Gatwick Airport Northern Runway Project

Environmental Statement
Appendix 15.9.1: In-combination Climate Change Impacts Assessment

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1.1 Introduction

1.1.1 This document forms Appendix 15.9.1 of the Environmental Statement (ES) prepared on behalf of Gatwick Airport Limited (GAL) for the proposal to make best use of Gatwick Airport's existing runways and infrastructure (referred to within this report as 'the Project').

1.1.2 This document provides the In-Combination Climate Change Impacts (ICCI) assessment for the project, the results of which are presented in Table 1.1.1 below. The assessment considers the extent to which climate change exacerbates a potential effect of the Project on an environmental receptor.

1.1.3 The ICCI assessment follows the same approach to assessing impacts and determining significance as for each of the ES disciplines, but with the added consideration of future climate change projections.

1.1.4 The full ICCI methodology is presented in Section 9 of **ES Chapter 15: Climate Change** (Doc Ref. 5.1). Phase 1 screened out any ICCIs that are considered unlikely to occur and therefore do not require further assessment. Only ICCIs considered to be likely have been presented in the table below.

1.1.5 The likelihood of each potential ICCI occurring was assessed using expert judgement based on the climate hazard assessment and the likelihood of the climate impact changing an effect already identified by another ES discipline.

1.1.6 Phase 2 assesses the consequence of the likely ICCIs identified in Phase 1 to determine significance of each ICCI.

1.1.7 The in-combination climate change impacts assessment concluded that no significant impacts were identified during the construction or operational periods given the mitigation identified.

1.1.8 No further mitigation is proposed during the construction or operational periods of the Project as a result of this ICCI assessment.

1.1.9 No future monitoring is proposed during the construction period of the Project on the basis that no new significant effects were identified.

1.1.10 As a responsible operator, and in compliance with the evolving legislative landscape, GAL has procedures to check the efficacy of embedded mitigation measures and keep them under review on account of regulator change, other circumstances change or the prevailing climate changes; to preserve passenger and operational safety and business continuity. All ICCIs currently identified as not significant need future monitoring by GAL (see Table 1.1.1 for more detail). During operation this can be formalised and aligned with the GAL's Task Force for Climate-Related Disclosures (TCFD) mandatory reporting (latest example in GAL, 2023) and GAL's 5-year review cycle for the Climate Adaptation Risk Assessment (GAL, 2021), reporting to the Government under the Adaptation Reporting Power (ARP) as part of the 2008 Climate Change Act. Although currently voluntary, all major airport and infrastructure operators currently report under the ARP and this reporting may become mandatory in the future.

Table 1.1.1: In-combination Climate Change Impacts Assessment

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	**Likely ICCI identified**	**Consequence of ICCI considering embedded environmental measures/ good practice**	**How secured**	**Significance of ICCI effects**
Historic Environment (ES Chapter 7)	Increase in frequency and intensity of heavy rainfall events/flooding	Waterlogged deposits/paleo-channels could be impacted by changes in river flows and routes	If waterlogged channels are encountered during works, they would be retained in situ wherever possible. Appropriate mitigation would be implemented during construction to ensure that waterlogged conditions are maintained. A review of historical ground investigations was completed for the ES. No embedded mitigation is required to maintain the paleo-channels. Car parks X and Y present potential issues in terms of the historic environment, where excavation for water storage containers could be up to 10 m deep. However, it is unclear until the works begin as to whether palaeo-channels are present. Therefore, a best practice approach would be followed in which suitable mitigation would be identified and implemented where appropriate (eg leaving the waterlogged channel in place and spanning over it). This process is detailed within **ES Appendix 5.3.2: Code of Construction Practice** (CoCP) (Doc Ref 5.3). Based on the above, the impacts of this ICCI are deemed to be minimal.	**ES Appendix 5.3.2: Code of Construction Practice** (Doc. Ref. 5.3)	Not significant
	Drier/drought conditions	Drought conditions could lead to a drying out of the ground which would lead to the loss of significance of sites as they will be less well preserved. Alternatively, changes in soil moisture due to hotter conditions could also uncover new archaeological finds (such as cropmarks and parch marks)			Not significant
	Drier/drought conditions	Potential shrinkage of ground could affect foundations of buildings	Potential shrinkage is unlikely because ground conditions comprise Weald clay and sands. Additionally, buildings in the vicinity have shallow or no footings; therefore, there are limited foundations available to be impacted by drying out of soils. The consequence of this ICCI is considered minimal.	Not needed	Not significant
	Increase in frequency and intensity of heavy rainfall events/flooding	This could lead to flooding and subsequent damage to the building fabric (ie timber framed buildings)	The design of the Project would not increase flood risk to the local area and therefore the consequence of this ICCI is considered minimal.	Not needed	Not significant
	Drier/drought conditions	Excavation during construction could lead to drying out of waterlogged ground	Spraying of finds during the excavation as part of the construction phase would maintain waterlogged conditions. A review of historical ground investigations was completed for the ES. No embedded mitigation is required to maintain the paleo-channels. Car parks X and Y present potential issues in terms of the historic environment, where excavation for water storage containers could be up to 10 m deep. However, it is unclear until the works begin as to whether palaeo-channels are present. Therefore, a best practice approach would be followed in which suitable mitigation would be identified and implemented where appropriate (eg leaving the waterlogged channel in place and spanning over it). This process is detailed within the CoCP. Based on the above, the impacts of this ICCI are still deemed to be minimal.	**ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3)	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	**Likely ICCI identified**	**Consequence of ICCI considering embedded environmental measures/ good practice**	**How secured**	**Significance of ICCI effects**
	Increase in frequency and intensity of heavy rainfall events/ flooding	Increased likelihood of rainfall events could lead to soil erosion negatively impacting the historic landscape	The frequency of heavy rainfall events and therefore the transition between dry and wet conditions will have some impact on the preservation of the historic environment. However, mitigation to ensure that arable and pasture boundaries are maintained can minimise soil erosion therefore retaining the wider historic landscape. This is deemed to be sufficient and therefore the consequence of this ICCI is deemed minimal.	**ES Appendix 5.3.2: Code of Construction Practice Annex 4 – Soil Management Strategy** (Doc Ref. 5.3)	Not significant
Landscape, Townscape and Visual Resources (ES Chapter 8)	Drier/drought conditions	Some plants may not survive repeated drought conditions leading to loss of vegetation and defoliation. Plants could become more vulnerable to disease, which could further disrupt views to and from the site.	The planting proposals include matrix planting, using a native species planting pallet. This involves the planting of several different species, including drought resistant species, to maximise resilience of plants against pests and disease. The additional climate data obtained for the ES does not present a situation that would hinder the ability of the proposed species to survive in the site. Project refinements include more extensive compensatory green space. No further mitigation is required and the consequence of this ICCI is considered minimal.	**ES Appendix 8.8.1 Outline Landscape and Ecology Management Plan** (oLEMP) (Doc Ref. 5.3)	Not significant
		Drought tolerant trees (ie native woodland) may become more prevalent and therefore change landscape character	Drought tolerant species are included as part of the planting proposals to minimise the risk of drought to tree species and ensure minimal impact to the landscape character. Species diversity would be enhanced to reduce the potential impact of drought on the specified ecology. The consequence of this ICCI is considered minimal.	**ES Appendix 8.8.1 Outline Landscape and Ecology Management Plan** (Doc Ref. 5.3)	Not significant
		Wetland adjacent to the River Mole may disappear (also dependent on elevation and spilt type) and certain soil types may be less readily available.	During the construction phase, mitigation is included in the **ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3) to limit the amount of dewatering (**ES Chapter 10: Geology and Ground conditions** (Doc Ref. 5.1) to reduce the drying out of wetland areas. The Project would not impact species that are reliant on permanently wet conditions (eg great crested newt populations). However, during operation, flood attenuation areas would be incorporated within the design. Due to safeguarding concerns, they would not remain permanently wet due to the risk of attracting additional bird species to the site. The consequence of this ICCI is considered minimal.	▪ **ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3) ▪ **ES Appendix 8.8.1 Outline Landscape and Ecology Management Plan** (Doc Ref. 5.3)	Not significant
	Hotter and wetter conditions	Could lead to an increase in pests and diseases, leading to loss of vegetation and defoliation making species more susceptible to external stress	The planting proposals set out in the **ES Appendix 8.8.1 Outline Landscape and Ecology Management Plan** (Doc Ref. 5.3) include matrix planting, using a native species planting pallet. This will include planting of several different species to maximise resilience of the plant species against pests and disease. Additionally, planting proposals for species selection will specify selection of drought-resistant species. The consequence of this ICCI is considered minimal.	**ES Appendix 8.8.1 Outline Landscape and Ecology Management Plan** (Doc Ref. 5.3)	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	**Likely ICCI identified**	**Consequence of ICCI considering embedded environmental measures/ good practice**	**How secured**	**Significance of ICCI effects**
Ecology and Nature Conservation (ES Chapter 9)	Increase in frequency and intensity of heavy rainfall events/ flooding	Flood events can be disruptive and cause erosion, therefore leading to loss of species in certain areas, because soils become water-saturated and can no longer support existing species	Flood risk mitigation in the form of flood compensation and storage areas have been defined (see **ES Chapter 11: Water Environment** (Doc Ref 5.1), **ES Appendix 11.9.6: Flood Risk Assessment** (FRA) and **ES Appendix 11.9.6: Flood Risk Assessment Annex 6** (Doc Ref 5.3)) as part of the Project to minimise flood events and impacts. Additionally, erosion of soil from flooding events during construction works would be mitigated by covering exposed soil/stockpiles and ensuring the timely reinstatement of hardstanding and vegetation to minimise the risk of soil erosion (as set out in the **ES Appendix 5.3.2: Code of Construction Practice**) and detailed within **ES Appendix 19.8.1: Draft Soil Management Strategy**. The consequence of this ICCI is considered minimal.	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment Annex 6** (Doc Ref. 5.3) ▪ **ES Appendix 5.3.2: Code of Construction Practice Annex 4 – Soil Management Strategy** (Doc Ref. 5.3)	Not significant
	Hotter and wetter conditions	Leading to an increase in invasive species in the local area and/ or increase in the risk of pests and diseases to ancient woodland and/or other habitats	Planting proposals set out in the **ES Appendix 8.8.1 Outline Landscape and Ecology Management Plan** (Doc Ref. 5.3) will incorporate multiple plant and tree species to reduce the risk of potential invasive species dominating the native species at the site and maximising resilience against potential for pests and diseases. At present, specific species have not been identified. Additionally, planting proposals for species selection will specify selection of drought-resistant species. The consequence of this ICCI is considered minimal.	**ES Appendix 8.8.1 Outline Landscape and Ecology Management Plan** (Doc Ref. 5.3)	Not significant
	Drier/drought conditions	Reduction in river flows and water levels could impact invertebrates, fish and water voles and otters	Flood risk mitigation in **ES Chapter 11: Water Environment** (Doc Ref. 5.1) includes re-alignment of the River Mole channel providing a more natural profile, improving the plan form and increasing resilience to future drought events. The consequence of this ICCI is considered minimal.	**ES Appendix 8.8.1: Outline Landscape and Ecology Management Plan** (Doc. Ref. 5.3)	Not significant
		The wetter areas, the River Mole corridor, the biodiversity wetland area and ponds around the site could be showing signs of lower water levels during summer and complete drying out occurring earlier in ponds resulting in the reduction of species populations that live in these habitats	The Project would not impact species that are reliant on permanently wet conditions (eg great crested newt populations). Flood attenuation areas will be incorporated within the design. However, due to safeguarding concerns they would not remain permanently wet due to the risk of attracting additional bird species to the site. The consequence of this ICCI is considered minimal.	▪ **ES Appendix 8.8.1: Outline Landscape and Ecology Management Plan** (Doc. Ref. 5.3) ▪ Design Principles – **Design and Access Statement** (Doc Ref. 7.3)	Not significant
		A decline in distinctive wet grasslands communities (relevant to habitats proposed within the flood attenuation areas)	Due to safeguarding concerns, wet habitats within the Project site would be avoided to reduce the chance of attracting additional bird species However, species that reside in these habitats are not expected to be impacted by the Project. The consequence of this ICCI is therefore considered minimal.		Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	**Likely ICCI identified**	**Consequence of ICCI considering embedded environmental measures/ good practice**	**How secured**	**Significance of ICCI effects**
Geology and Ground Conditions (ES Chapter 10)	Increased intensity of extreme precipitation events; increase in mean winter rainfall	Flash flooding during construction works when soils are exposed could lead to erosion of soils	Erosion of soil from flooding events during construction works would be mitigated by covering exposed soil and stockpiles and ensuring the timely reinstatement of hardstanding and vegetation to minimise the risk of soil erosion (as set out in the **ES Appendix 5.3.2: Code of Construction Practice**) and detailed within **ES Appendix 5.3.2: CoCP Annex 4 –Soil Management Strategy** (Doc Ref. 5.3). The consequence of this ICCI is considered minimal, the consequence of this ICCI is considered minimal.	**ES Appendix 5.3.2: Code of Construction Practice Annex 4 - Soil Management Strategy** (Doc Ref. 5.3)	Not significant
		Impacts on human health and controlled waters receptors in relation to the contamination of surface waters from accidental spillages to the ground during construction	Environmental measures are in place during construction to ensure appropriate storage and handling of materials and products are in line with the Control of Water Pollution from Construction Sites 2001 and the Control of Pollution (Oil storage) (England) Regulations 2001.This impact is possible, but the end use of the Project would be hardstanding and best practice measures would be in place should any spillages occur during operation. This would include secure storage facilities including a secondary containment system. A spillage control procedure would be implemented to ensure that any spillages are contained and removed. The consequence of this impact is considered minimal.	**ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3)	Not significant
		Damage to newly installed infrastructure from aggressive ground conditions (such as sulphate attack on concrete) or swelling and shrinkage of ground during construction and operation could be exacerbated by climate change. Increased surface water flooding could increase potential for sulphate attack or lead to water clogging and corrosion of structures.	The Project has been designed in accordance with requirements of relevant UK and European design standards. Detailed design would account for the ground type and water table level as well as projections of future flooding, calculated as part of the flood modelling assessment that will feed into the design of below ground structures. The consequence of this ICCI is considered minimal.	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment - Annex 6** (Doc Ref. 5.3)	Not significant
	Drier/drought conditions	Dry and windy conditions during construction could increase dust generation during construction	Mitigation measures within the **ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3) include damping down to prevent the generation of dust. A Dust Management Plan (DMP) will be prepared to ensure dust is appropriately managed and controlled therefore, the consequence of this ICCI is considered minimal.	**ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3)	Not significant
	Increased temperatures	Potential for increased volatisation of volatile organic compound (VOC) contamination under warmer temperatures	No significant VOC contamination has been identified from previous ground investigations (**ES Chapter 10: Geology and Ground Conditions** (Doc Ref. 5.1)). Some recent ground investigation has been completed for museum fields as part of the flood assessment (**ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3)) and the surface access for highways	Not needed	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	**Likely ICCI identified**	**Consequence of ICCI considering embedded environmental measures/ good practice**	**How secured**	**Significance of ICCI effects**
			assessment. Neither investigation identified any visual / olfactory evidence of contamination that might be indicative of VOCs. The consequence of this ICCI is therefore considered minimal.		
Water Environment (ES Chapter 11)	Increased frequency or severity of drought and flood events	Potential to alter the hydrological regime of watercourses resulting if different patterns of erosion and deposition	It is likely that the adjustment to the hydrological regime due to climate change would remain localised and of relatively low magnitude given the channel types. Overall, the potential effect of climate change is unlikely to change the outcome of the assessment and the consequence of this ICCI is considered minimal.	Not needed	Not significant
	Increased drought intensity	Potentially drier summers could lead to increasing soil moisture deficit and reduce groundwater storage and thus overall groundwater levels	The measures identified in the **ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3) would ensure dewatering activities are minimised during construction to limit any reduction in groundwater recharge. Changes in future groundwater recharge have been considered in **ES Chapter 11: Water Environment** (Doc Ref. 5.1). The latest Environment Agency (EA) Climate Change climate change allowances (EA, 2022) have been used in the most recent assessment. Rainfall intensity has been used for drainage and peak river flow for rivers. There is no change to the significance of the ICCI identified. Mitigation has been identified that would ensure there is no increase in flood risk offsite. An increase in onsite flood risk was identified using the latest EA guidance, however this is managed by GAL. The mitigation strategy has been updated, with flood compensation area (for operation) removed. However, this change is associated with a change in both policy and the assessment. Essential infrastructure is reclassified in terms of vulnerability. Therefore, a different, less severe uplift factor has been used, and therefore less mitigation is required. The consequence of this ICCI is considered minimal.	▪ **ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3) ▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment - Annex 6** (Doc Ref. 5.3)	Not significant
	Increased intensity of extreme precipitation events Increased mean winter rainfall	Changes in groundwater flow and levels	It is likely that the adjustment to the hydrological regime due to climate change would remain localised and of relatively low magnitude given the channel types. Additionally, a conservative range of groundwater levels has been employed in the **ES Chapter 11: Water Environment** (Doc Ref. 5.1) assessment to account for potential changes in groundwater recharge. Overall, the potential effect of climate change is unlikely to change the outcome of the assessment and the consequence of this ICCI is considered minimal.	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment - Annex 6** (Doc Ref. 5.3)	Not significant
	Increase in frequency and intensity of heavy rainfall events/ flooding	Increased flood risk, increased discharge volume, increased surface water run-off	Flood mitigation areas and additional surface water storage areas will be constructed to reduce the risk of flooding during construction works. No specific mitigation is being provided for this. However, some practices are included within the water management plan to reduce risk (eg raising	▪ **ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3)	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	**Likely ICCI identified**	**Consequence of ICCI considering embedded environmental measures/ good practice**	**How secured**	**Significance of ICCI effects**
			compounds above peak water level). Management practices will be implemented to mitigate this risk rather than structural measures. A flood compensation area previously designed to be near pond A is no longer in the flood plain. The consequence of this ICCI is considered minimal.	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment - Annex 6** (Doc Ref. 5.3)	
		Increase the risk of fluvial flooding	Mitigation to reduce fluvial flood risk includes compensatory flood storage areas and syphons (see **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3)). EA climate change allowances (2022) have been used as part of the design to reduce flood risk. The mitigation measures have been designed to ensure no increase in flood risk up to and including a 1 in 100 year event with a 20% climate change allowance in line with the longest design life of the highways assets. The consequence of this ICCI is therefore considered minimal.	▪ Flood Compensation Areas Delivery Plan – DCO Requirement ▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment - Annex 6** (Doc Ref. 5.3) ▪ Flood risk activity permit ▪ Design Principles – **Design and Access Statement** (Doc Ref. 7.3)	Not significant
		Increased risk of surface water flooding	Mitigation to reduce surface water flood risk includes additional storage within the airfield drainage network and ponds, tanks and oversized pipes within the highways drainage network, and a proposed pumping station. EA climate change allowances (2022) have been used as part of the design to reduce flood risk. The mitigation measures have been designed to ensure no increase in flood risk up to and including a 1 in 100 year event with 25% and 40% climate change allowances for the airfield and highways improvements respectively given the projected difference in design life between the two sets of assets. The consequence of this ICCI is therefore considered minimal.		Not significant
		Storm runoff from the small contributing areas discharging to the foul sewerage system would increase the flows in the network and potentially exceed the capacity of the gravity sewers or pumping stations	The potential impact was tested using the Design Year 2038 case as this exhibits the highest normal flows in the system. The Environment Agency predicts an upper end potential increase in precipitation of 25 per cent for the year 2039 and the storm flows were increased by this percentage and the performance of the system was compared to the equivalent baseline, and also the absolute impact was assessed. The increase to the storm flows increases the overall flows in the foul sewerage system by approximately 11 per cent. As a result, there are some minor increases to surcharging of the gravity pipes, and the pumps have to run for longer in order to deal with the flow, but there is no predicted flooding or significant detriment to the operation of the network. Compared to the incremental baseline with the same rainfall uplift applied, the flows are 5% lower and the predicted stress on the network is considerably	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment - Annex 6** (Doc Ref. 5.3)	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	**Likely ICCI identified**	**Consequence of ICCI considering embedded environmental measures/ good practice**	**How secured**	**Significance of ICCI effects**
			less due to the proposed mitigation works and changes in land use associated with the Project which would divert storm flow out of the foul system. The impact on the foul sewerage system does not change as there is no increased risk of flooding, but the system would experience higher degrees of surcharge. Based on this assessment the consequence of this ICCI is considered minimal.		
	Increased intensity of extreme summer drought and winter precipitation events and pluvial flooding	Increased intensity of flooding could increase erosion of sediments into the water, reducing water quality and increasing pollutant load Summer droughts could also reduce water quality from reduced dilution of pollutants during the summer therefore increasing pollutants when precipitation events occur	Construction works would have a limited impact on water quality due to mitigation measures implemented through the CoCP (Appendix 5.3.2). The consequence of this ICCI is considered minimal.	**ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3)	Not significant
	Extreme events (cold spells during winter)	The potential for cold spells of the same magnitude as today and the increase in air traffic movements could increase the use of deicer and lead to more contaminated runoff into water bodies	Whilst it is important to note that winters are anticipated to become warmer on average, cold spells will still occur. To mitigate the impact of increased contaminated runoff during cold spells when more deicer is used, a new water treatment works would be constructed to increase the capacity of the long-term storage lagoons and to store additional contaminated runoff. Given the implementation of these mitigation measures, the consequence of this ICCI is considered minimal.	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment – Annex 6** (Doc Ref. 5.3)	Not significant
Traffic and Transport (ES Chapter 12)	Increased frequency of extreme weather events (inundation from flooding)	Airfield construction: Increase construction traffic in relation to the airfield plus flooding which could lead to road closures and delay in the construction process of the airfield	There would be additional traffic on the network related to the airfield construction, but traffic modelling shows that this is manageable. Capacity on the highway network therefore stays the same. Flood mapping shows that there is limited surface water (pluvial) flood risk along the A23 with exception of the North Terminal roundabout. The approach for mitigating potential flood risk during construction works will be defined at a later design stage and include input from the contractor as set out in the CoCP. The consequence of this ICCI is considered minimal.	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment - Annex 6** (Doc Ref. 5.3)	Not significant
		Highway construction: Increased construction traffic and temporary road closures during highway construction works plus flooding could increase stress on network	There would be limited additional traffic on the network related to the highway construction works but there will be redistribution effects on the airport and background traffic related to narrow lane running and lane closures. Whilst the drainage has been resolved for the end state junction design, drainage and flood risk during construction has not yet been considered in detail. As stated in **ES Chapter 5: Project Description** (Doc Ref. 5.1), temporary drainage would be provided during construction to prevent any temporary	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk**	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	**Likely ICCI identified**	**Consequence of ICCI considering embedded environmental measures/ good practice**	**How secured**	**Significance of ICCI effects**
			increase in flood risk because of the works. This would consist of features for sustainable urban drainage systems (SuDS) and possibly some drainage and pumps. The approach for mitigating potential flood risk during construction works will be fully refined at a later design stage and include input from the contractor as set out in the CoCP. The consequence of this ICCI is considered minimal.	▪ **Assessment - Annex 6** (Doc Ref. 5.3) ▪ **ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3)	
	Increased temperatures Increased frequency and magnitude of heatwaves	Open windows due to increased temperatures leads to adverse impact on human health from traffic fumes	Updated traffic modelling shows there would be limited additional traffic on the network related to the highway and airfield construction works. There is not considered to be any additional adverse impacts to human health and no change in the significance of the impact. During construction the consequence of this ICCI is considered negligible. Noise insulation, seen in **ES Chapter 14: Noise and Vibration** (Doc Ref. 5.1), would be offered to qualifying buildings during operation which will also act as mitigation against potential traffic fumes. Details of this are included in the **ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3). In addition, the Air Quality assessment in **ES Chapter 13: Air Quality** (Doc Ref. 5.1) shows that the future vehicle mix will have a greater proportion of cleaner fuel sources (ie electric vehicles) which will reduce the impact of traffic fumes. Given the implementation of these mitigation measures, the consequence of this ICCI is considered minimal.	▪ **ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3) ▪ **ES Appendix 14.9.10: Noise Insulation Scheme** (Doc Ref. 5.3)	Not significant
	Increased frequency of extreme weather events (ie flooding)	Adverse effect from increased stress on the existing road network in combination with frequency of extreme weather events causing flooding of roads	Highway improvements to road infrastructure receptors, such as those of the strategic road network (SRN), are included as part of the Project design and would reduce the stress on the existing network. In addition, new highway infrastructure will be designed to appropriate climate change allowances, minimising any future flood risk to the highway network during operation of the Project. The consequence of this ICCI is considered minimal.	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment - Annex 6** (Doc Ref. 5.3)	Not significant
	Increased temperatures Increased number of hot days Increased frequency and magnitude of heatwaves	Bitumen materials are susceptible to softening in heatwaves	Highways assets, including the SRN, will be designed to standard road material specifications in line with the design life of the asset and climate change regulations as set out in the Design Manual for Roads and Bridges (DMRB). At this stage it is not possible to know which elements of the assets specifically will be susceptible to softening as the materials have not yet been selected. However, the choice of materials would be based on relevant design standards and appropriate considerations of climate change as set out in the CoCP. The effects of warmer temperatures on road materials in future is therefore considered to be negligible.	**ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3)	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	**Likely ICCI identified**	**Consequence of ICCI considering embedded environmental measures/ good practice**	**How secured**	**Significance of ICCI effects**
Air Quality (ES Chapter 13)	Increased number of hot days	There may be increased dust production during the construction phase due to extended dry periods of weather. There could also be a reduction in the availability of water for dust suppression measures.	This would be mitigated as far as reasonably practicable through dust suppression methods detailed in the **ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3). Given the implementation of these mitigation measures, the consequence of this ICCI is considered minimal.	**ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3)	Not significant
		An increase in hot, dry weather conditions has the potential to change concentrations of pollutants (eg NOx, PM_{10}, $PM_{2.5}$ and ozone (O_3)). The conditions are likely to cause an increase in O_3, which will affect NO_2 concentrations.	Any increase in pollutant concentrations as a result of the increase in number of hot days would be offset by the expected long-term reduction in concentrations arising from cleaner fuels and engines for aircraft and road transport. This hazard is not expected to change the results of the air quality assessment and is not expected to cause a significant effect. No additional mitigation is required. Based in on the findings of this assessment the consequence of this ICCI is considered minimal.	Not needed	Not significant
		An increase in the number of hot days leading to changes in wind speed and direction, has the ability to affect local pollutant levels during construction and operation.	There is uncertainty in future climate projection of changes in wind speed and direction, and the microclimate is not modelled well in climate models or represented in climate projections. However, no pronounced microclimate was identified in the Urban Heat Island Assessment. Increase in channelling that may be caused by changes in wind direction will increase concentrations at some receptors and decrease these at others. Additionally, if there is a decrease in wind speed, higher local pollution levels could occur. Due to the uncertainty of the future projections of wind data, and the microclimate, this hazard will not change the results of the air quality assessment and will not cause a significant effect. No additional mitigation is required. The consequence of this ICCI is considered minimal.	Not needed	Not significant
	Increased likelihood of extreme weather events (ie extreme hot or cold temperatures)	Change in auxiliary power unit (APU) usage, under extreme weather conditions.	Current practice for limiting APU usage in hot weather includes pre-cooling aircraft at the stand to reduce the need to use APU when taxiing to the runway and getting aircraft to take off in a timely manner, reducing the time of aircraft taxiing so that the cooling system uses energy from the aircraft engines rather than the APU. This is considered sufficient mitigation and this ICCI is considered not significant.	Not needed	Not significant
Noise and Vibration (ES Chapter 14)	Increase frequency of heatwaves	Climate Change may require greater cooling or warming of aircraft as they taxi which could increase APU usage.	APU use and noise is considered to be insignificant in relation to the engine noise when taxiing during hot weather due to the aircraft pre-cooling, and when the aircraft are at the stands, they generally do not operate the APU as they are connected to Fixed Electric Ground Power (FEGP) units. Any change, therefore, in the use of the APU as a result of climate change, assuming there is no increase in its use at the stands, would be insignificant in terms of the	Not needed	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	Likely ICCI identified	Consequence of ICCI considering embedded environmental measures/ good practice	How secured	Significance of ICCI effects
			assessment and results presented in **ES Chapter 14: Noise and Vibration** (Doc Ref. 5.1). The consequence of this ICCI is considered minimal.		
		Potential to exacerbate noise effects (leading to more sleep disturbance) on communities in terms of individual dwellings and on a wider community, due to windows being open more often when temperatures are warmer	A Physiological Sleep Disturbance study which was undertaken for the ES demonstrated that the anticipated impact of increased aircraft noise has a minor impact on night-time awakenings (induced by aircraft noise) in the study area (see **ES Appendix 14.9.2: Air Noise Modelling** (Doc Ref. 5.3)). This study assumed that all the windows in the study area would be open. However, as part of the Project, GAL's Noise Insulation Scheme will be extended to a three-tier scheme to also offer ventilation in the form of acoustic ventilators that allow fresh air in when the windows are closed but do not increase noise. This scheme provides acoustic and ventilation provision to reduce noise impacts and any potential future risk of overheating for dwellings that sign up to the scheme. The uptake of this scheme is currently 50% and therefore there is potential for greater uptake in the future. Given the implementation of these mitigation measures, the consequence of this ICCI is considered minimal.	**ES Appendix 14.9.10: Noise Insulation Scheme** (Doc Ref. 5.3)	Not significant
	Increased temperatures	Could affect aircraft efficiency and hence climb rates which could alter noise levels on the ground	An increase in temperature would have an insignificant impact on aircraft efficiency and there is not considered to be a change in noise level on the ground. The consequence of this ICCI is considered minimal.	Not needed	Not significant
	Increased temperatures and changes in humidity	Potential effect on noise levels during construction caused by change in the sound absorption properties of the air, arising from an increase in temperature and humidity	Construction noise will be limited to daytime hours and construction traffic routes will be chosen to avoid villages and minor roads minimising the adverse impacts of noise to local residents. In addition, GAL are offering a Noise Insulation Scheme as part of the Project to reduce additional noise. With the implementation of these measures, the consequence of this ICCI is considered minimal.	**ES Appendix 14.9.10: Noise Insulation Scheme** (Doc Ref. 5.3)	Not significant
		Changes in temperature and humidity could affect the propagation of noise from airborne aircraft to the ground, and subsequently noise levels at receptors.	Modelling an increase in the average summer temperature of 4°C (with a corresponding reduction in relative humidity of 8%) gave noise levels within 1 decibel (dB) of current weather conditions, so these effects are likely to be insignificant. Changes in climate could increase heatwaves in the summer months and lead to more residents opening windows more frequently for cooling in the day and at night. This could lead to greater impacts in terms of disturbance to indoor activities and sleep. A Physiological Sleep Disturbance study which was undertaken for the ES demonstrated that the anticipated impact of increased aircraft noise has a minor impact on night-time awakenings (induced by aircraft noise) in the study area (see Section 7 of **ES Appendix 14.9.2: Air Noise Modelling** (Doc Ref. 5.3)). The proposed	**ES Appendix 14.9.10: Noise Insulation Scheme** (Doc Ref. 5.3)	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	**Likely ICCI identified**	**Consequence of ICCI considering embedded environmental measures/ good practice**	**How secured**	**Significance of ICCI effects**
			enhanced Noise Insulation Scheme for homes within the forecast $L_{eq,\ 16\ hour}$ 54 dB daytime noise contour includes acoustic ventilators to allow residents to keep windows closed. The scheme is voluntary, and it may be that climate change would increase uptake, allowing for greater mitigation of noise impacts. The uptake of this scheme is currently 50% and therefore there is significant potential for greater uptake with increasing temperatures. With the implementation of these measures the consequence of this ICCI is considered minimal.		
	Change in wind speed and direction	Could change the runway modal split and associated changes to ground noise.	The results of modelling runway modal splits from 50% to 90% westerly are given in Chapter 14: Noise and Vibration. They show variations in contours areas of 3% for daytime $L_{eq,\ 16\ hour}$ 51 dB contours and 2% for night-time $L_{eq,\ 8\ hour}$ 45 dB contours. The variation in contours populations are 22% for daytime $L_{eq,\ 16\ hour}$ 51 dB contours and 2% for night-time $L_{eq,\ 8\ hour}$ 45 dB contours. An increase in wind speed (expected in winter in the future, with decreasing wind speed expected in the summer) could reduce noise impacts at ground level as there would be more uplift causing aircraft to rise sooner and therefore become quieter more quickly. It is not known to what extent climate change could affect runway modal split, but this analysis suggests that in itself it is not likely to have major changes in the noise impacts of the Project. Changes in wind direction will have a greater impact than changes in speed, however climate projections data on changes in wind direction is not available mainly as no changes in the trends are expected for wind direction, unlike wind speed. However, the consequence of this ICCI is considered minimal.	Not needed	Not significant
	Increased frequency and intensity of heavy rainfall events.	Wet roads during heavy rainfall events are noisier than dry roads.	The Calculation of Road Traffic Noise (CRTN) methodology does not consider the effect of wet roads as a result the assessment would not be affected by climate change. Additionally, this impact is not specific to the Project and minimal action can be taken to reduce it.	Not needed	Not significant
Greenhouse Gases (GHG) (ES Chapter 16)	Change in jet stream	Change flight times due to changes in the strength of the jet stream, requires more energy to during flights travelling against the direction of the jet stream (ie London to New York)	Future changes in the strength of the jet stream remain uncertain and it is likely that GAL and aircraft operators already have, and will further develop as needed, operational processes in place that can adequately deal with changes in the jet stream and the associated increase in carbon emissions of some journeys. If the strength of the jet stream does change then GAL and aircraft operators should be aware that this could have an impact on carbon emissions and may require additional offsetting or alternative methods to ensure additional emissions have been adequately mitigated. This is likely to be an	Not needed	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	Likely ICCI identified	Consequence of ICCI considering embedded environmental measures/ good practice	How secured	Significance of ICCI effects
			industry wide issue and GAL will liaise with other airports and operators should the need arise.		
	Increased temperatures/ droughts	Increased water use in hotels and office buildings during drought periods	By 2050 the water sector is expected to be largely decarbonised, therefore any increase in water consumption is not expected to contribute to additional carbon emissions. In addition, the design of airport buildings is likely to consider a water strategy that would seek to reduce water consumption during operation. Once the design is sufficiently progressed, further review of the significance of this ICCI will be required.	▪ **ES Chapter 16: Greenhouse Gases** (Doc Ref. 5.1**)** ▪ **ES Appendix 5.4.2: Carbon Action Plan** (Doc Ref. 5.3).	Not significant
	Increased temperatures, increased number of hot days (heatwaves)	Increased overheating risk, therefore increased use of cooling systems in terminal buildings, offices and hotels, increasing carbon emissions	By 2050 the electricity sector is expected to be largely decarbonised, therefore any increase in energy from cooling system usage is not expected to contribute to additional carbon emissions. In addition, the design of mechanical ventilation systems will choose lower carbon options (eg passive system) that would mitigate increased carbon emissions. As part of the Carbon Action Plan (CAP) GAL is committed to the airport being net zero by 2030 (scope 1 and 2 emissions).		Not significant
Socio-economics (ES Chapter 17)	Increase in frequency and intensity of heavy rainfall events/ flooding	Access to the site being severed from flooding during construction works	Mitigation designed to reduce the risk of flooding during construction works as set out in the CoCP. The consequence of this ICCI is considered minimal.	**ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3)	Not significant
		Access to car parking and land being severed from flooding at the site and in the surrounding area	The Project includes upgrades to local road transport infrastructure and flood risk mitigation is incorporated into the design of new infrastructure to reduce the flood risk potential in future (See **ES Chapter 5 Project Description** (Doc Ref. 5.1)). Assets have been designed to Environment Agency (2022) climate change allowances (as set out in **ES Chapter 11: Water Environment** (Doc Ref. 5.1) to ensure there is no increased risk of flooding during operation. The consequence of this ICCI is considered minimal.	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment - Annex 6** (Doc Ref. 5.3)	Not significant
		Could negatively affect journey times to the site and to nearby locations of employment	The transport assessment qualitatively highlights that traffic-related delays could have a disruptive impact on site business and surrounding business. This is particularly the case due to two junctions near the airport at the A23 London Road/Gatwick Road roundabout have a high magnitude for delay between 2032-2037 due to factors such as increases in construction traffic. The mitigation measures within the Construction Traffic Management Plan (CTMP) will reduce this impact. Construction works include mitigation in the form of flood compensation areas (see **ES Chapter 11: Water Environment** (Doc Ref. 5.1)) to ensure there is no increased risk of flooding.	▪ **ES Appendix 5.3.2: CoCP Annex 3 -Outline Construction Traffic Management Plan** (Doc. Ref. 5.3) ▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk**	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	**Likely ICCI identified**	**Consequence of ICCI considering embedded environmental measures/ good practice**	**How secured**	**Significance of ICCI effects**
			The Project includes upgrades to local road transport infrastructure and flood risk mitigation is incorporated into the design of new infrastructure to reduce the flood risk potential in future (See **ES Chapter 5 Project Description** (Doc Ref. 5.1)). The consequence of this ICCI is considered minimal.	**Assessment - Annex 6** (Doc Ref. 5.3)	
	Increase in the frequency of extreme events (heatwaves, flooding)	Adverse effect from the increase in frequency of extreme weather events in combination with direct and indirect job creation during operation leading to increased stress of local infrastructure	The Project includes upgrades to local road transport infrastructure and flood risk mitigation will be incorporated into the design of new infrastructure to reduce the flood risk potential in future (See **ES Chapter 12: Traffic and Transport** (Doc Ref. 5.1)). The consequence of this ICCI is considered minimal.	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment - Annex 6** (Doc Ref. 5.3)	Not significant
		Could change public behaviour and the pattern of use of public spaces.	Mitigation has been included in the form of re-provision of open space lost as part of the Project. This includes an area the same size as Riverside Garden Park and two additional areas, one at Car Park B and another at Longbridge Roundabout. The newly designed public space is likely to enhance existing conditions (see **ES Chapter 19: Agricultural Land Use and Recreation** (Doc Ref. 5.1) for more detail) and therefore reduce adverse effects of extreme events on public behaviour and patterns of use. The consequence of this ICCI is considered minimal.	Replacement open space implementation plan – DCO Article	Not significant
	Drier/drought conditions	Could lead to loss of vegetation and defoliation of public space	A replacement area the same size as Riverside Garden Park would be provided. This would be spread across two areas which are linked but are North and South of the A23. This will address any potential adverse impacts and is considered to enhance the baseline. Planting proposals (See **ES Appendix 8.8.1: Outline Landscape and Ecology Management Plan** (Doc ref 5.3)) will incorporate multiple plant and tree species to reduce the risk of drought conditions impacting on local flora. The inclusion of multiple species maximises resilience against drought conditions reducing adverse impacts to vegetation in the public realm. The consequence of this ICCI is considered minimal.	▪ **ES Appendix 8.8.1 Outline Landscape and Ecology Management Plan** (Doc Ref. 5.3) ▪ Replacement open space implementation plan – DCO Article	Not significant
Health and Wellbeing (ES Chapter 18)	Increase in temperatures	Greater number of people sleeping with windows open, may alter propagation characteristics of sound through air.	**General population:** It is unlikely that changes in humidity and hotter temperatures will increase noise levels in the local area during construction works because mitigation measures include restricting use of noisy plant to daytime where possible, use of low noise plant, location of plant further from noise sensitive receptors, temporary noise barriers and enclosure of stationary plant. Additionally, GAL has implemented a Noise Insulation Scheme (see **ES**	**ES Appendix 14.9.10: Noise Insulation Scheme** (Doc Ref. 5.3)	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	Likely ICCI identified	Consequence of ICCI considering embedded environmental measures/ good practice	How secured	Significance of ICCI effects
			Chapter 14: Noise and Vibration (Doc Ref. 5.1)), which would be extended to a three-tier scheme to offer ventilation in the form of acoustic ventilators that allow fresh air in when the windows are closed but do not increase noise. With the implementation of these mitigation measures, the consequence of the ICCI is considered minimal. A Physiological Sleep Disturbance study which was undertaken for the ES demonstrated that the anticipated impact of increased aircraft noise has a minor impact on night-time awakenings (induced by aircraft noise) in the study area (see Section 7 of **ES Appendix 14.9.2: Air Noise Modelling** (Doc Ref. 5.3)). Vulnerable population groups have been accounted for in the assessments that reached the above conclusions, the professional judgment being that the population health effect would be not significant.		
		Potential for ticks and other insects to carry and spread disease to the workforce and passengers	As stated in the CoCP, in order to avoid any potential adverse impact on the local health care system, on-site health care would be provided for construction workers. For instance, a health care practitioner would be available for construction workers to consult. The CoCP forms the basis for the final CoCP and more detailed plans and method statements to be prepared during the pre-construction period once a Principal Contractor has been appointed. The assessment is on the basis that the Principal Contractor will provide appropriate Occupational Health and Occupational Hygiene services (management of workplace health risks) for the construction workforce, including physical and mental health promotion and first-aid, as well as treatment of minor injuries. The consequence of this ICCI is considered minimal. Several organisations are responsible for Port Health at Gatwick Airport. Public Health England is in place to support sick passengers and manages infectious diseases.	**ES Appendix 5.3.2: Code of Construction Practice** (Doc. Ref. 5.3)	Not significant
		Change the dispersion of air pollutants in the air reducing local air quality	Pollutant emissions are likely to be lower in future due to cleaner fuels and therefore this would be less of an issue on health and wellbeing during the operational phase (**ES Chapter 13: Air Quality** (Doc Ref. 5.1)). Based on the current understanding, the consequence of this ICCI is considered minimal.	Not needed	Not significant
	Increase in frequency of extreme weather events (eg drought, flooding, heat waves)	Potential impact of flooding and increased storm events leading to isolation via reduction of active travel options	Surface transport infrastructure has been designed to EA guidance on FRAs including climate change allowances (**ES Chapter 11: Water Environment** (Doc Ref. 5.1)). The consequence of this ICCI is considered minimal.	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk**	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	**Likely ICCI identified**	**Consequence of ICCI considering embedded environmental measures/ good practice**	**How secured**	**Significance of ICCI effects**
				Assessment - Annex 6 (Doc Ref. 5.3)	
		Hotter summer extremes and cold winter extremes may increase summer and winter mortality rates	As stated in the CoCP, in order to avoid any potential adverse impact on the local health care system, on-site health care would be provided for construction workers. For instance, a health care practitioner would be available for construction workers to consult. The CoCP forms the basis for the final CoCP and more detailed plans and method statements to be prepared during the pre-construction period, once a Principal Contractor has been appointed. The assessment is on the basis that the Principal Contractor will provide appropriate Occupational Health and Occupational Hygiene services (management of workplace health risks) for the construction workforce, including physical and mental health promotion and first-aid, as well as treatment of minor injuries. The consequence of this ICCI is considered to be minimal.	**ES Appendix 5.3.2: Code of Construction Practice** (Doc. Ref. 5.3)	Not significant
		Potential for increased flooding could have an impact on mental health in the surrounding area	Flooding often presents low numbers of physical injuries but is strongly associated with mental health. However, the FRA demonstrates the required mitigation and therefore any increase in flood risk is deemed to be minimal. The impact of this ICCI is minimal.	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment - Annex 6** (Doc Ref. 5.3)	Not significant
		Potential for increased flooding could increase the risk of mould and spores. This will have an impact on the physical health of residents in the area.	The FRA demonstrates the required mitigation and therefore any increase in flood risk is deemed to be minimal. The impact of this ICCI is minimal.		Not significant
	Increase in frequency and intensity of heavy rainfall events	Increased frequency and intensity of storm events lead to reduced opportunity for the additional workforce to access and enjoy open space and nature, reduced suitability of conditions for active travel options	Surface transport infrastructure will be designed to EA guidance on FRAs including climate change allowances (**ES Chapter 11: Water Environment** (Doc Ref. 5.1)). The consequence of this ICCI is considered minimal.		Not significant
	Hotter and drier/drought conditions	Potential for temporary buildings to suffer from overheating due to increased temperatures and leading to less ambient working conditions during construction	Mitigation will be designed to ensure temporary buildings are resilient to overheating during construction works. This is addressed in the **ES Appendix 15.8.1: Climate Change Resilience Assessment** (Doc Ref. 5.3). Based on this, the consequence of this ICCI is considered minimal.	**ES Appendix 5.3.2: Code of Construction Practice** (Doc. Ref. 5.3)	Not significant
Agricultural Land Use and Recreation (ES Chapter 19)	Increased intensity of extreme precipitation events	Increased intensity of rainfall events could result in flash flooding as water won't be able to infiltration into the clay soils fast enough	Exposed soils are not particularly eroding because they are predominantly clay. **ES Appendix 5.3.2 Code of Construction Practice Annex 4 - Soil Management Strategy** (Doc Ref. 5.3) details the measures to maintain soil drainage and minimise damage to the soil structure during construction. Given	**ES Appendix 5.3.2: Code of Construction Practice Annex 4 – Soil Management Strategy** (Doc Ref. 5.3)	Not significant

Discipline	Phase 1 Assessment of ICCI likelihood		Phase 2 Assessment of consequences and significance		
	Climate change hazard	Likely ICCI identified	Consequence of ICCI considering embedded environmental measures/ good practice	How secured	Significance of ICCI effects
	Increase in mean winter rainfall		the existing ground conditions and implementation of mitigation measures, the consequence of this ICCI is considered minimal.		
	Increased temperatures Increased likelihood of heatwaves	Increased warming trends could extend the summer season for outdoor activities which could increase erosion	The soil structure is predominantly clay based which reduces the potential for erosion of soils. **Construction:** The Soil Management Strategy (**ES Appendix 5.3.2 Code of Construction Practice Annex 4 - Soil Management Strategy** (Doc Ref. 5.3)) would limit the potential for erosion as paths are diverted. Additionally, the Public Right of Way strategy would reduce the impact of erosion. Therefore, the impact of this ICCI is deemed to be minimal. **Operation:** Additional use of paths may cause erosion over time during operation. However, the impact of increased erosion due to greater usage is deemed to be minimal. Therefore, the impact of this ICCI is considered minimal.	▪ **ES Appendix 5.3.2: Code of Construction Practice Annex 4 – Soil Management Strategy** (Doc Ref. 5.3) ▪ **ES Appendix 19.8.2: Public Rights of Way Management Strategy** (Doc Ref. 5.3)	Not significant
	Drier/ drought conditions	More walkers during drier weather episodes could deplete current vegetation and increase soil disturbance	The soil structure is predominantly clay based which reduces the potential for erosion of soils. **Construction:** The Soil Management Strategy (**ES Appendix 5.3.2 Code of Construction Practice Annex 4 - Soil Management Strategy** (Doc Ref. 5.3)) will minimise the degradation of soils. This will be supported by the **ES Appendix 19.8.2: Public Rights of Way Management Strategy** (Doc Ref 5.3) and measures in the CoCP to minimise the loss of vegetation under drier conditions. Given the existing ground conditions and implementation of mitigation measures, the consequence of this ICCI is considered minimal. **Operation:** Additional use of paths may cause erosion overtime during operation. However, the impact of increased erosion due to greater usage is deemed to be minimal. Therefore, the impact of this ICCI is considered minimal.	▪ **ES Appendix 5.3.2: Code of Construction Practice Annex 4 – Soil Management Strategy** (Doc Ref. 5.3) ▪ **ES Appendix 19.8.2: Public Rights of Way Management Strategy** (Doc Ref. 5.3) ▪ **ES Appendix 5.3.2: Code of Construction Practice** (Doc Ref. 5.3)	Not significant
		Lower water levels in water courses, could reduce the availability of fish for fishing - adverse impacts on fishing recreational activities	Flood risk mitigation includes re-alignment of the River Mole channel providing a more natural profile, improving the plan form and increasing resilience of local water bodies to future drought events. The consequence of this ICCI is considered minimal.	▪ **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3) ▪ Flood Resilience Statement – **ES Appendix 11.9.6: Flood Risk Assessment - Annex 6** (Doc Ref. 5.3)	Not significant
		Land could be used for longer periods and there could be a change in the mix of land uses	Given the land use types and Agricultural policies for Weald Clay it is likely that there will only be minor changes in land use in future. The consequence of this ICCI is therefore considered minimal.	Not needed	Not significant

2 Reference

Environment Agency (2022) Flood risk assessments: climate change allowances [Online]. Available at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances.

3 Glossary

3.1 Glossary of Terms

Table 3.1.1 Glossary of Terms

Term	Description
APU	Auxiliary Power Unit
ARP	Adaptation Reporting Power
CAP	Carbon Action Plan
CCR	Climate Change Resilience
CoCP	Code of Construction practice
CRTN	Calculation of Road Traffic Noise
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
dB	Decibel
DMRB	Design Manual for Roads and Bridges
DMP	Dust Management Plan
EA	Environment Agency
EIA	Environmental Impact Assessment
ES	Environmental Statement
FEGP	Fixed Electric Ground Power
FRA	Flood Risk Assessment
GAL	Gatwick Airport Limited
GHG	Greenhouse Gases
GPU	Ground Power Unit
ICCI	In-Combination Climate Change Impact
NO_x	Nitrogen oxides
NO_2	Nitrogen dioxide
NRE	Northern Runway Extension
O_3	Ozone
$PM_{2.5}$	Airborne particles that have a median diameter of 2.5 microns.
PM_{10}	Airborne particles that have a median diameter of 10 microns.
SRN	Strategic Road Network
SuDS	Sustainable Drainage Systems
TCFD	Task Force for Climate-Related Disclosures
VOC	Volatile Organic Compound