are anticipated as a result of the Project.

Noise and Vibration

- 20.2.63 Chapter 14: Noise and Vibration assesses the impact of the Project on the following types of noise:
- construction noise and vibration – noise and vibration from temporary construction of the Project, including the use of construction compounds;
 - air noise - noise from aircraft in the air or departing or arriving (including reverse thrust) on a runway;
 - ground noise – noise generated from airport activities at ground level including aircraft taxiing and traffic within the airport boundary; and
 - road traffic noise – noise from road traffic vehicles outside the airport on the public highway.
- 20.2.64 Construction works would be undertaken in accordance with the Code of Construction Practice which will require contractors to adopt and implement appropriate management measures.

- 20.2.65 It is proposed that the use of the northern runway would be limited to the period 06:00 to 23:00 hours, avoiding the majority of the more sensitive night-time period. GAL would operate flights from the northern runway using procedures designed to minimise noise impacts, in line with its current processes and the commitments of the Noise Action Plan. GAL would continue to work with communities, the Noise Management Board and its aviation industry stakeholders to develop ways to minimise noise for all operations at the airport.
- 20.2.66 An enhanced Noise Insulation Scheme is proposed, providing greater coverage than currently offered. Residents in the highest noise Inner Zone would be offered a full package of acoustic insulation to avoid significant adverse effects, with residents in the Outer Zone being offered a lesser package but which would also include acoustic ventilation. In addition, assistance for homeowners looking to move from the most affected properties would also be provided.
- 20.2.67 GAL proposes a noise envelope that would set limits in terms of the areas affected by specified day and night noise levels (or contours). The identified contours have been chosen because they represent the lowest level of observable adverse effects during the day and night. Limiting noise contour areas are proposed at two points in the future as air traffic increases, with the latter being smaller than the former to ensure noise levels reduce in the longer term.
- 20.2.68 Mitigation for ground noise from aircraft taxiing and within the airfield has been incorporated into the design of the Project including bunding situated at the western end of northern runway, and noise barriers adjoining the bund installed at the western end of the northern runway.
- 20.2.69 With regards to noise from road traffic, noise barriers have been incorporated in the eastern side of the new highway to reduce the adverse effect of existing high noise levels in Riverside Garden Park and the surrounding residential area.

Initial Construction Phase: 2024 to 2029

- 20.2.70 Much of the work on the airfield would be required to be undertaken at night. The initial construction phase noise modelling indicates that there is potential for adverse noise impacts in the communities bordering the airport, and that the scale of those impacts is likely to be larger at night, reflecting the current expectation that much of the work would need to be carried out at night. It is expected that noise mitigation would be identified to reduce noise levels, including quieter methods of working, reducing plant noise levels for night works near sensitive areas, site perimeter noise barriers and receptor-based mitigation where appropriate (noise insulation and temporary rehousing). Based on the available information, and the likely extent of mitigation that would be available, **moderate adverse** effects may arise, which may be considered significant, in some areas. The construction noise assessment will be refined in order to develop further mitigation on site and to estimate the likely extent of the construction noise insulation scheme that would be required.

First Full Year of Opening: 2029

- 20.2.71 Effects in relation to noise from ongoing construction activities would be in line with those reported above for the initial construction period. Overall, the assessment results indicate that there is potential for adverse noise effects at approximately 150 properties during the day and approximately 500 during the night. A variety of mitigation measures are proposed to reduce the potential construction noise impacts and a noise insulation scheme for construction noise will be developed to avoid significant effects of health and quality of life.

20.2.72 The results of air noise modelling for 2029 indicate that the northern runway is anticipated to add approximately 40 additional movements in the summer daytime period and two additional movements at night. The impacts predicted in 2029 for air noise and ground noise are lower than in those predicted for 2032, are discussed below.

Interim Assessment Year: 2032

20.2.73 Air noise has the potential to affect residents, and other Noise Sensitive Receptors (NSRs) over a wide area beyond the airport boundary. The Project would make alterations to the existing northern runway, resulting in increased use of this runway using the same flight paths. The smaller 'Code C' aircraft (ie <36 metre wingspan) would use the northern runway. Consequently, any noise impacts of the Project would be the result of increases in noise due to the increased number of flights on the northern runway, rather than new noise impacts over areas previously unaffected. This would therefore avoid the noise impacts often associated with new flight paths.

20.2.74 To the west of the western end of the northern runway approximately 40 properties on Ifield Road and near Russ Hill have been identified as experiencing increases of 3-6 dB which are potentially **moderate adverse** significant effects. These houses would be eligible for full noise insulation under the new Inner Zone 1 NIS, to mitigate the potentially significant effects. For all other receptors, increases and decreases in air noise are not predicted to be significant. Noise changes at night would be lower than during the day because it is assumed that the current night noise restriction would continue to cap aircraft numbers and noise in the 23:30 to 06:00 hours period. No other significant effects have been identified.

20.2.75 Ground noise from aircraft taxiing and within the airfield has been modelled at 12 representative receptors. Mitigation has been incorporated into the design of the Project including bunding 8 metres in height situated at the western end of northern runway, and noise barriers 10 metres high adjoining the bund installed at the western end of the northern runway and running for approximately 500 metres just to the north of the relocated Taxiway Juliet. With this mitigation in place, the predicted ground noise impacts are not predicted to be significant (**negligible or minor**) at the majority of these representative receptors with **moderate adverse** effects at three of the 12 receptor areas. The effects rated as **moderate** are considered significant and these are predicted in the Charlwood and Povey Cross areas and the area immediately south of the airport, at a total of approximately 90 properties. These are conservative estimates that will be further refined in the ES.

20.2.76 The remodelling of the Longbridge, North Terminal and South Terminal roundabouts and associated highways works have potential to increase noise levels in the adjacent Riverside Garden Park and residential area. A detailed noise model has been used to predict noise levels and to compare them to the do-minimum in 2032 and 2047 as required by the Design Manual for Roads and Bridges (DMRB) methodology. Noise barriers have been incorporated in the elevated sections of new highway. These would ensure that at most receptors, including within the park, noise levels would reduce as a result of the Project. Further modelling of traffic forecasts will be undertaken and reported in the ES, the numbers of properties affected by the different noise changes will be assessed and is likely to conclude that the benefits are **of negligible or minor significance** in most areas with some moderate significant benefits in small areas where the highest baseline noise levels would be reduced.

2038 and Beyond

20.2.77 No further significant effects are predicted in the later assessment years. This is because fleet transition to quieter new generation aircraft would continue beyond 2038 offsetting the projected increase in air traffic, in all cases.

Climate Change and Carbon

20.2.78 Chapter 15: Climate Change and Carbon assesses the impact of the Project on climate change and carbon. In particular, the chapter assesses the following.

- Climate Change Resilience (CCR): the resilience of the design, construction and operation of the Project to potential climate change impacts.
- In-combination Climate Change Impacts (ICCI): the combined effects of the Project and potential climate change impacts on the receiving environment and community.
- Greenhouse gas (GHG) emissions: the likely effect of the Project in terms of GHG emissions.

20.2.79 The CCR assessment identified several risks as being high or very high during the construction and operation phase. Mitigation for these risks is being developed such that the design would be resilient to climate change. With such measures in place, significant effects are not likely.

20.2.80 No significant effects have been identified thus far through the ICCI assessment for the construction or operational phases.

20.2.81 The GHG assessment has assessed the calculated GHG emissions arising from the Project and confirms that these are significant, in line with guidance which considers all net emissions arising from a project as significant. The GHG emissions arising from aviation form the greatest proportion of overall emissions. Emissions at 2038 from all sources are 7.575 MtCO_{2e} (including all international aviation) compared with a future baseline projection of 6.188 MtCO_{2e} in the absence of the Project. This includes an element of fleet turnover affecting aviation emissions, but no inclusion of more widespread decarbonisation mechanisms such as increased efficiency of engines and use of sustainable aviation fuels.

20.2.82 The Project would incorporate a range of embedded environmental design measures that would contribute positively to mitigation of the GHG emissions associated with the Project. Work to develop mitigation activities remains ongoing, and the impact of these on GHGs will be included in the ES.

20.2.83 The opportunities to mitigate impacts of the Project through both construction and operation will be collated into a draft Carbon and Climate Change Action Plan, to enable the airport to continue to reduce carbon emissions and to deliver sustainable development. The following factors will be considered further:

- the scale of aircraft emissions will be reviewed to take into account the likely evolution and use of sustainable aviation fuels, and to reflect expected gradual transition to electric / hybrid aircraft in use on some domestic and short haul routes;
- more developed data on the design of buildings and infrastructure, and a more informed estimate of the material requirements and waste arisings from the construction of the Project;

- improved information from the strategic transport modelling to inform the assessments of surface access emissions;
- confirmation of the mitigation measures to be implemented and their effect on reducing the emissions arising from the Project including benefits of measures in the Carbon and Climate Change Action Plan currently under preparation; and
- any changes to UK carbon budgets resulting from the revision to the Climate Change Act.

20.2.84 The next steps will include close working with the Project design teams to confirm the adoption of mitigation measures through design of the airport facilities and highways infrastructure, optimisation of material sourcing and recycling of cut/fill materials, management of construction stage emissions and the adoption of the energy strategy to reduce emissions arising from airport operations. The opportunities to mitigate impacts of the Project through both construction and operation will be collated into the draft Carbon and Climate Change Action Plan, to be published as part of the application for development consent.

Socio-economic Effects

20.2.85 Chapter 16: Socio-economics considers the potential socio-economic effects of the Project during the construction and operational phases. The assessment considers a broad range of effects including:

- employment;
- supply chains;
- labour markets;
- business disruption;
- business displacement;
- population;
- housing;
- resident disruption;
- community facilities and services;
- community cohesion; and
- compensation.

20.2.86 The Project will include the adoption of an Outline Employment, Skills and Business Strategy to continue and expand activities undertaken by GAL to support career entry (for graduates and apprenticeships), training and other work opportunities, together with the adoption of a Business Support Strategy to link Gatwick Airport with providers in the supply chain and through local procurement initiatives. These measures will enhance the potential employment and labour market impacts of the Project.

20.2.87 Some significant effects have been identified including beneficial effects through the generation of construction and operational employment across the four different phases of this socio-economic assessment. In particular, within the local study area the Project has been assessed to have a **moderate to major beneficial** effect that would be significant for construction employment 2024-29; **moderate beneficial** effect at 2029 first year of opening; a **moderate beneficial** effect at 2032 and also at 2038.

20.2.88 There would also be a **moderate beneficial** effect on supply chain employment opportunities at 2029 opening year and **moderate to major beneficial** at 2032 and 2038. Some of these effects

will be subject to further enhancement and mitigation measures which will be outlined in further detail at the ES stage.

- 20.2.89 The Project is expected to generate some disruption to business and residents (eg through changes to traffic and noise levels) and this would be a **moderate adverse** effect that would be significant. The Project is not expected to increase the need for housing above what is already planned for by neighbouring local authorities.
- 20.2.90 There would be a loss of Open Space (ie less than one hectare of open space) at Riverside Garden Park comprising a **moderate adverse** effect. Measures including re-provision of the entire loss and further enhancements to the rest of the open space provision are expected to mitigate the effect. Finally, there are **moderate adverse** effects on the labour market in the local study area identified in the interim assessment 2032 and 2038 design year. These effects will be mitigated by the Outline Employment, Skills and Business Strategy.

Health and Wellbeing

- 20.2.91 Chapter 17: Health and Wellbeing considers the effects of the Project on health and wellbeing and draws from other technical assessments (most notably: Chapter 12: Traffic and Transport; Chapter 13: Air Quality; Chapter 14: Noise and Vibration; and Chapter 16: Socio-economics).

Initial Construction Phase: 2024 to 2029

- 20.2.92 Overall, no significant health and wellbeing effects (adverse or beneficial) have been identified during the initial construction phase for the range of determinants assessed. Potential health and wellbeing effects from changes in environmental health determinants assessed (ie air quality and transport nature/flow rate) are considered to be **minor adverse** on the basis that impacts would generally be temporary, intermittent and managed through the implementation of best practice construction methods. In addition, health and wellbeing effects from changes in exposure to temporary lighting have been explored, but predicted to have no change, on the basis that no residential receptors would be impacted.

2029-3038

- 20.2.93 In terms of wider determinants, beneficial health and wellbeing effects have been predicted for changes in lifestyle factors and socio-economic factors during the initial construction phase (ie employment) due to job creation. In addition, impacts on healthcare capacity due to the influx of a non-home-based workforce is intended to be managed internally to ensure that any effect is not significant. The first full year of opening (2029) and the interim assessment year (2032) would include a combination of construction and operation-related health and wellbeing effects. However, health and wellbeing effects associated with environmental determinants (ie air quality, noise and transport) would remain not significant. Similarly, there would be no significant change in exposure to temporary or permanent lighting for residential receptors. Health and wellbeing effects from changes in lifestyle factors would remain **minor beneficial** and not significant in both assessment scenarios.
- 20.2.94 Health and wellbeing effects from changes in socio-economic factors (ie employment) would increase from **minor beneficial** in the first full year of opening (2029) to **moderate beneficial** in the interim assessment year (2032), which is considered significant. This is primarily due to the magnitude of indirect and induced job opportunities expected to be provided.

- 20.2.95 In terms of health and wellbeing effects from changes in healthcare capacity, a number of elements have been assessed (relating to construction and operation), which comprise the increase in demand for local health care services due to the influx of a non-home-based construction workforce, or from emergency call outs associated with increased passenger throughput. Overall, the effect on health and wellbeing is not considered significant, on the basis that any potential increase in demand is intended to be managed internally.

Design Year: 2038 (Operational Phase)

- 20.2.96 The design year (2038) is an operation only scenario. Health and wellbeing effects associated with environmental determinants would remain not significant. Operational employment opportunities (direct, indirect and induced) would reach their peak and continue to have **moderate beneficial** health and wellbeing effects, which are considered to be significant. There would no longer be a construction workforce, so any changes to healthcare capacity would be limited to emergency call outs associated with increased passenger throughput, which would not be significant on the basis that any change is intended to be managed internally.

Agricultural Land Use and Recreation

- 20.2.97 Chapter 18: Agriculture and Land Use considers the potential effects of the Project on agricultural land use and recreational resources, including areas of public open space, public rights of way and other linear recreational routes during its construction and operational phases.
- 20.2.98 The Project includes a range of mitigation measures, including replacement open space and provision of a new recreational route around the environmental enhancement area at Museum Field.

Initial Construction Phase: 2024 to 2029

- 20.2.99 During the initial construction phase of the Project there would be temporary effects associated with the loss (approximately 3.3 hectares) of lower quality agricultural land and permanent effects associated with land take (approximately 13.2 hectares) required for the development of surface parking on Pentagon Field, the provision of the Museum Field flood compensation area and a strip of land north of the existing South Terminal roundabout. In this instance, for both temporary and permanent land take, this is not considered to be significant, as no best and most versatile land resource (Grades 1, 2 or 3a land) is affected. Also associated with the temporary works at South Terminal roundabout, there would also be temporary disruption to a single holding which is let on a short term arrangement for horse grazing and hay production. The long term temporary effect of the loss of this single holding would not be significant.
- 20.2.100 There would also be permanent loss of agricultural land from seven land holdings during this stage. These losses would have effects on three holdings where land is being used for agricultural production, but these enterprises would still be able to continue to operate.
- 20.2.101 The overall significance of effect arising from the permanent loss of these areas of agricultural grassland from these holdings would not be significant.
- 20.2.102 In terms of effects on recreation, during the initial construction phase, there is the potential for access disruption along the Sussex Border Path and a number of public footpaths as a result of the commencement of the new grade separated junction to serve the South Terminal and construction activities at Pentagon Field. Public access improvements are proposed to mitigate

these effects, including the provision of new circular recreational route around the east of Museum Field flood compensation. Taking all these factors into account, the temporary effect on public rights of way during construction is assessed to be of **minor adverse** significance (not significant) and the overall effect on recreational routes and facilities during operation is assessed to be of permanent **minor beneficial** significance (not significant).

20.2.103 The improvement works associated with the proposed new grade separated junction to serve the North Terminal may encroach into the southern fringe of Riverside Garden Park. This would result in potential permanent loss of approximately 0.75 hectares of public open space within these areas and would impact on a section of the Sussex Border Path to the south of the A23. There would be no change to the alignment of National Cycle Route (NCR)21 within the south eastern corner of Riverside Garden Park and under the existing A23 during the construction works. However, there is the potential for some changes to the amenity of the route in this location.

20.2.104 To mitigate for these impacts the following measures have been incorporated into the Project design.

- New areas of public open space would be created totalling a minimum of 0.75 hectares (or an area equivalent to the total loss of public open space), with links to the existing area of Riverside Garden Park, St Bartholomew's Church and the former Horley Anderson Centre and Playing Fields, and the residential areas of Horley to the north and east.
- It is also proposed to make a commitment towards improvements/enhancements within Riverside Garden Park in consultation with Reigate and Banstead Borough Council.
- Provision of a permanent diversion to the Sussex Border Path to the south of the A23 arising from the new North Terminal roundabout.
- Provision of a pedestrian link between the footway on the northern side of the A23 footway near the Longbridge Roundabout into Riverside Garden Park.
- Provision of an additional pedestrian route linking Riverside Garden Park with the Sussex Border Path to the north of the A23.

20.2.105 Taking these factors into account, the effect on the areas of public open space in Riverside Garden Park, is assessed to be of long term **moderate adverse** that would be significant; and the effect on the Sussex Border Path is assessed to be of permanent **minor beneficial** significance.

Ongoing Construction and Operation: 2030 to 2032

20.2.106 The North and South Terminal junction improvements which would commence towards the end of the initial construction phase, are anticipated to be completed by 2032. Works to the Longbridge Roundabout are anticipated to take place between 2030 and 2032. These would impact approximately 0.1 hectares on the southern part of areas of public open space (St Bartholomew's Church and the former Horley Anderson Centre and Playing Fields) to the north of the A23 and east of the River Mole.

20.2.107 To mitigate for these impacts the following measures have been incorporated into the Project design, in addition to those identified above.

- New areas of public open space would be created totalling a minimum of 0.1 hectares (or an area equivalent to the total loss of public open space), with links to the existing area of

Riverside Garden Park, St Bartholomew's Church and the former Horley Anderson Centre and Playing Fields, and the residential areas of Horley to the north and east.

- 20.2.108 Taking these factors into account, the effect on these areas of public open space would not be significant.

Ongoing Construction and Operation: 2033 to 2038

- 20.2.109 No further effects on recreational resources are anticipated as a result of the ongoing construction and operation of the project in the period 2033-2038

Design Year: 2038 (Operational Phase)

- 20.2.110 No further effects on recreational resources are anticipated as a result of the operation of the Project in the design year 2038.

Table 20.2.1: Summary of Significant Effects Identified in the PEIR

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
Construction Phase (2024 – 2029)							
Historic Environment	Buried archaeological remains (surface access works contractor compound – South Terminal roundabout – land north of the M23 motorway spur)	Up to Medium	Potential loss or damage to remains from establishment of compound	Permanent	Up to High	Up to Major Adverse	Date, nature and extent of any buried archaeological remains not yet ascertained. Proposed programme of archaeological investigation should establish receptor sensitivity. Appropriate mitigation may be implemented during establishment of compound and this would reduce the magnitude of impact. If this is not possible then the effect could be offset through a programme of archaeological investigation.
	Buried archaeological remains (ground lowering – Museum Field)	Up to Medium	Complete loss or substantial damage resulting from reduction in ground level	Permanent	Up to High	Up to Major Adverse	Date, nature and extent of any buried archaeological remains not yet ascertained. Effect offset through programme of archaeological investigation.
	Deposits of geoarchaeological interest (flood	Low	Complete loss or substantial damage resulting from ground reduction	Permanent	Up to High	Up to Major Adverse	

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
	alleviation – car park X)						
	Buried archaeological remains (Pentagon Field)	Up to Medium	Loss of or damage resulting from placement of spoil and construction of the decked car park	Permanent	Up to High	Up to Major Adverse	
	Buried archaeological remains (environmental mitigation land surrounding Museum Field)	Up to medium	Planting, scrapes, replacement habitats etc	Permanent	High	Up to Major Adverse	Date, nature and extent of any buried archaeological remains not yet ascertained. Proposed programme of archaeological investigation should establish receptor sensitivity. Appropriate mitigation may be implemented during establishment of compound. and this would reduce the magnitude of impact. If this is not possible then the effect could be offset through a programme of archaeological investigation.
	Buried archaeological remains (replacement 'Purple Parking' at	Low	Complete loss or substantial damage resulting from construction of surface car park	Permanent	High	Up to Moderate Adverse	Date, nature and extent of any buried archaeological remains not yet ascertained. Effect offset through programme of archaeological investigation.

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
	western end of Crawter's Field)						
	Deposits of geoarchaeological interest (relocation of Pond A and River Mole Diversion)	Up to Medium	Complete loss or substantial damage resulting from construction of River Mole Diversion	Permanent	Medium	Moderate Adverse	
Landscape, Townscape and Visual Resources	Gatwick Airport Urban Character Area	Low generally, Medium at Pentagon Field.	Loss of Pentagon Field grazing land for spoil placement and construction of decked parking. Construction phase impact on townscape character generally.	Medium term, temporary and long term permanent	High to Medium	Major to Minor Adverse	Effects are only significant at Pentagon Field, which is a green field site and more sensitive to large scale change than other parts of Gatwick.
	Walkers using Public right of way 359/Sy at Pentagon Field	High	Visual, construction / operation of decked car park	Medium term, temporary and long term permanent	Medium	Major adverse	
	Pedestrians on Balcombe Road	Medium	Visual, construction/ operational phase	Medium term, temporary and long term, permanent	High	Moderate to Major adverse	

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
Ecology and Nature Conservation	Hedgerows	County	Loss of species-poor hedgerow to South Terminal roundabout improvements	Medium term	Medium	Moderate adverse	
			Reconfiguration of airport facilities	Long term	Medium	Moderate beneficial	
	Broadleaved plantation woodland and associated scrub	Local	Loss of woodland and scrub and loss of habitat connectivity	Long-term	High	Moderate Adverse	New woodland planting would result in long term beneficial effects.
	Breeding bird assemblage including species of conservation interest (confirmed or possible)	County (other/Reed Bunting)	Loss of suitable nesting sites for a range of species	Long-term	Medium	Moderate Adverse	
	Assemblage of other bat species	Local	Construction of Surface access satellite contractor compound, South Terminal and North and South Terminal improvement works	Long-term	High	Moderate Adverse	

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
	Terrestrial Invertebrate Assemblage	County	Habitat loss	Medium term	Medium	Moderate adverse	
Traffic and Transport	Car drivers and passengers	Low to Medium	Driver delay	Medium term	No Change to Medium	Moderate Adverse for two Croydon junctions	Further work and mitigation measures will be considered, and the residual effect is expected to be not significant
Noise and Vibration	Construction Noise	Residential (High) Non-Residential (various)	Construction noise	Short term	Medium	Moderate (subject to further assessment)	Further assessment to be undertaken.
Climate Change and Carbon	GHG	N/A	Emission of GHGs	Long term	N/A	Significant	IEMA guidance (IEMA, 2017) indicates that all emissions of GHG are significant
Socio-economics	Employment (local study area)	Medium	Direct construction employment	Medium-term	High beneficial	Moderate to major beneficial	
Agriculture and recreation	Riverside Garden Park		Loss of approx. 0.75 hectares of public open space and provision of replacement land	Long term	Medium	Moderate adverse	

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
2030-2032 (Construction and Operational Effects)							
Historic Environment	Buried archaeological remains (surface access works contractor compound – Longbridge Roundabout)	Up to High	Potential loss or damage to remains from establishment of compound	Permanent	Up to High	Up to Major Adverse	Date, nature and extent of any buried archaeological remains not yet ascertained. Proposed programme of archaeological investigation should establish receptor sensitivity. Appropriate mitigation may be implemented during establishment of compound and this would reduce the magnitude of impact. If this is not possible then the effect could be offset through a programme of archaeological investigation.
	Buried archaeological remains (Car Park B north of A27 Airport Way)	Up to High	Potential loss or damage to remains from environmental mitigation	Permanent	Up to High	Up to Major Adverse	Date, nature and extent of any buried archaeological remains not yet ascertained. Appropriate mitigation may be implemented ahead of the environmental mitigation works and this would reduce the magnitude of impact. If this is not possible then the effect could be offset through a programme of archaeological investigation.

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
Landscape, Townscape and Visual Resources	Gatwick Airport Urban Character Area	Medium at Pentagon Field, Low generally	Loss of Pentagon Field grazing land to decked parking. Construction and operational phase impacts on townscape character generally.	Short to Medium term, temporary and long term permanent	Medium (overall) High (Pentagon Field)	Minor adverse (overall) Major adverse (Pentagon Field)	Effects are only significant at Pentagon Field, which is a green field site and more sensitive to large scale change than other parts of Gatwick.
	Occupiers of Hilton Hotel	Medium	Visual, construction phase	Medium term, temporary and long term permanent	High	Moderate to major adverse	
	Walkers using Public right of way 359/Sy at Pentagon Field	High	Visual, operation of decked car park	Long term permanent	Medium	Major adverse	
	Pedestrians on Balcombe Road	Medium	Visual, construction phase	Long term, permanent	High	Major adverse	
Ecology and Nature Conservation	Semi-natural broadleaved woodland and individual broadleaved trees	County (Riverside Garden Park)	Loss of woodland in combination with loss from the South and North Terminal improvements	Long term	Medium	Moderate adverse	The Project currently proposes a significant loss of woodland that is partially mitigated for at a later date. The combined effect on habitat connectivity is significant.

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
	Breeding birds (NERC Species of Principal Importance and BoCC Red or Amber listed species)	County	Loss of suitable nesting sites for a range of species	Medium term	Medium	Moderate adverse	There would be an additional loss of nesting sites between habitats being lost and new habitats being sufficiently established to provide alternative nest sites. The long term effects would be beneficial.
	Assemblage of Bat Species	County	Loss of semi-natural broadleaved woodland due to Longbridge roundabout improvements	Long term	High	Moderate adverse	Some woodland, broadleaved trees, hedgerow and scrub would be lost along the A23 London Road and Riverside Garden Park. New woodland would be planted, but this will take time to become established. The long term effects would be beneficial.
Traffic and Transport (assessed for 2029)	Car drivers and passengers	Low to Medium	Driver delay	Medium term	No Change to Medium	Moderate Adverse for four Croydon junction.	Further work and mitigation measures will be considered, and the residual effect is expected to be not significant.
Climate Change and Carbon	GHG	N/A	Emission of GHGs	Long term	N/A	Significant	IEMA guidance (IEMA, 2017) indicates that all emissions of GHG are significant.

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
Socio-economics (Construction Phase 2029 – 2032)	Employment (local study area)	Medium	Direct construction employment	Short-term	Medium beneficial	Moderate beneficial	
	Open Space – Riverside Garden Park (Project site boundary)	High	Loss of Open Space	Permanent	Medium adverse	Moderate Adverse	
Socio-economics (Operational Phase 2029)	Supply chain (local study area)	Medium	Introduction of new indirect and catalytic jobs and GVA	Permanent	Medium beneficial	Moderate beneficial	
2033-2038 (Construction and Operational Effects)							
Historic Environment	Buried archaeological remains (Flood Compensation Area east of Gatwick Stream)	Up to Medium	Complete loss or substantial damage resulting from ground reduction	Permanent	High	Up to Major Adverse	Date, nature and extent of any buried archaeological remains not yet ascertained. Effect offset through programme of archaeological investigation.
Landscape, Townscape and Visual Resources	Gatwick Airport Urban Character Area	Low generally Medium at Pentagon Field	Loss of Pentagon Field grazing land to decked parking. Construction and operation phase impacts on townscape character generally.	Short/Medium/ long term, temporary/ permanent	Medium (overall) High (Pentagon Field)	Minor adverse (overall) Major adverse	Effects are only significant at Pentagon Field, which is a green field site and more sensitive to large scale change than other parts of Gatwick.

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
						(Pentagon Field)	
Traffic and Transport (assessed for 2032)	Pedestrians and cyclists	Negligible to Medium	Severance	Long term	Low to High	Moderate Adverse for three links in Croydon.	Further work and mitigation measures will be considered, and the residual effect is expected to be not significant
	Car drivers and passengers	Negligible to Medium	Driver delay	Long term	No Change to Medium	Moderate Adverse for eight junctions.	Further work and mitigation measures will be considered, and the residual effect is expected to be not significant
Noise and Vibration (assessed for 2032)	West of runway Ifield Road, Russ Hill	Residential (high) and non-residential (various) noise sensitive receptors	Air noise disturbance	Permanent	Day 40 homes: medium to high. Night 60 homes: medium to high. Approximately 80 homes above SOAEL due to Project.	Moderate adverse	All homes eligible for Inner Zone NIS to avoid significant effects

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
	Properties in Charlwood and Povey Cross areas and the area immediately south of the airport	Residential (high) and non-residential (various) noise sensitive receptors	Ground noise disturbance	Permanent	Approximately 90 properties (conservative estimate to be refined)	Moderate adverse, subject to further study	Noise bund and barrier minimises impacts to below SOAEL.
	Area immediately south of the airport	Residential (high)	Ground noise disturbance	Permanent	Approximately 10 properties	Moderate adverse, subject to further study	The Inner Zone NIS will be offered to mitigate significant effects (above SOAEL) predicted at approximately 10 properties in the Myrtle Cottage area.
	Properties within LOAEL road traffic noise contours	Residential (high) and non-residential (various) noise sensitive receptors	Road traffic noise disturbance from roads modified by the Project	Permanent	Negligible to low/medium beneficial	Not significant/significant beneficial	Includes noise barriers
Climate Change and Carbon	GHG	N/A	Emission of GHGs	Long term	N/A	Significant	IEMA guidance (IEMA, 2017) indicates that all emissions of GHG are significant.

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
Socio-economics (Construction Phase 2032 – 2037)	Businesses (Project site boundary)	High	Driver delays – Business disruptions	Medium-term	Medium Adverse	Moderate adverse	
Socio-economics (Operational Phase 2032)	Employment (local study area)	Medium	Introduction of new permanent direct jobs and GVA	Permanent	Medium beneficial	Moderate beneficial	
	Supply chain (local study area)	Medium	Introduction of new indirect and catalytic jobs and GVA	Permanent	High beneficial	Moderate to major beneficial	
	Labour Market (local study area)	Medium	Demand for labour, new training opportunities and improved access to work	Permanent	Medium adverse	Moderate adverse	
	Businesses (Project site boundary)	High	Business disruption - Driver delays	Permanent	Low to medium adverse	Moderate adverse	
Health and Wellbeing	Health and wellbeing effects from changes in socio-economic factors	High	Increase in direct, indirect and induced employment opportunities	Medium term, temporary (construction)/long term, permanent (operational)	Medium	Moderate beneficial	

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
Design year (2038)							
Landscape, Townscape and Visual Resources	Medium at Pentagon Field, Low generally	Loss of Pentagon Field grazing land for decked parking. Operational phase impacts on townscape character generally.	Long term, permanent	Medium (overall) High (Pentagon Field)	Medium at Pentagon Field, Low generally	Minor adverse (overall) Major adverse (Pentagon Field)	Effects are only significant at Pentagon Field, which is a green field site and more sensitive to large scale change than other parts of Gatwick.
Water Environment	Surface Water - Water Quality and Geomorphology	High	River Mole diversion, including re-meandering and restoration of natural channel morphology, improved floodplain coupling	Long-term	Medium	Moderate Beneficial	
	Flood Risk – Fluvial (on Airport)	Very High to Low	Change in flood risk due to encroachment into floodplain	Long-term	Medium to No Change	Major Beneficial	Potential impact on flood risk is long-term, however, if the risk is realised,

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
						to Minor Adverse	the flooding would be a short-term event. Small extent of increase at Fire training Ground
	Flood Risk – Fluvial (offsite)	Very High (Transport Infrastructure) to Medium (Industrial)	Change in flood risk due to encroachment into floodplain	Long-term	Medium to No Change	Major Beneficial to No Change	Potential impact on flood risk is long-term, however, if the risk is realised, the flooding would be a short-term event. Third party receptors would experience lower flood depths for the design event.
Traffic and transport (assessed for 2047)	Car drivers and passengers	Low to Medium	Driver delay	Permanent	No Change to Medium	Moderate Adverse for thirteen junctions.	Further work and mitigation measures will be considered, and the residual effect is expected to be not significant.
Climate Change and Carbon	Climate	N/A	Emission of GHGs	Long term	N/A	Significant	IEMA guidance (IEMA, 2017) indicates that all emissions of GHG are significant.
Socio-economics	Employment (local study area)	Medium	Introduction of new permanent direct jobs and GVA	Permanent	Medium beneficial	Moderate beneficial	
	Supply chain (local study area)	Medium	Introduction of new indirect and catalytic jobs and GVA	Permanent	High beneficial	Moderate to major beneficial	

Topic	Receptor	Receptor Sensitivity	Description of Impact	Short / medium / long term / permanent	Magnitude of Impact	Significance of Effect	Notes
	Labour market (local study area)	Medium	Demand for labour, new training opportunities and improved access to work	Permanent	Medium adverse	Moderate adverse	
Health and Wellbeing	Health and wellbeing effects from changes in socio-economic factors	High	Increase in direct, indirect and induced employment opportunities	Long term, permanent	Medium	Moderate beneficial	

20.3. References

Institute of Environmental Management and Assessment (2017) The Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance.

20.4. Glossary

Table 20.4.1: Glossary of Terms

Term	Description
CCR	Climate Change Resilience
CoCP	Code of Construction Practice
EIA	Environmental Impact Assessment
GHG	Greenhouse Gas
GVA	Gross Value Added
ICCI	In-combination Climate Change Impacts
IEMA	Institute of Environmental Management and Assessment
MSCP	Multi-storey car park
NSR	Noise Sensitive Receptors
PEIR	Preliminary Environmental Information Report