Gatwick Airport Northern Runway Project

Consultation Report Appendices – Part B – Volume 12

Book 6

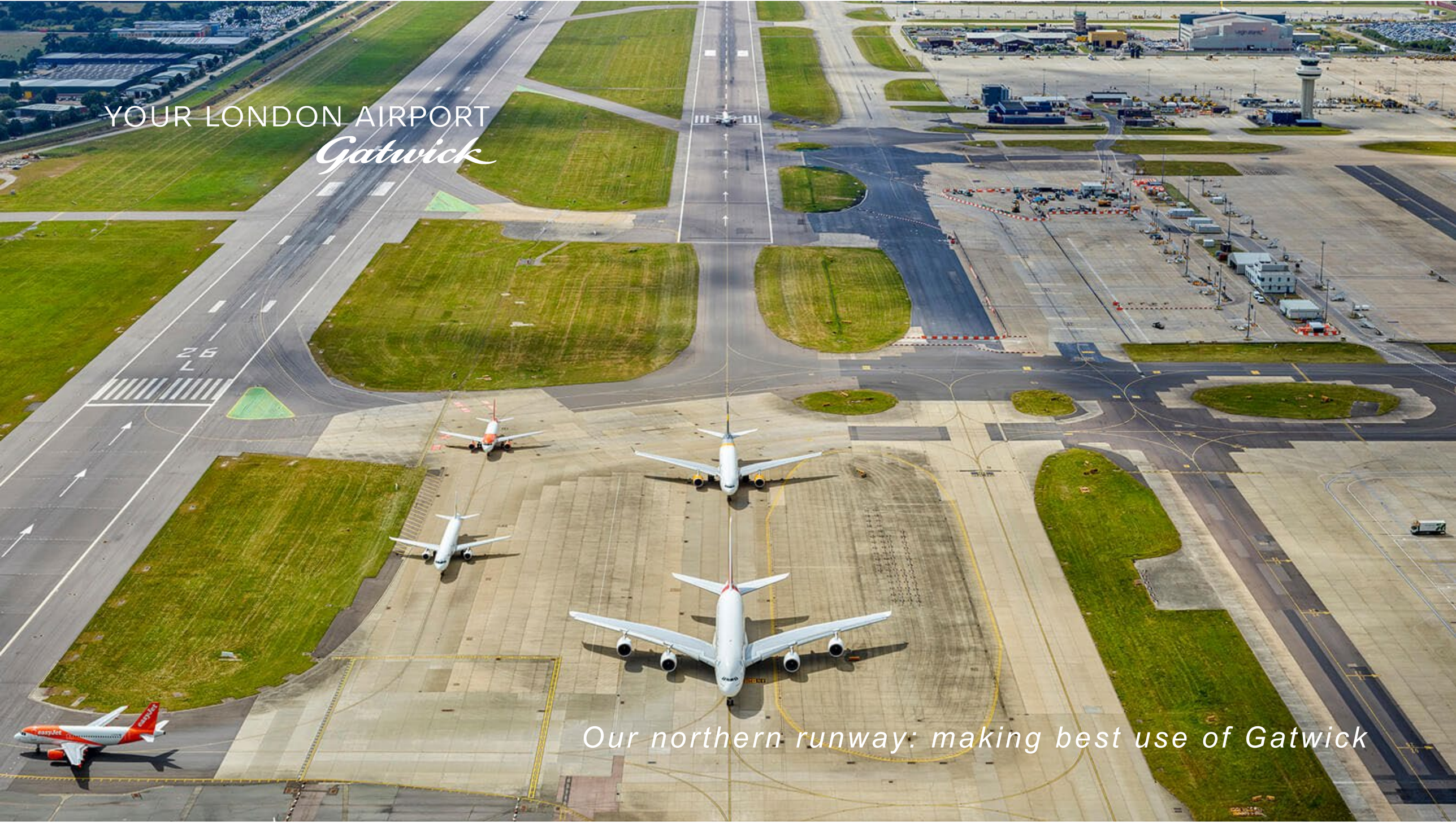
VERSION: 1.0

DATE: JULY 2023

Application Document Ref: 6.2

PINS Reference Number: TR020005

Contents – Part B – Volume 12



Our northern runway: making best use of Gatwick

Preliminary Environmental Information Report
Volume 3

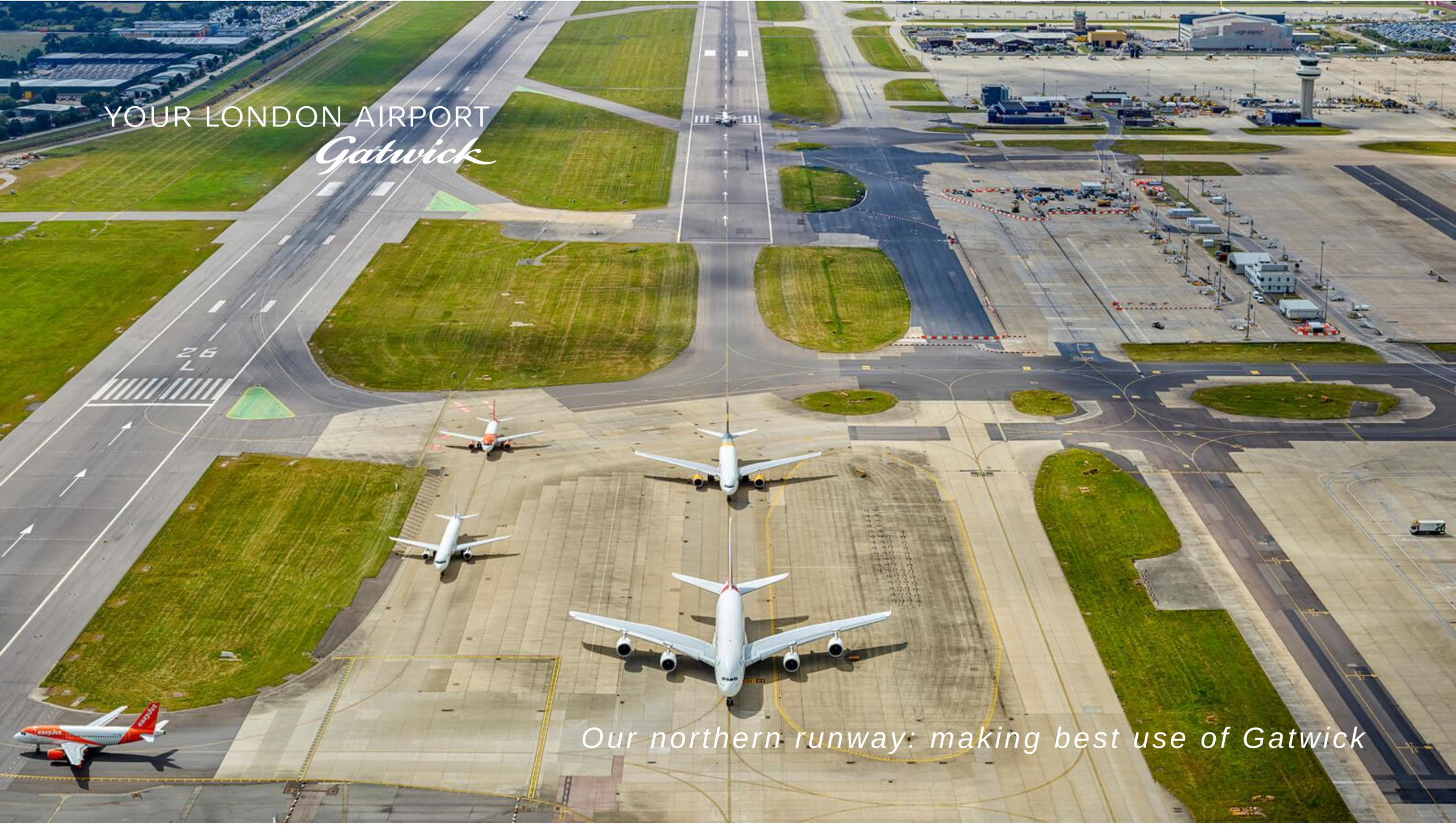
September 2021

Table of Contents

Volume 3

Appendix 9.9.1	Habitat Regulations Assessment Report
Appendix 10.3.1	Summary of Stakeholder Scoping Responses – Geology and Ground Conditions
Appendix 10.9.1	Preliminary Risk Assessment
Appendix 11.2.1	Summary of Local Planning Policy: Water Environment
Appendix 11.3.1	Summary of Stakeholder Scoping Responses - Water Environment
Appendix 11.9.1	Flood Risk Assessment
Appendix 11.9.2	Water Environment Regulations Compliance Assessment
Appendix 11.9.3	Geomorphology Assessment
Appendix 11.9.4	Water Supply Assessment
Appendix 12.3.1	Summary of Stakeholder Scoping Responses – Traffic and Transport
Appendix 12.9.1	Preliminary Transport Assessment Report (PTAR)
Appendix 12.9.2	Highway Flows
Appendix 13.2.1	Summary of Local Planning Policy: Air Quality
Appendix 13.3.1	Summary of Stakeholder Scoping Responses – Air Quality
Appendix 13.4.1	Air Quality Assessment Methodology
Appendix 13.6.1	Air Quality Data and Model Verification
Appendix 13.6.2	Air Quality Sensitive Receptors and Background Pollutant Concentrations
Appendix 13.8.1	Air Quality Construction Phase Mitigation
Appendix 13.9.1	Air Quality Results Tables and Figures
Appendix 14.3.1	Summary of Stakeholder Scoping Responses – Noise and Vibration
Appendix 14.9.1	Construction Noise
Appendix 14.9.2	Air Noise
Appendix 14.9.3	Ground Noise
Appendix 14.9.4	Road Traffic Noise
Appendix 14.9.5	Noise Envelope
Appendix 15.2.1	Summary of Local Planning Policy - Climate Change and Carbon
Appendix 15.3.1	Summary of Stakeholder Scoping Responses – Climate Change and Carbon
Appendix 15.4.1	Climate Change and Carbon Technical Appendix
Appendix 15.4.2	Climate Change Resilience (CCR) Definitions
Appendix 15.9.1	Climate Change Resilience (CCR) Assessment
Appendix 15.9.2	In-combination Climate Change Impacts (ICCI) Assessment
Appendix 16.2.1	Summary of Local Planning Policy: Socio-economics

Appendix 16.3.1	Summary of Stakeholder Scoping Responses – Socio-economics
Appendix 16.6.1	Socio-Economic Data Tables
Appendix 16.6.2	Assessment of Population and Housing Effects
Appendix 17.2.1	Summary of Local Planning Policy: Health and Wellbeing
Appendix 17.3.1	Summary of Stakeholder Scoping Responses – Health and Wellbeing
Appendix 17.6.1	Health and Wellbeing Baseline Conditions
Appendix 18.2.1	Summary of Local Planning Policy: Agricultural Land Use and Recreation
Appendix 18.3.1	Summary of Stakeholder Scoping Responses – Agricultural Land Use and Recreation
Appendix 18.6.1	Published Agricultural Land Classification Data
Appendix 18.6.2	Soil Survey Results
Appendix 18.6.3	Recreational User Survey
Appendix 19.4.1	Cumulative Effects Assessment Long and Short List



Preliminary Environmental Information Report
Appendix 1.8.1: Statement of Expertise

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 1.8.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the statement of expertise for the Project.

2 Statement of Expertise

2.1 EIA Management

RPS

2.1.1 RPS is a member of the Institute of Environmental Management and Assessment (IEMA) Environmental Impact Assessment (EIA) Quality Mark. This means that RPS adheres to the following quality mark commitments.

- EIA Management – We commit to using effective project control and management processes to deliver quality in the EIA we co-ordinate and the Environmental Statements we produce.
- EIA Team Capabilities – We commit to ensuring that all our EIA staff have the opportunity to undertake regular and relevant continuing professional development.
- EIA Regulatory Compliance – We commit to delivering Environmental Statements that meet the requirements established within the appropriate UK EIA Regulations.
- EIA Context & Influence – We commit to ensuring that all EIAs we co-ordinate are effectively scoped and that we will transparently indicate how the EIA process, and any consultation undertaken, influenced the development proposed and any alternatives considered.
- EIA Content – We commit to undertaking assessments that include: a robust analysis of the relevant baseline; assessment and transparent evaluation of impact significance; and an effective description of measures designed to monitor and manage significant effects.
- EIA Presentation – We commit to deliver Environmental Statements that set out environmental information in a transparent and understandable manner.
- Improving EIA Practice – We commit to enhance the profile of good quality EIA by working with IEMA to deliver a mutually agreed set of activities, on an annual basis, and by making appropriate examples of our work available to the wider EIA community.

2.1.2 The EIA project management consultants responsible for the proposal to make best use of Gatwick Airport's existing runways (referred to hereafter as 'the Project') have over 20 years' experience in coordinating the EIA process for various types of development, including extensive experience in large industrial and highways development.

2.2 Topic Authors

Historic Environment

2.2.1 Mick Rawlings is a Technical Director at RPS with 30 years of professional experience within the historic environment sector, with projects in the UK and overseas. This time has provided Mick with an excellent and wide-ranging understanding of the policy and guidance regarding historic environment across all parts of the UK. He has been employed by contracting and consulting organisations that provide archaeological and historic environment services to a wide range of clients. These include transport and infrastructure providers as well as public agencies and private sector developers. His experience includes recreational, road, rail and aviation projects, renewable energy schemes (including onshore and offshore wind farms) and a considerable number of large-scale residential schemes. Mick is a member of the Chartered Institute for Archaeologists' Working Party and has prepared and presented evidence on behalf of clients at public and local plan inquiries.

Landscape, Townscape and Visual Resources

2.2.2 Paul Ellis is an Technical Director at RPS who has worked in the landscape sector for over 27 years. He has been involved in a diverse range of projects which have required landscape planning, assessment, design and implementation inputs. He has extensive experience in the preparation of Landscape and Visual Impact Assessment (LVIA) for Environmental Statements (ESs) and townscape and seascape characterisations and assessments for developments in urban and rural locations throughout the UK. These projects include Nationally Significant Infrastructure Projects (NSIPs) and other large scale commercial developments. Paul is familiar with the consultation process with both statutory consultees and non-statutory consultees, providing support at public exhibitions. He has appeared as an expert witness at public inquiries, hearings and Development Consent Order (DCO) hearings.

Ecology and Nature Conservation

2.2.3 Nick Betson is a Technical Director at RPS and is a highly experienced ecologist and project manager who has been with RPS since 2007. During this time, Nick has managed the ecology component of over 400 projects, including large-scale infrastructure. Combining a strategic appreciation of ecology with a thorough understanding of the EIA process, Nick has built up substantial experience of overall project management in relation to ecology. As lead ecologist on large-scale EIA projects, this has often included liaison and discussions with key consultees such as Natural England and the Environment Agency, as well as wider stakeholder engagement. He has undertaken ecological appraisals for a broad range of brownfield and greenfield sites to support planning applications and the development of long-term site management plans as the ecology lead for EIA and Habitats Regulations Assessment (HRA).

Geology and Ground Conditions

2.2.4 Liz Williams is a Principal Geo-Environmental Consultant at RPS with over 15 years' experience working in environmental consultancy. During this time Liz has developed significant expertise in the characterisation and assessment of ground conditions and contaminated land as well as air quality assessments and waste classification. Liz has delivered these in support of a variety of projects including development for commercial, residential, primary infrastructure, renewable energy and waste purposes. She has also delivered numerous human health risk assessments for contaminated land projects for both

planning and permitting purposes. Liz is a qualified Radiological Protection Surveyor and has had formal training of the United States Environmental Protection Agency (USEPA) Data Quality Objective (DQO) process including use of Visual Sampling Plan software. Liz also has experience of being a key support role at Public Inquiry.

Water Environment

2.2.5 Michael Symons is a Senior Director and Head of Discipline for Flood Risk Management at Jacobs with over 20 years' experience of all aspects of the water industry and specialises in Flood Risk Assessment (FRA). Michael has delivered flood risk mitigation projects through the project life cycle from strategic planning, scheme identification, appraisal, design and construction. Michael is highly experienced in the planning process and has developed, reviewed and led the drainage and water elements of Environmental Impact Assessment and FRA across a number of sectors including aviation, highways, rail, water and energy. In addition to planning support Michael is also our LLFA and Environment Agency lead in the south-east leading a team of over 30 responsible for identifying and delivering flood risk mitigation projects. He has performed the lead and reviewer role on a number of NSIPs, representing them at Public Inquiry. Michael has acted as a flood risk Expert Witness for the Broughton Bypass for Lancashire County Council and the Cambridge to Huntingdon Improvement Scheme (DCO) for Highways England. Michael is also a member of the Chartered Institution of Water and Environment Managers.

Traffic and Transport

2.2.6 Richard Higgins is a transport planning professional with a Masters degree in Transport Planning and Engineering from the University of Leeds, Institute for Transport Studies and 30 years' experience. He has led technical work relating to Gatwick Airport's surface access strategy since 2012, first as a consultant and since July 2016 as Head of Surface Access Strategy employed by Gatwick Airport Limited. Richard has provided transport modelling and analytical advice to transport assessments in support of major planning applications as well as strategic advice for airport access elsewhere in the UK, Europe and Scandinavia. Richard's role includes setting the strategic direction for surface access to accommodate growth, ensuring Gatwick remains a highly accessible airport for passengers, staff and business partners and fulfilling a technical advisor role on key projects. Richard is also a Member of the Chartered Institute of Highways and Transportation.

2.2.7 Jim Peacock is an Associate Director with 20 years' experience at Arup. Since joining Arup, Jim has attained particular experience in airport planning and airport surface access. Jim is currently Arup's Project Manager for surface access advice to Gatwick for growth to 2040 with a single runway, including the Gatwick Growth Board Connectivity Study as well as the current Master Plan update. Jim recently led feasibility studies, exploring the capacity of the highway network, station and inter-terminal shuttle under Project Genesis. He was also Arup's Project Manager for provision of transport planning services to Gatwick in response to the UK Airports Commission process on additional runway capacity (2013 to 2015). Jim has worked on a range of airport and surface access projects in the UK, Europe, the Middle East, North America and Australasia. He has led multi-disciplinary planning and design teams in both the UK, Australia and New Zealand. Jim combines leadership, problem solving excellence, experience and a strong client focus – maximising the value in airport planning and airport surface access.

Air Quality

2.2.8 Michael Bull is an EIA and air quality specialist at Arup with over 35 years of experience. Michael has led air quality assessments on some of the most significant airport projects in the UK including airports, road tunnels and bridge and large road schemes. He is a leading expert witness on air quality for transport projects. Michael has appeared at DCO examinations, at more than 60 Public Inquiries, and in court presenting expert evidence on air quality. This has included evidence on general air quality impacts, dust nuisance and odour impacts covering a wide range of industries. He has led several environmental and air quality assessment projects for airports including the Stansted Generation 1 ES, as Stansted Airport's Environmental Lead on their submissions to the Airports Commission and air quality assessments. Michael has extensive experience of transport infrastructure projects including HS2 where he has been the lead advisor on air quality matters since 2012. Michael has published regularly on air quality assessment and other environmental matters, speaks regularly at conferences and on radio.

2.2.9 Charles Walker is an air quality specialist at Ricardo with over 25 years' experience of atmospheric dispersion modelling and emission inventory compilation. Charles is skilled in mathematical modelling, software development and computer programming. He has undertaken numerous air quality and greenhouse gas assessments of UK airports including environmental impacts assessments for the Heathrow Terminal 5 and Stansted G1 Public Inquiries. Charles has also undertaken a number of local authority review and assessments and air quality assessments of urban transport schemes. Over the past ten years, Charles has developed inventories of emissions and fuel use for civil aircraft in the UK for inclusion in the 'National Greenhouse Gas Emissions Inventory'.

Noise and Vibration

2.2.10 Steve Mitchell is a Director at Mitchell Environmental Limited with 30 years of experience in environmental noise impact assessment for a wide range of noise sources in over 50 countries, specialising in the transport and infrastructure sectors. He is a fellow of the Institute of Acoustics and is currently the Chairman of UK Institute of Acoustics Environmental Noise Group. Steve has lectured on the effects of aircraft noise at South Bank University and has given expert witness evidence at 14 transport infrastructure Public Inquiries since 1999. Steve has carried out detailed studies of noise around 40 airports, and undertaken three major airport noise research projects for the European Commission. Steve has been retained as Gatwick Airport's air noise advisor since 2014, contributing to or managing numerous noise impact and mitigation studies for the Noise Management Board. Steve undertook a review of 13 UK airport draft noise Action Plans prepared under the requirements of EC Directive 2002/49, the Environmental Noise Directive. The review was presented to a workshop from which Steve compiled the Institute's formal response to the airports and the Department for Transport. Steve has also been involved in the assessment of health impacts, applying the methods and compiling the ground and air noise chapters for the ES for the proposed second runway at Stansted Airport.

2.2.11 Seth Roberts is a Principal Consultant at Hayes McKenzie with 12 years of experience in environmental noise impact assessment in the UK and Ireland. He is a corporate member of the UK Institute of Acoustics and has served on their publications committee since 2009. Hayes McKenzie have been involved in airport ground noise assessment since the early 1990s, working in combination with Ian Flindell Associates on the Heathrow Airport Terminal 5 Inquiry, the evolving Gatwick Airport Master Plan and the Stansted Airport Phase 2 Development. Seth Roberts took over the Gatwick ground noise work in 2013 initially doing modelling work for the second runway proposal then providing an assessment for the Boeing Hangar planning application and continuing to work with GAL on assessments for master planning.

Climate Change and Carbon

2.2.12 Keith Robertson is a Senior Sustainability Consultant at Arup and has over 13 years of experience in delivering sustainability projects in the public and private sector and on large infrastructure and development projects. Keith's work focuses on bringing together diverse technical expertise to tackle the complex sustainability challenges faced by clients. Taking a systems approach to complexity, Keith can draw on a diverse range of project experience to work with clients and project teams to identify, articulate and deliver their strategic needs. He has experience in delivering sustainability appraisal and sustainability plan/strategy development; organisational carbon management strategies; sustainability in buildings and infrastructure projects; urban water management; and waste and resource efficiency. Keith is currently delivering carbon and sustainability input to two NSIPs. He has also delivered Sustainability Appraisals for several national and regional spatial strategies. Keith's experience also includes his work with the United Nations Development Programme to develop a ground-breaking study into the carbon impacts of HIV and TB programmes in developing countries.

2.2.13 Jake Hacker is a Climate Scientist and Building Physicist at Arup with 22 years' experience of applications in built environment and infrastructure design. Jake's area of work encompasses: applications of climate change projection data; climate downscaling methods; climate change adaption and resilience assessments; climate change science and urban climatology; EIA (climate change resilience and in-combination climate change impacts); and applications of weather and climate data to building and infrastructure design. Jake provides specialist advice to projects using weather and climate data both in the UK and internationally. Jake has also been involved in a number of collaborative research projects with academic institutions including research for the Greater London Authority on the London urban heat island and the generation of Design Summer Year and Future Weather Year data sets for the Chartered Institute of Building Services Engineers. These projects involved extensive use of UKCIP02 and UKCP09 climate change projections and analysis of heatwave events in London over the last few decades. He also led the Arup 'Drivers of Climate Change' climate change initiative to raise awareness of climate change within the firm and externally.

Socio-economic Effects

2.2.14 Ciaran Gunn-Jones is a Senior Director and is Head of Economics at Lichfields and is a leading expert on spatial economics, policy and strategy. Ciaran woks with developers and investors, Local Enterprise Partnerships and local authorities on the economic evidence for Local Plans, business cases and funding proposals, and formulation place-based investment and delivery strategies. Ciaran also has a wealth of experience in assessing the economic impacts of major development, regeneration and infrastructure projects, and corporate property portfolios. Ciaran's projects include the Metropolitan Line Extension to Watford Junctions, assessing growth options for Letchworth garden City, and preparing an investment and delivery strategy for Worthing town centre.

2.2.15 Matthew Shepherd is a Principal at Oxera and has wide ranging experience across the transport sector, including in demand forecasting, economic impact assessment, litigation, and policy advice. He has led projects using the Green Book and WebTAG to produce economic and financial cases for clients as diverse as the UK Department for Transport (DfT) and clients across Europe as well as Gatwick Airport. Matthew has produced demand forecasts for bus concessions in the Netherlands and contributed to the business case for transport infrastructure in continental Europe. His experience includes advising clients and local planning authorities in relation to assessments for 'Very Special Circumstances' and has advised a client on the realism of demand forecasts for a rail infrastructure project to inform the client's engagement with the relevant government body. Matthew is also a member of the International Association of Public Transport's (UITP) Transport Economics Commission.

Health and Wellbeing

2.2.16 Andrew Buroni is a Director of Health and Social Impact Assessment at Savills and is a Health and Social Impact Assessment Practice Leader with over 13 years of project experience in leading international health and social impact assessment in the civil aviation, transport, energy (including nuclear power), oil and gas, waste management, spatial planning, regeneration and sustainable development sectors. Andrew is a Fellow of the Royal Society of Medicine and is currently the only person to hold a PhD on international Health Impact Assessment (HIA) methods and best practice. He has designed, delivered and defended some of the most complex planning focussed examples of HIA globally, including the first HIA of a New Nuclear Power Station. Andrew provides clients with specialist advice on clarifying potential health and social outcomes, separating perceived impacts from actual risk, assessing the distribution, significance and likelihood of potential health outcomes and the provision of bespoke Health Action Plans geared to addressing existing burdens of poor health, inequality and improving community health.

Agricultural Land Use and Recreation

2.2.17 Julia Tindale is a Senior Director at RPS and has over 25 years of experience in land use and environmental assessment. During her career, Julia has specialised in the preparation of soil resource, agricultural, assessments for ESs together with the development and implementation of soil handling and restoration strategies from mineral and other construction sites. This includes experience in England, Wales and Scotland. Julia has presented expert evidence on soils, agricultural land quality and restoration at Public Inquiry. She has also managed research on behalf of the Department of Environment which resulted in the publication of good practice guidance on the Reclamation of Mineral and Landfill Workings to Agriculture (1996). Julia has carried out monitoring of soil handling operations on individual mineral and development sites including Channel Tunnel Rail Link, Eton Rowing Course, Southern Water Wastewater Treatment Works, Trefigin Sand and Gravel Quarry, A3 Hindhead and Ffos y fran opencast coal restoration. Julia has also given Professional Witness evidence at Public Inquiry.

Major Accidents and Disasters

2.2.18 Daniel O'Kelly is a Practice Manager at Atkins and is a Chartered Environmentalist, IEMA Registered Environmental Impact Assessor and technical expert in environmental assessment and management with over 17 years' experience leading multidisciplinary environmental issues for major infrastructure schemes in the UK and internationally. Daniel has specialisms in the transport, utility and energy sectors and has extensive experience of working in integrated DCO schemes, including most recently Port of Tilbury, Wrexham Energy Centre and M25 J28 and all stages of the HS2 Hybrid Bill. Dan is also currently acting as lead environmental advisor for Heathrow Strategic Planning Group, an organisation comprising of the local authorities around Heathrow. For this, Daniel is responsible for the monitoring, challenging and informing Heathrow Airport Limited's EIA process and emerging masterplan designs, and steering scheme development by shaping the shared local authority position in the form of Position Papers to deliver a better scheme for local communities.

Waste

2.2.19 Clare Russell is an Associate Director at RPS with over 15 years' experience in environmental consultancy, specialising in EIA.

Clare has managed multi-disciplined teams to deliver high quality ESs for a range of developments including several NSIPs and road improvement schemes. Clare also has a broad range of experience covering other aspect of planning and EIA including due diligence, contaminated land and the management of construction impacts, which has been valuable to clients in understanding potential environmental impacts. Clare has worked closely with Project Directors to successfully deliver a number of high profile ESs. She adopts a proactive approach in building good working relationships within the environ and the client/design teams. Clare was the EIA co-ordinator for Hornsea Project Two Offshore Wind Farm and was responsible for the preparation of the ES. She specialises in assessing construction impacts and the management of construction and operation waste. Clare has also prepared Site Waste Management Plans, Code of Construction Practice documents and Construction Environmental Management Plans.

Cumulative Effects and Inter-relationships

2.2.20 The cumulative effects and interrelationships assessment has been informed by the topic-specific authors mentioned above with input and coordination from the EIA management team at RPS.

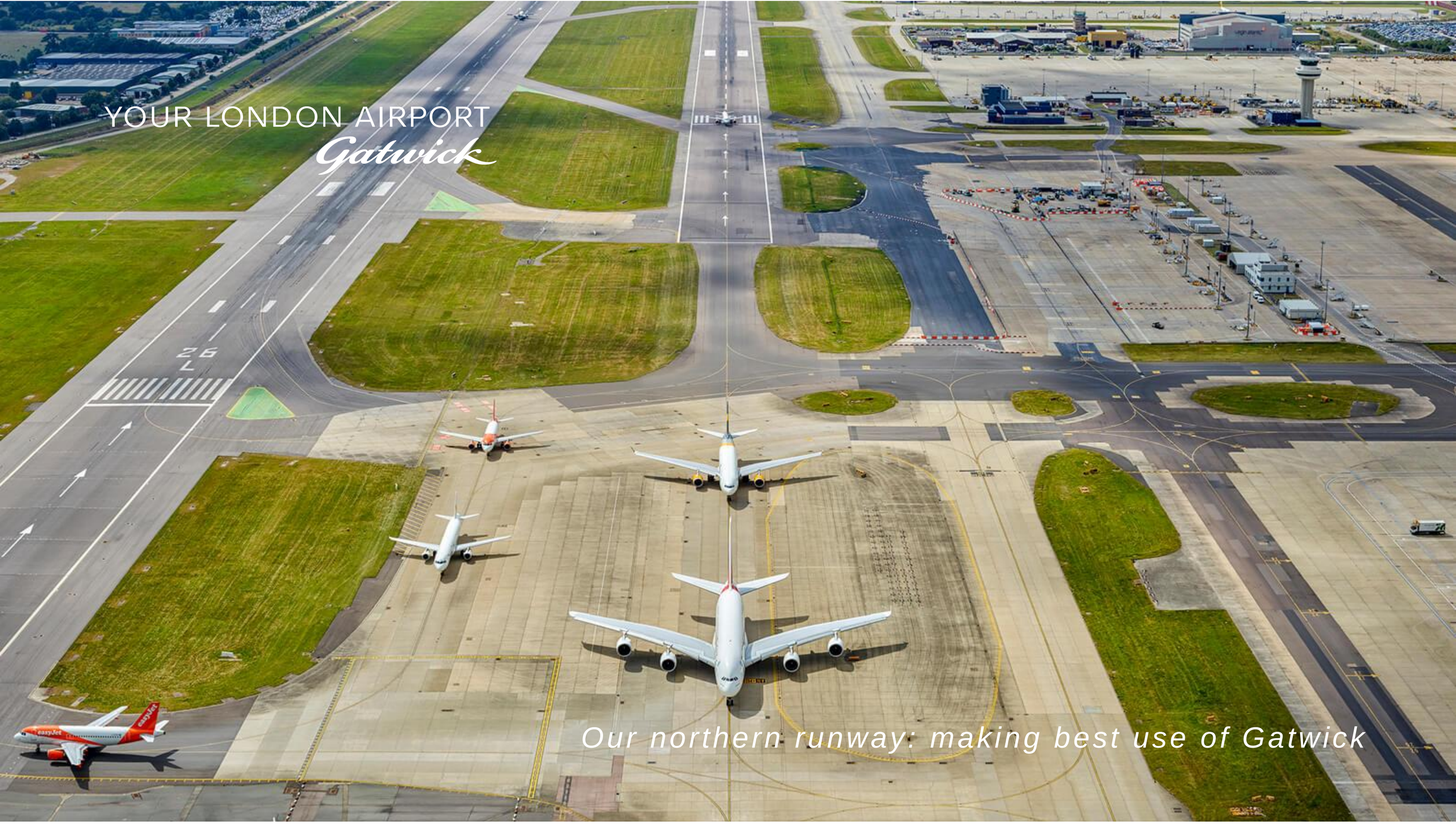
Term	Description
NSIP	Nationally Significant Infrastructure Project
PEIR	Preliminary Environmental Information Report
UIPT	International Association of Public Transport's
USEPA	United States Environmental Protection Agency

3 Glossary

3.1 Glossary of Terms

Table 3.1.1 Glossary of Terms

Term	Description
DCO	Development Consent Order
DfT	Department for Transport
DQO	Data Quality Objectives
EIA	Environmental Impact Assessment
ES	Environmental Statement
FRA	Flood Risk Assessment
GAL	Gatwick Airport Limited
HIA	Health Impact Assessment
HRA	Habitats Regulations Assessment
IEMA	Institute of Environmental Management and Assessment
LLFA	Lead Local Flood Authority
LVIA	Landscape and Visual Impact Assessment



Preliminary Environmental Information Report
Appendix 2.2.1: National Planning Policy Context

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 2.2.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger numbers and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the national planning policy context for the Project.

2 National Planning Policy Context

2.1 National Planning Policy Context

2.1.1 National Planning Policy, as relevant to a DCO determination for the Project, comprises the following principle national planning policy and aviation strategy documents:

- Airports National Policy Statement (2018)
- Beyond the Horizon: The Future of UK Aviation: Making Best Use of Existing Runways (2018)
- Aviation Policy Framework (2013)
- Aviation Strategy Green Paper: Aviation 2050 - The Future of UK Aviation Policy (2019)
- National Networks - National Policy Statement (2015)
- National Planning Policy Framework (2021)

2.2 Airports National Policy Statement (Department for Transport, 2018a)

2.2.1 The Government designated in June 2018 the Airports National Policy Statement (NPS) – new runway capacity and infrastructure at airports in the South East of England, which sets out the primary policy for decision-making in relation to the proposed new runway at Heathrow, and states that it '*will be an important and relevant consideration in respect of applications for new runway capacity and other airport infrastructure in London and the South East of England.*'

2.2.2 The NPS also notes that, in addition to a new runway at Heathrow, the Government is supportive of airports beyond Heathrow making best use of their existing runways.

2.2.3 Key points of relevance for the Project are set out below.

Assessment of Impacts – Decision Making:

Surface Access – Decision Making

2.2.4 Paragraph 5.21: *'The applicant's proposals will give rise to impacts on the existing and surrounding transport infrastructure. The Secretary of State will consider whether the applicant has taken all reasonable steps to mitigate these impacts during both the development and construction phase and the operational phase. Where the proposed mitigation measures are insufficient to effectively offset or reduce the impact on the transport network, arising from expansion, of additional passengers, freight operators and airport workers, the Secretary of State will impose requirements on the applicant to accept requirements and / or obligations to fund infrastructure or implement other measures to mitigate the adverse impacts, including air quality.'*

2.2.5 Paragraph 5.22: *'Provided the applicant is willing to commit to transport planning obligations to satisfactorily mitigate transport impacts identified in the transport assessment (including environment and social impacts), with costs being considered in accordance with the Department for Transport's policy on the funding of surface access schemes, development consent should not be withheld on surface access grounds.'*

Air Quality – Decision Making

2.2.6 Paragraph 5.42: *'The Secretary of State will consider air quality impacts over the wider area likely to be affected, as well as in the vicinity of the scheme. In order to grant development consent, the Secretary of State will need to be satisfied that, with mitigation, the scheme would be compliant with legal obligations that provide for the protection of human health and the environment.'*

2.2.7 Paragraph 5.43: *'Air quality considerations are likely to be particularly relevant where the proposed scheme:*

- *is within or adjacent to Air Quality Management Areas, roads identified as being above limit values, or nature conservation sites (including Natura 2000 sites and Sites of Special Scientific Interest);*
- *would have effects sufficient to bring about the need for new Air Quality Management Areas or change the size of an existing Air Quality Management Area, or bring about changes to exceedances of the limit values, or have the potential to have an impact on nature conservation sites; and*
- *after taking into account mitigation, would lead to a significant air quality impact in relation to Environmental Impact Assessment and / or to a deterioration in air quality in a zone or agglomeration.'*

Noise – Decision Making

2.2.8 Paragraph 5.68: *'Development consent should not be granted unless the Secretary of State is satisfied that the proposals will meet the following aims for the effective management and control of noise, within the context of Government policy on sustainable development:*

- *Avoid significant adverse impacts on health and quality of life from noise;*
- *Mitigate and minimise adverse impacts on health and quality of life from noise; and*
- *Where possible, contribute to improvements to health and quality of life.'*

Carbon Emissions – Decision making

2.2.9 Paragraph 5.82: *'Any increase in carbon emissions alone is not a reason to refuse development consent, unless the increase in carbon emissions resulting from the project is so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets, including carbon budgets.'*

2.2.10 Paragraph 5.83: *'Evidence of appropriate mitigation measures (incorporating engineering plans on configuration and layout, and use of materials) in both design and construction should be presented as part of any application for development consent. The Secretary of State will consider the effectiveness of such mitigation measures in order to ensure that, in relation to design and construction, the carbon footprint is not unnecessarily high. The Secretary of State's view of the adequacy of the mitigation measures relating to design, construction and operational phases will be a material factor in the decision making process.'*

Biodiversity and Ecological Conservation – Decision Making

2.2.11 Paragraph 5.96: *'As a general principle, and subject to the specific policies set out below and the Infrastructure Planning (Decisions) Regulations 2010, development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. The applicant may also wish to make use of biodiversity offsetting in devising compensation proposals to counteract any impacts on biodiversity which cannot be avoided or mitigated. Where significant harm cannot be avoided or mitigated, as a last resort appropriate compensation measures should be sought. The development consent order, or any associated planning obligations, will need to make provision for the long term management of such measures.'*

2.2.12 Paragraph 5.97: *'In taking decisions, the Secretary of State will ensure that appropriate weight is attached to designated sites of international, national and local importance, protected species, habitats and other species of principal importance for the conservation of biodiversity, and to biodiversity and geological interests within the wider environment.'*

2.2.13 Paragraph 5.98: *'The most important sites for biodiversity are those identified through international conventions and European Directives. The Habitats Regulations provide statutory protection for European sites and require an assessment of impacts upon such sites. The Government considers that the following wildlife sites should have the same protection as European sites:*

- *Potential Special Protection Areas and possible Special Areas of Conservation;*
- *Listed or proposed Ramsar sites; and*
- *Sites identified or required as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.'*

2.2.14 Paragraph 5.100: *'Many Sites of Special Scientific Interest are also designated as sites of international importance and will be protected accordingly. Those that are not, or those features of Sites of Special Scientific Interest that are not covered by an international designation, will be given a high degree of protection. All National Nature Reserves are notified as Sites of Special Scientific Interest'.*

2.2.15 Paragraph 5.101: '*Where a proposed development on land within or outside a Site of Special Scientific Interest is likely to have an adverse effect on the site (either individually or in combination with other developments), development consent should not normally be granted. Where an adverse effect on the site's notified special interest features is likely, an exception should be made only where the benefits of the development at this site clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest. The Secretary of State will ensure that the applicant's proposals to mitigate the harmful aspects of the development and, where possible, to ensure the conservation and enhancement of the site's biodiversity or geological interest, are acceptable. Where necessary, requirements and / or planning obligations should be used to ensure these proposals are delivered'.*

2.2.16 Paragraph 5.102: '*Sites of regional and local biodiversity interest (which include Local Nature Reserves, Local Wildlife Sites and Nature Improvement Areas) have a fundamental role to play in meeting overall national biodiversity targets, contributing to the quality of life and the wellbeing of the community, and supporting research and education. The Secretary of State will give due consideration to such regional or local designations. However, given the need for new infrastructure, these designations should not be used in themselves to refuse development consent, although adequate compensation should always be considered, and ecological corridors and their physical processes should be maintained as a priority to mitigate widespread impacts'.*

2.2.17 Paragraph 5.103 *'Ancient woodland is a valuable biodiversity resource both for its diversity of species and for its longevity as woodland. Once lost, it cannot be recreated. The Secretary of State should not grant development consent for any development that would result in the loss or deterioration of irreplaceable habitats including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the national need for and benefits of the development, in that location, clearly outweigh the loss. Aged or veteran trees found outside ancient woodland are also particularly valuable for biodiversity and their loss should be avoided.[176] Where such trees would be affected by development proposals, the applicant should set out proposals for their conservation or, where their loss is unavoidable, the reasons for this'.*

'176 This does not prevent the loss of such trees where the decision maker is satisfied that their loss is unavoidable'

2.2.18 Paragraph 5.105: *'In addition to the habitats and species that are subject to statutory protection or international, regional or local designation, other habitats and species have been identified as being of principal importance for the conservation of biodiversity in England and Wales and therefore requiring conservation action. The Secretary of State will ensure that the applicant has taken measures to ensure that these other habitats and species are protected from the adverse effects of development. Where appropriate, requirements or planning obligations may be used in order to deliver this protection. The Secretary of State will refuse consent where harm to these other habitats, or species and their habitats, would result, unless the benefits of the development (including need) clearly outweigh that harm. In such cases, compensation will generally be expected to be included in the design proposals.'*

Land Use including Open Space, Green Infrastructure and Green Belt – Decision Making

2.2.19 Paragraph 5.124: *'The Secretary of State should not grant consent for development on existing open space, sports and recreational buildings and land, including playing fields, unless an assessment has been undertaken either by the local authority or independently, which has shown the open space or the buildings and land to be no longer needed, or the Secretary of State determines that the benefits of the project (including need) outweigh the potential loss of such facilities, taking into account any positive proposals made by the applicant to provide new, improved or compensatory land or facilities.'*

2.2.20 Paragraph 5.125: *'Where networks of green infrastructure have been identified in development plans, they should normally be protected from development and, where, possible, strengthened by or integrated within it. The Secretary of State will also have regard to the effect of the development upon and resulting from existing land contamination, as well as the mitigation proposed.'*

2.2.21 Paragraph 5.126: *'The Secretary of State will take into account the economic and other benefits of the best and most versatile agricultural land, and ensure the applicant has put forward appropriate mitigation measures to minimise impacts on soils or soil resources.'*

2.2.22 Paragraph 5.127: *'When located in the Green Belt, projects may comprise inappropriate development. Inappropriate development is by definition harmful to the Green Belt and there is a presumption against it except in very special circumstances. The Secretary of State will need to assess whether there are very special circumstances to justify inappropriate development. Very special circumstances will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm, is clearly outweighed by other considerations. In view of*

the presumption against inappropriate development, the Secretary of State will attach substantial weight to the harm to the Green Belt, when considering any application for such development. In exchange for, or so as to ensure the reprovision of, lost Green Belt land, the Secretary of State may require the provision of other land by the applicant, to be declared as Green Belt under the Green Belt (London and the Home Counties) Act 1938. The provision of such land should be in accordance with the National Planning Policy Framework or any successor document, and take into account relevant development plan policies.'

Resource and Waste Management – Decision Making

2.2.23 Paragraph 5.145: *'The Secretary of State will consider the extent to which the applicant has proposed an effective process that will be followed to ensure effective management of hazardous and non-hazardous waste arising from all stages of the lifetime of the development. The Secretary of State should be satisfied that the process set out provides assurance that:*

- *Waste produced will be properly managed, both onsite and offsite;*
- *The waste from the proposed development can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available. Such waste arising should not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arising in the area; and*
- *Adequate steps have been taken to ensure that all waste arising from the site is subject to the principles of the waste hierarchy and are dealt with at the highest possible level within the hierarchy.'*

2.2.24 Paragraph 5.146: *'Where necessary, the Secretary of State will require the applicant to develop a resource management plan to ensure that appropriate measures for sustainable resource and waste management are secured.'*

Flood Risk Assessment

2.2.25 Paragraph 5.154: *'In preparing a flood risk assessment the applicant should:*

- *Consider the risk of all forms of flooding arising from the development comprised in the preferred scheme, in addition to the risk of flooding to the project, and demonstrate how these risks will be managed and, where relevant, mitigated, so that the development remains safe throughout its lifetime;*
- *Take into account the impacts of climate change, clearly stating the development lifetime over which the assessment has been made;*
- *Consider the need for safe access and exit arrangements;*
- *Include the assessment of residual risk after risk reduction measures have been taken into account, and demonstrate that this is acceptable for the development;*
- *Consider if there is a need to remain operational during a worst case flood event over the preferred scheme's lifetime; and*
- *Provide evidence for the Secretary of State to apply the Sequential Test and Exception Test, as appropriate.'*

Flood Risk – Decision Making

2.2.26 Paragraph 5.166*: 'Where flood risk is a factor in determining an application for development consent, the Secretary of State will need to be satisfied that, where relevant:*

- *The application is supported by an appropriate flood risk assessment; and*
- *The Sequential Test has been applied as part of site selection and, if required, the Exception Test.'*

2.2.27 Paragraph 5.167: '*When determining an application, the Secretary of State will need to be satisfied that flood risk will not be increased elsewhere, and will only consider development appropriate in areas at risk of flooding where, informed by a flood risk assessment, following the Sequential Test and, if required, the Exception Test, it can be demonstrated that:*

- *Within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location; and*
- *Over its lifetime, development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning, and that priority is given to the use of sustainable drainage systems.'*

2.2.28 Paragraph 5.168: *'The applicant should take into account the potential impacts of climate change using the latest UK Climate Change Risk Assessment, the latest set of UK Climate Projections, and other relevant sources of climate change evidence. The applicant should also ensure any environment statement that is prepared identifies appropriate mitigation or adaptation measures. This should cover the estimated lifetime of the new infrastructure. Should a new set of UK Climate Projections become available after the preparation of an environmental statement, the Examining Authority or the Secretary of State will consider whether they need to request additional information from the applicant as part of the development consent application.'*

2.2.29 Paragraph 5.169: *'When determining an application, the Secretary of State will need to be satisfied that the potential effects of climate change on the development have been considered as part of the design.'*

2.2.30 Paragraph 5.170: *'For construction work which has drainage implications, approval for the preferred scheme's overall approach to drainage systems will form part of any development consent issued by the Secretary of State. The Secretary of State will therefore need to be satisfied that the proposed drainage system complies with any technical standards issued by the Government or to any National Standards issued under Schedule 3 to the Flood and Water Management Act 2010. In addition, the development consent order, or any associated planning obligations, will need to make provision for the adoption and maintenance of any sustainable drainage systems, including any necessary access rights to property. The Secretary of State will need to be satisfied that the most appropriate body would be given the responsibility for maintaining any sustainable drainage systems, taking into account the nature and security of the infrastructure on the proposed site. The responsible body could include, for example, the applicant, the landowner, the relevant local authority, or another body such as the Internal Drainage Board.'*

2.2.31 Paragraph 5.171: *'If the Environment Agency continues to have concerns, and therefore objects to the grant of development consent on the grounds of flood risk, the Secretary of State can grant consent, but would need to be satisfied that all reasonable steps have been taken by the applicant and the Environment Agency to attempt to resolve the concerns. Similarly, if the lead local flood authority objects to the development consent on the grounds of surface or other local sources of flooding, the Secretary of State can grant consent, but would need to be satisfied that all reasonable steps have been taken by the applicant and the lead local flood authority to attempt to resolve the concerns.'*

Water Quality and Resources – Decision Making

2.2.32 Paragraph 5.182: *'Activities that discharge to the water environment are subject to pollution control, and the considerations set out at paragraphs 4.53-4.59 above covering the interface between planning and environmental permitting*

therefore apply. These considerations will also apply in an analogous way to the abstraction licensing regime regulating activities that take water from the environment, and to the control regimes relating to works to, and structures in, on, or under, a controlled water.'

2.2.33 Paragraph 5.183: *'The Secretary of State will generally need to give more weight to impacts on the water environment where a project would have adverse effects on the achievement of the environmental objectives established under the Water Framework Directive.'*

2.2.34 Paragraph 5.184: *'The Secretary of State will need to be satisfied that a proposal has had regard to the Thames river basin management plan and the Water Framework Directive and its daughter Directives on priority substances and groundwater. In terms of Water Framework Directive compliance, the overall aim of development should be to prevent deterioration in status of water bodies, to support the achievement of the objectives in the Thames river basin management plan and not to jeopardise the future achievement of good status for any affected water bodies. If the development is considered likely to cause deterioration of water body status or to prevent the achievement of good groundwater status or of good ecological status or potential, compliance with Article 4.7 of the Water Framework Directive must be demonstrated. Any use of Article 4.7 must be reported in the Thames river basin management plan.'*

2.2.35 Paragraph 5.185: *'The Secretary of State will need to consider the interactions of the preferred scheme with other plans, such as statutory water resources management plans.'*

2.2.36 Paragraph 5.186: *'The Secretary of State will need to consider proposals put forward by the applicant to mitigate adverse effects on the water environment, taking into account the likely impact of climate change on water availability, and whether appropriate requirements should be attached to any development consent and / or planning obligations. If the Environment Agency continues to have concerns, and objects to the grant of development consent on the grounds of impacts on water quality / resources, the Secretary of State can grant consent, but will need to be satisfied that all reasonable steps have been taken by the applicant and the Environment Agency to try to resolve the concerns.'*

Historic Environment – Decision Making

2.2.37 Paragraph 5.196: *'In determining applications, the Secretary of State will seek to identify and assess the particular significance of any heritage asset that may be affected by the proposed development (including by development affecting the setting of a heritage asset), taking account of the available evidence and any necessary expertise from:*

- *Relevant information provided with the application and, where applicable, relevant information submitted during examination of the application;*
- *Any designation records included on the National Heritage List for England;*
- *Historic landscape character records;*
- *The relevant Historic Environment Record(s) and similar sources of information;*
- *Representations made by interested parties during the examination; and*
- *Expert advice, where appropriate and when the need to understand the significance of the heritage asset demands it.'*

2.2.38 Paragraph 5.197: *'The Secretary of State must also comply with the regime relating to Listed Buildings, Conservation Areas and Scheduled Monuments set out in The Infrastructure Planning (Decisions) Regulations 2010.'*

2.2.39 Paragraph 5.198: *'In considering the impact of a proposed development on any heritage assets, the Secretary of State will take into account the particular nature of the significance of the heritage asset and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between their conservation and any aspect of the proposal'.*

2.2.40 Paragraph 5.199*: 'The Secretary of State will take into account: the desirability of sustaining and, where appropriate, enhancing the significance of heritage assets; the contribution of their settings; and the positive contribution their conservation can make to supporting sustainable communities – including to their quality of life, their economic vitality, and to the public's enjoyment of these assets. The Secretary of State will also take into account the desirability of new development making a positive contribution to the character and local distinctiveness of the historic environment. The consideration of design should include scale, height, massing, alignment, materials, use and landscaping (for example screen planting)'.*

2.2.41 Paragraph 5.200: '*When considering the impact of a proposed development on the significance of a designated heritage asset, the Secretary of State will give great weight to the asset's conservation. The more important the asset, the greater the weight should be. The Secretary of State will take into account the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation, the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality, and the desirability of new development making a positive contribution to local character and distinctiveness'*

2.2.42 Paragraph 5.202: '*Substantial harm to or loss of a Grade II Listed Building or a Grade II Registered Park or Garden should be exceptional. Substantial harm to or loss of designated sites of the highest significance, including World Heritage Sites, Scheduled Monuments, Grade I and II* Listed Buildings, Protected Wreck Sites, Registered Battlefields, and Grade I and II* Registered Parks and Gardens should be wholly exceptional'.*

2.2.43 Paragraph 5.203: '*Any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset, the greater the justification that will be needed for any loss'.*

2.2.44 Paragraph 5.204: *'Where the proposed development will lead to substantial harm to or the total loss of significance of a designated heritage asset, the Secretary of State will refuse consent unless it can be demonstrated that the substantial harm or loss of significance is necessary in order to deliver substantial public benefits that outweigh that loss or harm, or alternatively that all of the following apply:*

- *The nature of the heritage asset prevents all reasonable uses of the site;*
- *No viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation;*
- *Conservation by grant funding or some form of charitable or public ownership is demonstrably not possible; and*
- *The harm or loss is outweighed by the benefit of bringing the site back into use'.*

2.2.45 Paragraph 5.205: *'Where the proposed development will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use'.*

2.2.46 Paragraph 5.207: *'Where the loss of significance of any heritage asset is justified on the merits of the new development, the Secretary of State will consider imposing a requirement on the consent, or require the applicant to enter into an obligation, that will prevent the loss occurring until it is reasonably certain that the relevant part of the development is to proceed'.*

2.2.47 Paragraph 5.208: *'The applicant should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the setting of heritage assets, to enhance and better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset should be treated favourably'.*

Landscape & Visual Impact - Decision Making

2.2.48 Paragraph 5.218: '*Landscape effects depend on the nature of the existing landscape likely to be changed and nature of the effect likely to occur. Both these factors need to be considered in judging the impact of the preferred scheme on the landscape. The preferred scheme needs to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints, the development should aim to avoid or minimise harm to the landscape, providing reasonable mitigation where possible and appropriate.'*

2.2.49 Paragraph 5.222: '*The duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. The development should aim to avoid compromising the purposes of designation, and such projects should be designed sensitively given the various siting, operational, and other relevant constraints.'*

2.2.50 Paragraph 5.223: *'Outside nationally designated areas, there are local landscapes and townscapes that are highly valued locally and may be protected by local designation. Where a local development document in England has policies based on landscape character assessment, these should be given particular consideration. However, local landscape designations should not be used in themselves as reasons to refuse consent, as this may unduly restrict acceptable development'.*

2.2.51 Paragraph 5.224: *'In taking decisions, the Secretary of State will consider whether the preferred scheme has been designed carefully, taking account of environmental effects on the landscape and siting, operational and other relevant constraints, to avoid adverse effects on landscape or to minimise harm to the landscape, including by reasonable mitigation'.*

2.2.52 Paragraph 5.225: *'The Secretary of State will judge whether the visual effects on sensitive receptors, such as local residents, and other receptors, such as visitors to the local area, outweigh the benefits of the development.'*

Dust, Odour, Artificial Light, Smoke and Steam – Decision Making

2.2.53 Paragraph 5.237: *'The Secretary of State should be satisfied that all reasonable steps have been taken, and will be taken, to minimise any detrimental impact on amenity from emissions of dust, odour, artificial light, smoke and steam. This includes the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'*

2.2.54 Paragraph 5.238: *'If development consent is granted for a project, the Secretary of State should consider whether there is a justification for all of the authorised project (including any associated development) being covered by a defence of statutory authority against nuisance claims. If the Secretary of State cannot conclude that this is justified, then the defence should be disapplied, in whole or in part, through a provision in the development consent order.'*

Community Compensation – Decision Making

2.2.55 Paragraph 5.252: *'The Secretary of State will also consider whether the applicant has consulted on the details of a community compensation fund, including source of revenue, size and duration of fund, eligibility, and how delivery will be ensured.'*

2.2.56 Paragraph 5.253: *'The Secretary of State will expect the applicant to demonstrate how these provisions are secured, and how they will be operated. The applicant will also need to show how these measures will be administered to ensure that they are relevant to planning when in operation. The mechanisms for enforcing these provisions should also be demonstrated, along with the appropriateness of any identified enforcing body, which may include the Secretary of State.'*

2.3 Beyond the Horizon - The Future of UK Aviation: Making Best Use of Existing Runways (HM Government, 2018a)

2.3.1 In June 2018, the Government published its paper on making best use of existing runways, as part of the overall aviation strategy (HM Government, 2018a).

2.3.2 Key points of relevance for the Project are set out below.

2.3.3 Paragraph 1.22: *'The government recognises the impact on communities living near airports and understands their concerns over local environmental issues, particularly noise, air quality and surface access. As airports look to make the best use of their existing runways, it is important that communities surrounding those airports share in the economic benefits of this, and that adverse impacts such as noise are mitigated where possible.'*

2.3.4 Paragraph 1.24: '*As part their planning applications airports will need to demonstrate how they will mitigate local environmental issues, which can then be presented to, and considered by, communities as part of the planning consultation process'.*

2.3.5 Paragraph 1.25: '*As a result of the consultation and further analysis to ensure future carbon emissions can be managed, government believes there is a case for airports making best of their existing runways across the whole of the UK. The position is different for Heathrow Airport where the government's policy on increasing capacity is set out in the proposed Airports NPS'*

2.3.6 Paragraph 1.26: *'Airports that wish to increase either the passenger or air traffic movement caps to allow them to make best use of their existing runways will need to submit applications to the relevant planning authority. We expect that applications to increase existing planning caps by fewer than 10 million passengers per annum (mppa) can be taken forward through local planning authorities under the Town and Country Planning Act 1990. As part of any planning application airports will need to demonstrate how they will mitigate against local environmental issues, taking account of relevant national policies, including any new environmental policies emerging from the Aviation Strategy'.*

2.3.7 Paragraph 1.27*: 'Applications to increase caps by 10mppa or more or deemed nationally significant would be considered as Nationally Significant Infrastructure Projects (NSIPs) under the Planning Act 2008 and as such would be considered on a case by case basis by the Secretary of State.'*

2.3.8 Paragraph 1.29: *'Therefore the Government is supportive of airports beyond Heathrow making best use of their existing runways. However, we recognise that the development of airports can have negative as well as positive local impacts, including on noise levels. We therefore consider that any proposals should be judged by the relevant planning authority, taking careful account of all relevant considerations, particularly economic and environmental impacts and proposed mitigations.'*

2.4 Aviation Policy Framework (Department for Transport, 2013)

2.4.1 The Government published in March 2013 the Aviation Policy Framework. The Framework sets out Government's high-level objectives and policy on aviation.

2.4.2 Key points of relevance for the Project are set out below.

Managing Aviation's Environmental Impact

2.4.3 Paragraph 2.4*:'The Government's objective is to ensure that the aviation sector makes a significant and cost-effective contribution towards reducing global emissions.'*

2.4.4 Paragraph 2.60: *'The Government strongly supports the need to better understand and manage the risks associated with climate change. It is essential for the successful long-term resilience of the UK's aviation industry and its contribution to supporting economic growth and competitiveness.'*

2.4.5 Paragraph 3.1: *'Whilst the aviation industry brings significant benefits to the UK economy, there are costs associated with its local environmental impacts which are borne by those living around airports, some of whom may not use the airport or directly benefit from its operations. This chapter considers noise, air quality and other local environmental impacts.'*

Noise

2.4.6 Paragraph 3.12: *'The Government's overall policy on aviation noise is to limit and, where possible, reduce the number of people in the UK significantly affected by aircraft noise, as part of a policy of sharing benefits of noise reduction with industry.'*

Air Quality and other local environmental Impacts

2.4.7 Paragraph 3.46*: 'Whilst noise is the most obvious local environmental impact of airport operations, airports have a significant impact on other aspects of the local environment, some of which, including air quality, may not be visible.'*

2.4.8 Paragraph 3.48*: 'Our policy on air quality is to seek improved international standards to reduce emissions from aircraft and vehicles and to work with airports and local authorities as appropriate to improve air quality, including encouraging HGV, bus and taxi operators to replace or retrofit with pollution-reducing technology older, more polluting vehicles.'*

Working Together

2.4.9 Paragraph 4.3: *'Government's objective is to encourage the aviation industry and local stakeholders to strengthen and streamline the way in which they work together. Local stakeholders have the experience and expertise to identify solutions tailored to their specific circumstances. We therefore want to encourage good practice rather than propose a 'one size fits all' model for local engagement.'*

2.5 Aviation Strategy Green Paper: Aviation 2050 - The Future of UK Aviation (Department for Transport, 2018b)

2.5.1 In December 2018, the Government published a Green Paper: Aviation 2050 - The Future of UK Aviation. The consultation ran from 17 December 2018 to 20 June 2019.

2.5.2 Key points of relevance for the Project are set out below.

Community Engagement and Sharing Benefits from Growth

2.5.3 Paragraph 3.69: *'Growth in aviation can benefit local communities. Airports create jobs for local residents, improve transport links and bring tourism and trade to the region. Airports should therefore create opportunities for communities to engage, particularly on issues which have the most direct impact on them such as road and rail access, airspace change and noise policy. All commercial airports and many larger General Aviation aerodromes are required to provide processes for consultation and engagement with those affected by their operations as well as users of the airport. In practice, this requirement is usually fulfilled through the existence of an airport consultative committee.'*

2.5.4 Paragraph 3.70: *'The government has produced guidance on how such committees should operate and it will continue to work closely with those committees to consider the scope for supplementary guidance. Communities should use those existing statutory mechanisms to engage with airports, noting that locally elected representatives sit on the committees. Representatives from residents' groups or amenity societies may also participate. In some cases, additional bespoke solutions tailored to the local circumstances may be needed to address noise management issues, such as those which have been created at Heathrow, Gatwick and Edinburgh airports. Such solutions may be particularly useful where there are major airspace changes under discussion and where local communities would benefit from help to understand the complex proposals. Local communities are encouraged to work with airports to discuss and develop such solutions where necessary.'*

2.5.5 Paragraph 3.71: *'In recognition of their impact on local communities and as a matter of good corporate social responsibility, a number of airports have community funds which exist to provide funding for local community projects. There is currently no national policy on such funds. In relation to the proposed Heathrow Northwest runway, the Airports NPS expects ongoing community compensation will be proportionate to environmental impacts.'*

2.5.6 Paragraph 3.72*: 'The government believes all major airports should establish and maintain community funds, to invest sufficiently in these so that they are able to make a difference in the communities impacted and to raise the profile of these funds. The levels of investment should be proportionate to the growth at the airport. Community funds are complementary measures to ensure communities get a fair deal and do not substitute for noise reduction. The government proposes to produce guidance on minimum standards for community funds.'*

Emissions

2.5.7 Paragraph 3.82: *'The government is committed to setting a clear and appropriate level of ambition for the sector. In doing so, the government recognises that international action is the first priority for tackling international aviation emissions.'*

2.5.8 Paragraph 3.83: *'The government proposes to: negotiate in ICAO (the UN body responsible for tackling international aviation climate emissions) for a long term goal for international aviation that is consistent with the temperature goals of the Paris Agreement, ideally by ICAO's 41st Assembly in 2022.'*

2.5.9 Paragraph 3.96: *'To implement the government's long-term vision and pathway for addressing UK aviation's impact on climate change, the government also proposes to:*

- *negotiate in ICAO for standards for all engine emissions with climate effects. As scientific understanding improves, the government will expect ICAO to issue best practice guidance on operational mitigations for non- CO2 effects;*
- *consider the use of all feasible abatement options, particularly in-sector measures, to ensure effective action is taken at the national and international level. This includes policies that may evolve over the long term such as technological developments, operational efficiencies, sustainable fuels, market-based measures, demand management and behavioural change;*
- *require planning applications for capacity growth to provide a full assessment of emissions, drawing on all feasible, cost-effective measures to limit their climate impact, and demonstrating that their project will not have a material impact on the government's ability to meet its carbon reduction targets.'*

Noise

2.5.10 Paragraph 3.112: *'The government expects the industry to show continuing commitment to noise reduction and mitigation as part of its contribution to the partnership for sustainable growth. The government has shown that it is committed to this by setting out in the Airports NPS its expectations that the developer put in place a comprehensive mitigations package. The proposals in this consultation are aligned with the principles in the NPS, but the implementation of those document principles must be proportionate to the local situation (recognising that the scale of the noise impacts at Heathrow is much greater than at other airports due to the number of movements and local population density).*

2.5.11 Paragraph 3.115: *'The proposed new measures are:*

- *setting a new objective to limit, and where possible, reduce total adverse effects on health and quality of life from aviation noise. This brings national aviation noise policy in line with airspace policy updated in 2017*
- *developing a new national indicator to track the long term performance of the sector in reducing noise. This could be defined either as a noise quota or a total contour area based on the largest airports*
- *routinely setting noise caps as part of planning approvals (for increase in passengers or flights). The aim is to balance noise and growth and to provide future certainty over noise levels to communities. It is important that caps are subject to periodic review to ensure they remain relevant and continue to strike a fair balance by taking account of actual growth and the introduction of new aircraft technology. It is equally important that there are appropriate compliance mechanisms in case such caps are breached and the government wants to explore mechanisms by which airports could 'pay for' additional growth by means of local compensation as an alternative to the current sanctions available*
- *requiring all major airports to set out a plan which commits to future noise reduction, and to review this periodically. This would only apply to airports which do not have a noise cap approved through the planning system and would provide similar certainty to communities on future noise levels. The government wants to see better noise monitoring and a mechanism to enforce these targets as for noise caps. The noise action planning process could potentially be developed to provide the basis for such reviews, backed up by additional powers as necessary for either central or local government or the CAA.'*

2.5.12 Paragraph 3.121: *'The government is also: proposing new measures to improve noise insulation schemes for existing properties, particularly where noise exposure may increase in the short term or to mitigate against sleep disturbance.'*

2.5.13 Paragraph 3.122: *'Such schemes, while imposing costs on the industry, are an important element in giving impacted communities a fair deal. The government therefore proposes the following noise insulation measures:*

- *to extend the noise insulation policy threshold beyond the current 63dB LAeq 16hr contour to 60dB LAeq 16hr*
- *to require all airports to review the effectiveness of existing schemes. This should include how effective the insulation is and whether other factors (such as ventilation) need to be considered, and also whether levels of contributions are affecting take-up*
- *the government or ICCAN to issue new guidance to airports on best practice for noise insulation schemes, to improve consistency*
- *for airspace changes which lead to significantly increased overflight, to set a new minimum threshold of an increase of 3dB LAeq, which leaves a household in the 54dB LAeq 16hr contour or above as a new eligibility criterion for assistance with noise insulation'*

Air Quality

2.5.14 Paragraph 3.127: *'The government recognises the need to take further action to ensure aviation's contribution to local air quality issues is properly understood and addressed and is proposing the following measures:*

- *improving the monitoring of air pollution, including ultrafine particles (UFP), in order to improve understanding of aviation's impact on local air quality. This will be achieved by standardising processes for airport air pollution monitoring and communication*
- *ensuring comprehensive information on aviation-related air quality issues is made available to better inform interested parties. This will be achieved through government guidance on the scope and content of airport air quality reports*
- *requiring all major airports to develop air quality plans to manage emissions within local air quality targets. This will be achieved through establishing minimum criteria to be included in the plans*
- *validation of air quality monitoring to ensure consistent and robust monitoring standards that enable the identification of long-term trends. This could be achieved by the government or a third party being given responsibility for overseeing aviation-related air quality monitoring at the national level*
- *supporting industry in the development of cleaner fuels to reduce the air quality impacts of aviation fuels. This will be achieved by international action to develop cleaner fuel standards and reviewing progress towards Renewable Transport Fuel Obligations by 2032.'*

Support Regional Growth and Connectivity

2.5.15 Paragraph 4.1: *'Airports can directly support thousands of jobs and generate economic benefits beyond the airport fence. Core and specialist aviation services, freight companies, logistics hubs and aerospace investment are often located close to airports, creating jobs in the local area. Regional airports also act as wider magnets attracting non-aviation businesses due to the air connections the airport offers but also the strong road and rail access links that support the airport. They act as a gateway to international opportunities for the regions of the UK.'*

2.5.16 Paragraph 4.2: *'The government recognises the importance of rebalancing the UK economy through the economic growth of the regions and ensuring that the UK remains competitive after we leave the EU. Through the Industrial Strategy, the government has set out its ambition to create a geographically-balanced*

economy that works for everyone. This will be supported by local enterprise partnerships, mayoral combined authorities, the Northern Powerhouse, the Midlands Engine and the devolved administrations.'

2.5.17 Paragraph 4.3: *'The government has also confirmed that it is supportive of airports beyond Heathrow making best use of their existing runways, subject to proposals being assessed in light of environmental and economic impacts.'*

2.6 National Policy Statement for National Networks (Department for Transport, 2015)

2.6.1 The Government designated in January 2015 the National Policy Statement (NPS) for National Networks. This establishes in paragraph 2.8 that '*there is also a need to improve the integration between the transport modes, including the linkages to ports and airports. Improved integration can reduce end-to-end journey times and provide users of the networks with a wider range of transport choices*.'

2.6.2 Key points of relevance for the Project are set out below.

Assessment of Impacts – Decision Making:

Air Quality – Decision Making

2.6.3 Paragraph 5.10: '*The Secretary of State should consider air quality impacts over the wider area likely to be affected, as well as in the near vicinity of the scheme. In all cases the Secretary of State must take account of relevant statutory air quality thresholds set out in domestic and European legislation. Where a project is likely to lead to a breach of the air quality thresholds, the applicant should work with the relevant authorities to secure appropriate mitigation measures with a view to ensuring so far as possible that those thresholds are not breached'*.

2.6.4 Paragraph 5.11: '*Air quality considerations are likely to be particularly relevant where schemes are proposed:*

- *within or adjacent to Air Quality Management Areas (AQMA); roads identified as being above Limit Values or nature conservation sites (including Natura 2000 sites and SSSIs, including those outside England); and*
- *where changes are sufficient to bring about the need for a new AQMA s or change the size of an existing AQMA; or bring about changes to exceedences of the Limit Values, or where they may have the potential to impact on nature conservation sites'*.

2.6.5 Paragraph 5.12: '*The Secretary of State must give air quality considerations substantial weight where, after taking into account mitigation, a project would lead to a significant air quality impact in relation to EIA and / or where they lead to a deterioration in air quality in a zone/agglomeration'*.

2.6.6 Paragraph 5.13: '*The Secretary of State should refuse consent where, after taking into account mitigation, the air quality impacts of the scheme will:*

- *result in a zone/agglomeration which is currently reported as being compliant with the Air Quality Directive becoming non-compliant; or*
- *affect the ability of a non-compliant area to achieve compliance within the most recent timescales reported to the European Commission at the time of the decision'*.

Noise – Decision Making

2.6.7 Paragraph 5.193: '*Developments must be undertaken in accordance with statutory requirements for noise. Due regard must have been given to the relevant sections of the Noise Policy Statement for England, National Planning Policy Framework and the Government's associated planning guidance on noise'*.

2.6.8 Paragraph 5.194: '*The project should demonstrate good design through optimisation of scheme layout to minimise noise emissions and, where possible, the use of landscaping, bunds or noise barriers to reduce noise transmission. The project should also consider the need for the mitigation of impacts elsewhere on the road and rail networks that have been identified as arising from the development, according to Government policy'*.

2.6.9 Paragraph 5.195: '*The Secretary of State should not grant development consent unless satisfied that the proposals will meet, the following aims, within the context of Government policy on sustainable development:*

- *avoid significant adverse impacts on health and quality of life from noise as a result of the new development;*
- *mitigate and minimise other adverse impacts on health and quality of life from noise from the new development; and*
- *contribute to improvements to health and quality of life through the effective management and control of noise, where possible'*.

2.6.10 Paragraph 5.196: '*In determining an application, the Secretary of State should consider whether requirements are needed which specify that the mitigation measures put forward by the applicant are put in place to ensure that the noise levels from the project do not exceed those described in the assessment or any other estimates on which the decision was based'*.

Carbon Emissions – Decision making

2.6.11 Paragraph 5.18: '*The Government has an overarching national carbon reduction strategy (as set out in the Carbon Plan 2011) which is a credible plan for meeting carbon budgets. It includes a range of non-planning policies which will, subject to the occurrence of the very unlikely event described above, ensure that any carbon increases from road development do not compromise its overall carbon reduction commitments. The Government is legally required to meet this plan. Therefore, any increase in carbon emissions is not a reason to refuse development consent, unless the increase in carbon emissions resulting from the proposed scheme are so significant that it would have a material impact on the ability of Government to meet its carbon reduction targets*'.

Biodiversity and Ecological Conservation – Decision Making

2.6.12 Paragraph 5.24: '*The Government's biodiversity strategy is set out in Biodiversity 2020: A Strategy for England's wildlife and ecosystem services. Its aim is to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people. This aim needs to be viewed in the context of the challenge of climate change: failure to address this challenge will result in significant impact on biodiversity'*.

2.6.13 Paragraph 5.25: '*As a general principle, and subject to the specific policies below, development should avoid significant harm to biodiversity and geological conservation interests, including through mitigation and consideration of reasonable alternatives. The applicant may also wish to make use of biodiversity offsetting in devising compensation proposals to counteract any impacts on biodiversity which cannot be avoided or mitigated. Where significant harm cannot be avoided or mitigated, as a last resort, appropriate compensation measures should be sought'*.

2.6.14 Paragraph 5.26: '*In taking decisions, the Secretary of State should ensure that appropriate weight is attached to designated sites of international, national and local importance, protected species, habitats and other species of principal importance for the conservation of biodiversity, and to biodiversity and geological interests within the wider environment'*.

2.6.15 International sites 5.27: '*The most important sites for biodiversity are those identified through international conventions and European Directives. The Habitats Regulations provide statutory protection for European sites [76] (see also paragraphs 4.22 to 4.25). The National Planning Policy Framework states that the following wildlife sites should have the same protection as European sites:*

- *potential Special Protection Areas and possible Special Areas of Conservation;*
- *listed or proposed Ramsar sites; and*
- *sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation and listed or proposed Ramsar sites*'.

'76 This includes candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas, and is defined in regulation 8 of the Conservation of Habitats and Species Regulations 2010. See the Government Circular referred to in the introduction above for further information on the requirements of the Habitats Regulations.'

2.6.16 Sites of Special Scientific Interest 5.28: '*Many Sites of Special Scientific Interest (SSSIs) are also designated as sites of international importance and will be protected accordingly. Those that are not, or those features of SSSIs not covered by an international designation, should be given a high degree of protection'*.

2.6.17 All National Nature Reserves are notified as SSSI. 5.29: '*Where a proposed development on land within or outside a SSSI is likely to have an adverse effect on an SSSI (either individually or in combination with other developments), development consent should not normally be granted. Where an adverse effect on the site's notified special interest features is likely, an exception should be made only where the benefits of the development at this site clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest, and any broader impacts on the national network of SSSIs. The Secretary of State should ensure that the applicant's proposals to mitigate the harmful aspects of the development and, where possible, to ensure the conservation and enhancement of the site's biodiversity or geological interest, are acceptable. Where necessary, requirements and/or planning obligations should be used to ensure these proposals are delivered*'.

2.6.18 Regional and Local Sites 5.31: '*Sites of regional and local biodiversity and geological interest (which include Local Geological Sites, Local Nature Reserves and Local Wildlife Sites and Nature Improvement Areas) have a fundamental role to play in meeting overall national biodiversity targets, in contributing to the quality of life and the well-being of the community, and in supporting research and education. The Secretary of State should give due consideration to such regional or local designations. However, given the need for new infrastructure, these designations should not be used in themselves to refuse development consent*'.

2.6.19 Irreplaceable habitats including ancient woodland and veteran trees 5.32: '*Ancient woodland is a valuable biodiversity resource both for its diversity of species and for its longevity as woodland. Once lost it cannot be recreated. The Secretary of State should not grant development consent for any development that would result in the loss or deterioration of irreplaceable habitats including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the national need for and benefits of the development, in that location, clearly outweigh the loss. Aged or veteran trees found outside ancient woodland are also particularly valuable for biodiversity and their loss should be avoided. Where such trees would be affected by development proposals, the applicant should set out proposals for their conservation or, where their loss is unavoidable, the reasons for this*'.

2.6.20 Biodiversity within and around developments 5.33: '*Development proposals potentially provide many opportunities for building in beneficial biodiversity or geological features as part of good design.[80] When considering proposals, the Secretary of State should consider whether the applicant has maximised such opportunities in and around developments. The Secretary of State may use requirements or planning obligations where appropriate in order to ensure that such beneficial features are delivered*'.

'80 The Natural Environment White Paper 2011 identifies opportunities for transport to contribute to the creation of coherent and resilient ecological networks.'

2.6.21 Protection of other habitats and species 5.34: '*Many individual wildlife species receive statutory protection under a range of legislative provisions*'.

2.6.22 Paragraph 5.35: '*Other species and habitats have been identified as being of principal importance for the conservation of biodiversity in England and Wales[82] and therefore requiring conservation action. The Secretary of State should ensure that applicants have taken measures to ensure these species and habitats are protected from the adverse effects of development. Where appropriate, requirements or planning obligations may be used in order to deliver this protection. The Secretary of State should refuse consent where harm to the habitats or species and their habitats would result, unless the benefits of the development (including need) clearly outweigh that harm*'.

82 Lists of habitats and species of principal importance for the conservation of biological diversity in England published in response to Section 41 of the Natural Environment and Rural Communities Act 2006 are available from the Biodiversity Action Reporting System website.'

Land Use including Open Space, Green Infrastructure and Green Belt – Decision Making

2.6.23 Paragraph 5.173: '*Where the project conflicts with a proposal in a development plan, the Secretary of State should take account of the stage which the development plan document has reached in deciding what weight to give to the plan for the purposes of determining the planning significance of what is replaced, prevented or precluded. The closer the development plan document is to being adopted by the local plan, the greater the weight which can be attached to the impact of the proposal on the plan*'.

2.6.24 Paragraph 5.174: '*The Secretary of State should not grant consent for development on existing open space, sports and recreational buildings and land, including playing fields, unless an assessment has been undertaken either by the local authority or independently, which has shown the open space or the buildings and land to be surplus to requirements, or the Secretary of State determines that the benefits of the project (including need) outweigh the potential loss of such facilities, taking into account any positive proposals made by the applicant to provide new, improved or compensatory land or facilities*'.

2.6.25 Paragraph 5.175: '*Where networks of green infrastructure have been identified in development plans, they should normally be protected from development, and, where possible, strengthened by or integrated within it. The value of linear infrastructure and its footprint in supporting biodiversity and ecosystems should also be taken into account when assessing the impact on green infrastructure*'.

2.6.26 Paragraph 5.176: '*The decision-maker should take into account the economic and other benefits of the best and most versatile agricultural land. The decisionmaker should give little weight to*

the loss of agricultural land in grades 3b, 4 and 5, except in areas (such as uplands) where particular agricultural practices may themselves contribute to the quality and character of the environment or the local economy'.

2.6.27 Paragraph 5.177: '*In considering the impact on maintaining coastal recreation sites and features, the Secretary of State should expect applicants to have taken advantage of opportunities to maintain and enhance access to the coast. In doing so the Secretary of State should consider the implications for development of the creation of a continuous signed and managed route around the coast, as proposed in the Marine and Coastal Access Act 2009'*.

2.6.28 Paragraph 5.178: '*When located in the Green Belt national networks infrastructure projects may comprise inappropriate development. Inappropriate development[109] is by definition harmful to the Green Belt and there is a presumption against it except in very special circumstances. The Secretary of State will need to assess whether there are very special circumstances to justify inappropriate development. Very special circumstances will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm, is clearly outweighed by other considerations. In view of the presumption against inappropriate development, the Secretary of State will attach substantial weight to the harm to the Green Belt, when considering any application for such development*'.

'109 See National Planning Policy Framework.'

Waste Management – Decision Making

2.6.29 Paragraph 5.43: '*The Secretary of State should consider the extent to which the applicant has proposed an effective process that will be followed to ensure effective management of hazardous and non-hazardous waste arising from the construction and operation of the proposed development. The Secretary of State should be satisfied that the process sets out:*

- *any such waste will be properly managed, both on-site and off-site;*
- *the waste from the proposed facility can be dealt with appropriately by the waste infrastructure which is, or is likely to be, available. Such waste arisings should not have an adverse effect on the capacity of existing waste management facilities to deal with other waste arisings in the area; and*
- *adequate steps have been taken to minimise the volume of waste arisings, and of the volume of waste arisings sent to disposal, except where an alternative is the most sustainable outcome overall*'.

2.6.30 Paragraph 5.44: '*Where necessary, the Secretary of State should use requirements or planning obligations to ensure that appropriate measures for waste management are applied'*.

2.6.31 Paragraph 5.45: '*Where the project will be subject to the Environment Agency's environmental permitting regime, waste management arrangements during operations will be covered by the permit and the considerations set out in paragraphs 4.48 to 4.56 will apply'*.

Flood Risk Assessment

2.6.32 Paragraph 5.94: *'In preparing a flood risk assessment the applicant should:*

- *consider the risk of all forms of flooding arising from the project (including in adjacent parts of the United Kingdom), in addition to the risk of flooding to the project, and demonstrate how these risks will be managed and, where relevant, mitigated, so that the development remains safe throughout its lifetime;*
- *take the impacts of climate change into account, clearly stating the development lifetime over which the assessment has been made;*
- *consider the vulnerability of those using the infrastructure including arrangements for safe access and exit;*
- *include the assessment of the remaining (known as 'residual') risk after risk reduction measures have been taken into account and demonstrate that this is acceptable for the particular project;*
- *consider if there is a need to remain operational during a worst case flood event over the development's lifetime;*
- *provide the evidence for the Secretary of State to apply the Sequential Test and Exception Test, as appropriate'*.

Flood Risk – Decision Making

2.6.33 Paragraph 5.98: '*Where flood risk is a factor in determining an application for development consent, the Secretary of State should be satisfied that, where relevant:*

- *the application is supported by an appropriate FRA;*
- *the Sequential Test (see the National Planning Policy Framework) has been applied as part of site selection and, if required, the Exception Test (see the National Planning Policy Framework)*'.

2.6.34 Paragraph 5.99: '*When determining an application the Secretary of State should be satisfied that flood risk will not be increased elsewhere and only consider development appropriate in areas at risk of flooding where (informed by a flood risk assessment, following the Sequential Test and, if required, the Exception Test), it can be demonstrated that:*

- *within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location; and*
- *development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and priority is given to the use of sustainable drainage systems'*.

2.6.35 Paragraph 5.100: '*For construction work which has drainage implications, approval for the project's drainage system will form part of any development consent issued by the Secretary of State. The Secretary of State will therefore need to be satisfied that the proposed drainage system complies with any National Standards published by Ministers under Paragraph 5(1) of Schedule 3 to the Flood and Water Management Act 2010.[93] In addition, the development consent order, or any associated planning obligations, will need to make provision for the adoption and maintenance of any Sustainable Drainage Systems (SuDS), including any necessary access rights to property. The Secretary of State, should be satisfied that the most appropriate body is being given the responsibility for maintaining any SuDS, taking into account the nature and security of the infrastructure on the proposed site. The responsible body could include, for example, the applicant, the landowner, the relevant local authority, or another body such as the Internal Drainage Board'*.

'93 The National Standards set out requirements for the design, construction, operation and maintenance of SuDS and may include guidance to which the Secretary of State should have regard.'

2.6.36 Paragraph 5.101: '*If the Environment Agency continues to have concerns and objects to the grant of development consent on the grounds of flood risk, the Secretary of State can grant consent, but would need to be satisfied before deciding whether or not to do so that all reasonable steps have been taken by the applicant and the Environment Agency to try and resolve the concerns*'.

2.6.37 Paragraph 5.102: '*The Secretary of State should expect that reasonable steps have been taken to avoid, limit and reduce the risk of flooding to the proposed infrastructure and others.*

However, the nature of linear infrastructure means that there will be cases where:

- *upgrades are made to existing infrastructure in an area at risk of flooding;*
- *infrastructure in a flood risk area is being replaced;*
- *infrastructure is being provided to serve a flood risk area; and*
- *infrastructure is being provided connecting two points that are not in flood risk areas, but where the most viable route between the two passes through such an area'*.

2.6.38 Paragraph 5.103: '*The design of linear infrastructure and the use of embankments in particular, may mean that linear infrastructure can reduce the risk of flooding for the surrounding area. In such cases the Secretary of State should take account of any positive benefit to placing linear infrastructure in a flood-risk area*'.

2.6.39 Paragraph 5.104: '*Where linear infrastructure has been proposed in a flood risk area, the Secretary of State should expect reasonable mitigation measures to have been made, to ensure that the infrastructure remains functional in the event of predicted flooding*'.

2.6.40 The Sequential Test 5.105: '*Preference should be given to locating projects in Flood Zone 1. If there is no reasonably available site in Flood Zone 1, then projects can be located in Flood Zone 2. If there is no reasonably available site in Flood Zones 1 or 2, then national networks infrastructure projects can be located in Flood Zone 3, subject to the Exception Test. If the development is not essential transport infrastructure that has to cross the area at risk, it is not appropriate in Flood Zone 3b, the functional floodplain where water has to flow and be stored in times of flood'*.

2.6.41 The Exception Test 5.106: '*If, following application of the Sequential Test, it is not possible, consistent with wider sustainability objectives, for the project to be located in zones of lower probability of flooding than Flood Zone 3a, the Exception Test can be applied. The test provides a method of managing flood risk while still allowing necessary development to occur'*.

2.6.42 Paragraph 5.107: '*The Exception Test is only appropriate for use where the Sequential Test alone cannot deliver an acceptable site, taking into account the need for national networks infrastructure to remain operational during floods'*.

2.6.43 Paragraph 5.108: '*Both elements of the test will have to be passed for development to be consented. For the Exception Test to be passed:*

- *it must be demonstrated that the project provides wider sustainability benefits to the community[95] that outweigh flood risk; and*
- *a FRA must demonstrate that the project will be safe for its lifetime, without increasing flood risk elsewhere and, where possible, will reduce flood risk overall'*.

'95 These would include benefits (including need) for the infrastructure set out in Chapter 2.'

2.6.44 Paragraph 5.109: '*In addition, any project that is classified as 'essential infrastructure' and proposed to be located in Flood Zone 3a or b should be designed and constructed to remain operational and safe for users in times of flood; and any project in Zone 3b should result in no net loss of floodplain storage and not impede water flows'*.

Water Quality and Resources – Decision Making

2.6.45 Paragraph 5.224: '*Activities that discharge to the water environment are subject to pollution control. The considerations set out in paragraphs 4.48-4.56 on the interface between planning and pollution control therefore apply. These considerations will also apply in an analogous way to the abstraction licensing regime regulating activities that take water from the water environment, and to the control regimes relating to works to, and structures in, on, or under a controlled water'*.

2.6.46 Paragraph 5.225: '*The Secretary of State will generally need to give impacts on the water environment more weight where a project would have adverse effects on the achievement of the environmental objectives established under the Water Framework Directive'*.

2.6.47 Paragraph 5.226: '*The Secretary of State should be satisfied that a proposal has had regard to the River Basin Management Plans and the requirements of the Water Framework Directive (including Article 4.7) and its daughter directives, including those on priority substances and groundwater. The specific objectives for particular river basins are set out in River Basin Management Plans. In terms of Water Framework Directive compliance, the overall aim of projects should be no deterioration of ecological status in watercourses, ensuring that Article 4.7 of the Water Framework Directive Regulations does not need to be applied. The Secretary of State should also consider the interactions of the proposed project with other plans such as Water Resources Management Plans, Shoreline/Estuary Management Plans and Marine Plans'*.

2.6.48 Paragraph 5.227: '*The Examining Authority and the Secretary of State should consider proposals put forward by the applicant to mitigate adverse effects on the water environment and whether appropriate requirements should be attached to any development consent and/or planning obligations. If the Environment Agency continues to have concerns and objects to the grant of development consent on the grounds of impacts on water quality/resources, the Secretary of State can grant consent, but will need to be satisfied before deciding whether or not to do so that all reasonable steps have been taken by the applicant and the Environment Agency to try to resolve the concerns, and that the Environment Agency is satisfied with the outcome'*.

Historic Environment – Decision Making

2.6.49 Paragraph 5.128: *'In determining applications, the Secretary of State will seek to identify and assess the particular significance of any heritage asset that may be affected by the proposed development (including by development affecting the setting of a heritage asset), taking account of the available evidence and any necessary expertise from:*

- *relevant information provided with the application and, where applicable, relevant information submitted during examination of the application;*
- *any designation records;*
- *the relevant Historic Environment Record(s), and similar sources of information;*
- *representations made by interested parties during the examination; and*
- *expert advice, where appropriate, and when the need to understand the significance of the heritage asset demands it'.*

2.6.50 Paragraph 5.129: '*In considering the impact of a proposed development on any heritage assets, the Secretary of State should take into account the particular nature of the significance of the heritage asset and the value that they hold for this and future generations. This understanding should be used to avoid or minimise conflict between their conservation and any aspect of the proposal'*.

2.6.51 Paragraph 5.130: '*The Secretary of State should take into account the desirability of sustaining and, where appropriate, enhancing the significance of heritage assets, the contribution of their settings and the positive contribution that their conservation*

can make to sustainable communities – including their economic vitality. The Secretary of State should also take into account the desirability of new development making a positive contribution to the character and local distinctiveness of the historic environment. The consideration of design should include scale, height, massing, alignment, materials, use and landscaping (for example, screen planting)'.

2.6.52 Paragraph 5.131: '*When considering the impact of a proposed development on the significance of a designated heritage asset, the Secretary of State should give great weight to the asset's conservation. The more important the asset, the greater the weight should be. Once lost, heritage assets cannot be replaced and their loss has a cultural, environmental, economic and social impact. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. Given that heritage assets are irreplaceable, harm or loss affecting any designated heritage asset should require clear and convincing justification. Substantial harm to or loss of a grade II Listed Building or a grade II Registered Park or Garden should be exceptional. Substantial harm to or loss of designated assets of the highest significance, including World Heritage Sites, Scheduled Monuments, grade I and II* Listed Buildings, Registered Battlefields, and grade I and II* Registered Parks and Gardens should be wholly exceptional'*.

2.6.53 Paragraph 5.132: '*Any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset, the greater the justification that will be needed for any loss'*.

2.6.54 Paragraph 5.133: '*Where the proposed development will lead to substantial harm to or total loss of significance of a designated heritage asset, the Secretary of State should refuse consent unless it can be demonstrated that the substantial harm or loss of significance is necessary in order to deliver substantial public benefits that outweigh that loss or harm, or alternatively that all of the following apply:*

- *the nature of the heritage asset prevents all reasonable uses of the site; and*
- *no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and*
- *conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and*
- *the harm or loss is outweighed by the benefit of bringing the site back into use'*.

2.6.55 Paragraph 5.134: '*Where the proposed development will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use'*.

2.6.56 Paragraph 5.135: '*Not all elements of a World Heritage Site or Conservation Area will necessarily contribute to its significance. The Secretary of State should treat the loss of a building (or other element) that makes a positive contribution to the site's significance either as substantial harm or less than substantial harm, as appropriate, taking into account the relative significance of the elements affected and their contribution to the significance of the Conservation Area or World Heritage Site as a whole'*.

2.6.57 Paragraph 5.136: '*Where the loss of significance of any heritage asset has been justified by the applicant based on the merits of the new development and the significance of the asset in question, the Secretary of State should consider imposing a requirement that the applicant will prevent the loss occurring until the relevant development or part of development has commenced'*.

2.6.58 Paragraph 5.137: '*Applicants should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the setting of heritage assets, to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to or better reveal the significance of the asset should be treated favourably'*.

2.6.59 Paragraph 5.138: '*Where there is evidence of deliberate neglect of or damage to a heritage asset the Secretary of State should not take its deteriorated state into account in any decision'*.

Landscape & Visual Impact - Decision Making

2.6.60 Paragraph 5.149: '*Landscape effects depend on the nature of the existing landscape likely to be changed and nature of the effect likely to occur. Both these factors need to be considered in judging the impact of the preferred scheme on the landscape. The preferred scheme needs to be designed carefully, taking account of the potential impact on the landscape. Having regard to siting, operational and other relevant constraints, the development should aim to avoid or minimise harm to the landscape, providing reasonable mitigation where possible and appropriate.'*

2.6.61 Developments outside nationally designated areas which might affect them 5.154: '*The duty to have regard to the purposes of nationally designated areas also applies when considering applications for projects outside the boundaries of these areas which may have impacts within them. The aim should be to avoid compromising the purposes of designation and such projects should be designed sensitively given the various siting, operational, and other relevant constraints. This should include projects in England which may have impacts on designated areas in Wales or on National Scenic Areas in Scotland.'* 5.155 *'The fact that a proposed project will be visible from within a designated area should not in itself be a reason for refusing consent'*.

2.6.62 Developments in other areas 5.156: '*Outside nationally designated areas, there are local landscapes that may be highly valued locally and protected by local designation. Where a local development document in England has policies based on landscape character assessment, these should be given particular consideration. However, local landscape designations should not be used in themselves as reasons to refuse consent, as this may unduly restrict acceptable development.'*

2.6.63 Paragraph 5.157: '*In taking decisions, the Secretary of State should consider whether the project has been designed carefully, taking account of environmental effects on the landscape and siting, operational and other relevant constraints, to avoid adverse effects on landscape or to minimise harm to the landscape, including by reasonable mitigation'*.

2.6.64 Visual impact. 5.158: '*The Secretary of State will have to judge whether the visual effects on sensitive receptors, such as local residents, and other receptors, such as visitors to the local area, outweigh the benefits of the development*…'

Dust, Odour, Artificial Light, Smoke and Steam – Decision Making

2.6.65 Paragraph 5.87: *'The Secretary of State should be satisfied that all reasonable steps have been taken, and will be taken, to minimise any detrimental impact on amenity from emissions of dust, odour, artificial light, smoke and steam. This includes the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'*

2.6.66 Paragraph 5.88: *'If development consent is granted for a project, the Secretary of State should consider whether there is a justification for all of the authorised project (including any associated development) being covered by a defence of statutory authority against nuisance claims. If the Secretary of State cannot conclude that this is justified, then the defence should be disapplied, in whole or in part, through a provision in the development consent order.'*

Land Instability – Applicant's Assessment

2.6.67 Paragraph 5.117: '*Where necessary, land stability should be considered in respect of new development, as set out in the National Planning Policy Framework and supporting planning guidance. Specifically, proposals should be appropriate for the location, including preventing unacceptable risks from land instability. If land stability could be an issue, applicants should seek appropriate technical and environmental expert advice to assess the likely consequences of proposed developments on sites where subsidence, landslides and ground compression is known or suspected. Applicants should liaise with the Coal Authority if necessary.'*

2.6.68 Paragraph 5.118: '*A preliminary assessment of ground instability should be carried out at the earliest possible stage before a detailed application for development consent is prepared. Applicants should ensure that any necessary investigations are undertaken to ascertain that their sites are and will remain stable or can be made so as part of the development. The site needs to be assessed in context of surrounding areas where subsidence, landslides and land compression could threaten the development during its anticipated life or damage neighbouring land or property. This could be in the form of a land stability or slope stability risk assessment report*'.

Impact on Transport Networks – Decision Making

2.6.69 Paragraph 5.211: *'The Examining Authority and the Secretary of State should give due consideration to impacts on local transport networks and policies set out in local plans, for example, policies on demand management being undertaken at the local level.*'

2.6.70 Road and rail developments 5.212: '*Schemes should be developed and options considered in the light of relevant local policies and local plans, taking into account local models where appropriate, however the scheme must be decided in accordance with the NPS except to the extent that one or more of sub-sections 104(4) to 104(8) of the Planning Act 2008 applies*'.

2.6.71 Strategic Rail Freight Interchanges 5.213: '*Projects may give rise to impacts on the surrounding transport infrastructure including connecting transport networks. The Secretary of State should therefore ensure that the applicant has taken reasonable steps to mitigate these impacts. Where the proposed mitigation measures are insufficient to reduce the impact on the transport infrastructure to acceptable levels, the Secretary of State should expect applicants to accept requirements and/or obligations for funding infrastructure and otherwise mitigating adverse impacts on transport networks, as set out below*'.

2.6.72 Paragraph 5.214: '*Provided that the applicant is willing to commit to transport planning obligations and, to mitigate transport impacts identified in the WebTAG transport assessment (including environment and social impacts), with attribution of costs calculated in accordance with the Department's guidance, then development consent should not be withheld. Appropriately limited weight should be applied to residual effects on the surrounding transport infrastructure*'.

Community Compensation – Decision Making

2.6.73 Paragraph 4.3: '*In considering any proposed development, and in particular, when weighing its adverse impacts against its benefits, the Examining Authority and the Secretary of State should take into account:*

- *its potential benefits, including the facilitation of economic development, including job creation, housing and environmental improvement, and any long-term or wider benefits;*
- *its potential adverse impacts, including any longer-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts.'*

Community Engagement – Decision Making

2.6.74 Paragraph 5.204: *'Applicants should consult the relevant highway authority, and local planning authority, as appropriate, on the assessment of transport impacts.'*

2.7 National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2021)

2.7.1 The National Planning Policy Framework (NPPF) was published in 2012 and updated in 2018, 2019 and 2021 (Ministry of Housing, Communities and Local Government, 2021a). In addition, in January 2021 the Government consulted on a selective review of the NPPF and published a draft Model Design Code (Ministry of Housing, Communities and Local Government, 2021b) to implement policy changes in response to the 'Living with Beauty' report (Building Better, Building Beautiful Commission, 2020).

2.7.2 The NPPF is the principal national planning policy document in relation to the preparation of local plans and the determination of planning applications.

2.7.3 Key points of relevance for the Project are set out below.

Nationally Significant Infrastructure Projects

2.7.4 Paragraph 5: *'The Framework does not contain specific policies for nationally significant infrastructure projects. These are determined in accordance with the decision-making framework in the Planning Act 2008 (as amended) and relevant national policy statements for major infrastructure, as well as any other matters that are relevant (which may include the National Planning Policy Framework). National policy statements form part of the overall framework of national planning policy, and may be a material consideration in preparing plans and making decisions on planning applications.'*

Decision Making

2.7.5 Paragraph 38: *'Local planning authorities should approach decisions on proposed development in a positive and creative way. They should use the full range of planning tools available, including brownfield registers and permission in principle, and work proactively with applicants to secure developments that will improve the economic, social and environmental conditions of the area. Decision-makers at every level should seek to approve applications for sustainable development where possible.'*

Building a strong, competitive economy

2.7.6 Paragraph 81: *'Planning policies and decisions should help create the conditions in which businesses can invest, expand and adapt. Significant weight should be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development. The approach taken should allow each area to build on its strengths, counter any weaknesses and address the challenges of the future. This is particularly important where Britain can be a global leader in driving innovation [42], and in areas with high levels of productivity, which should be able to capitalise on their performance and potential.'*

'42 The Government's Industrial Strategy sets out a vision to drive productivity improvements across the UK, identifies a number of Grand Challenges facing all nations, and sets out a delivery programme to make the UK a leader in four of these: artificial intelligence and big data; clean growth; future mobility; and catering for an ageing society. HM Government (2017) Industrial Strategy: Building a Britain fit for the future.'

Open Space and Recreation

2.7.7 Paragraph 99: *'Existing open space, sports and recreational buildings and land, including playing fields, should not be built on unless:*

…b) the loss resulting from the proposed development would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location; or…'

Promoting Sustainable Transport

2.7.8 Paragraph 110: *'In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:*

a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;

b) safe and suitable access to the site can be achieved for all users;

c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code [46]; and

d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.'

'46 Policies and decisions should not make use of or reflect the former Design Bulletin 32, which was withdrawn in 2007.'

2.7.9 Paragraph 111: *'Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.'*

2.7.10 Paragraph 113: *'All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed.'*

2.7.11 Making Effective Use of Land 119*: 'Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. Strategic policies should set out a clear strategy for accommodating objectively assessed needs, in a way that makes as much use as possible of previously-developed or 'brownfield' land[47]'*

'47 Except where this would conflict with other policies in this Framework, including causing harm to designated sites of importance for biodiversity.'

Acheiving Well-Designed Places

2.7.12 Paragraph 130: *'Planning policies and decisions should ensure that developments:*

a) will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;

b) are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;

c) are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);

d) establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;

e) optimise the potential of the site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks; and

f) create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users[49]; and where crime and disorder, and the fear of crime, do not undermine the quality of life or community cohesion and resilience. '

'49 Planning policies for housing should make use of the Government's optional technical standards for accessible and adaptable housing, where this would address an identified need for such properties. Policies may also make use of the nationally described space standard, where the need for an internal space standard can be justified.'

2.7.13 Paragraph 134: *'Development that is not well designed should be refused, especially where it fails to reflect local design policies and government guidance on design[52], taking into account any local design guidance and supplementary planning documents which use visual tools such as design guides and codes. Conversely, significant weight should be given to:*

a) development which reflects local design policies and government guidance on design, taking into account any local design guidance and supplementary planning documents which use visual tools such as design guides and codes; and/or

b) outstanding or innovative designs which promote high levels of sustainability, or help raise the standard of design more generally in an area, so long as they fit in with the overall form and layout of their surroundings.'

'52 Contained in the National Design Guide and National Model Design Code.'

Protecting Green Belt Land

2.7.14 Paragraph 148: *'When considering any planning application, local planning authorities should ensure that substantial weight is given to any harm to the Green Belt. 'Very special circumstances' will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm resulting from the proposal, is clearly outweighed by other considerations.'*

2.7.15 Paragraph 150: *'Certain other forms of development are also not inappropriate in the Green Belt provided they preserve its openness and do not conflict with the purposes of including land within it. These are:*

a) mineral extraction;

b) engineering operations;

c) local transport infrastructure which can demonstrate a requirement for a Green Belt location;

d) the re-use of buildings provided that the buildings are of permanent and substantial construction;

e) material changes in the use of land (such as changes of use for outdoor sport or recreation, or for cemeteries and burial grounds); and…'

Planning for Climate Change

2.7.16 Paragraph 154*: 'New development should be planned for in ways that:*

a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and

b) can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.'

Planning and Flood Risk

2.7.17 Paragraph 159: *'Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.'*

2.7.18 Paragraph 163: *'If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3.'*

2.7.19 Paragraph 164: *'The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. For the exception test to be passed it should be demonstrated that:*

a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and

b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.'

2.7.20 Paragraph 165: *'Both elements of the exception test should be satisfied for development to be allocated or permitted.'*

2.7.21 Paragraph 167: *'When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment[55]. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:*

a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;

b) the development is appropriately flood resistant and resilient;

c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;

d) any residual risk can be safely managed; and

e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.'

'55 A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.'

Conserving and Enhancing the Natural Environment

2.7.22 Paragraph 174*: 'Planning policies and decisions should contribute to and enhance the natural and local environment by:*

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;

c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.'

Habitats and Biodiversity

2.7.23 Paragraph 180*: 'When determining planning applications, local planning authorities should apply the following principles:*

a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons58 and a suitable compensation strategy exists; and

d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.'

2.7.24 Paragraph 182. *'The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.'*

Ground Conditions and Pollution

2.7.25 Paragraph 185: *'Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:*

a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life[65];

b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and

c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'

'65 See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010).'

2.7.26 Paragraph 186*: 'Planning policies and decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications. Planning decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local air quality action plan.'*

Conserving and enhancing the historic environment

2.7.27 Paragraph 190: *'Plans should set out a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. This strategy should take into account:*

a) the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;

b) the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;

c) the desirability of new development making a positive contribution to local character and distinctiveness; and

d) opportunities to draw on the contribution made by the historic environment to the character of a place.'

3 References

Building Better, Building Beautiful Commission (2020) Living with Beauty: Promoting Health, Wellbeing and Sustainable Growth. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/861832/Living_with_beauty_BBBBC_report.pdf

Department for Transport (2013) Aviation Policy Framework, March 2013. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/153776/aviation-policy-framework.pdf

Department for Transport (2015) National Policy Statement for National Networks. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/387223/npsnn-web.pdf

Department for Transport (2018a) Airports National Policy Statement: New Runway Capacity and Infrastructure at Airports in the South East of England. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/714106/airports-nps-new-runway-capacity-and-infrastructure-at-airports-in-the-south-east-of-england-web-version.pdf

Department for Transport (2018b) Aviation 2050 – The Future of UK Aviation: A Consultation. [Online] Available at: https://www.gov.uk/government/consultations/aviation-2050-the-future-of-uk-aviation

HM Government (2018a) Beyond the Horizon: The Future of UK Aviation. Making Best Use of Existing Runways. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/714069/making-best-use-of-existing-runways.pdf

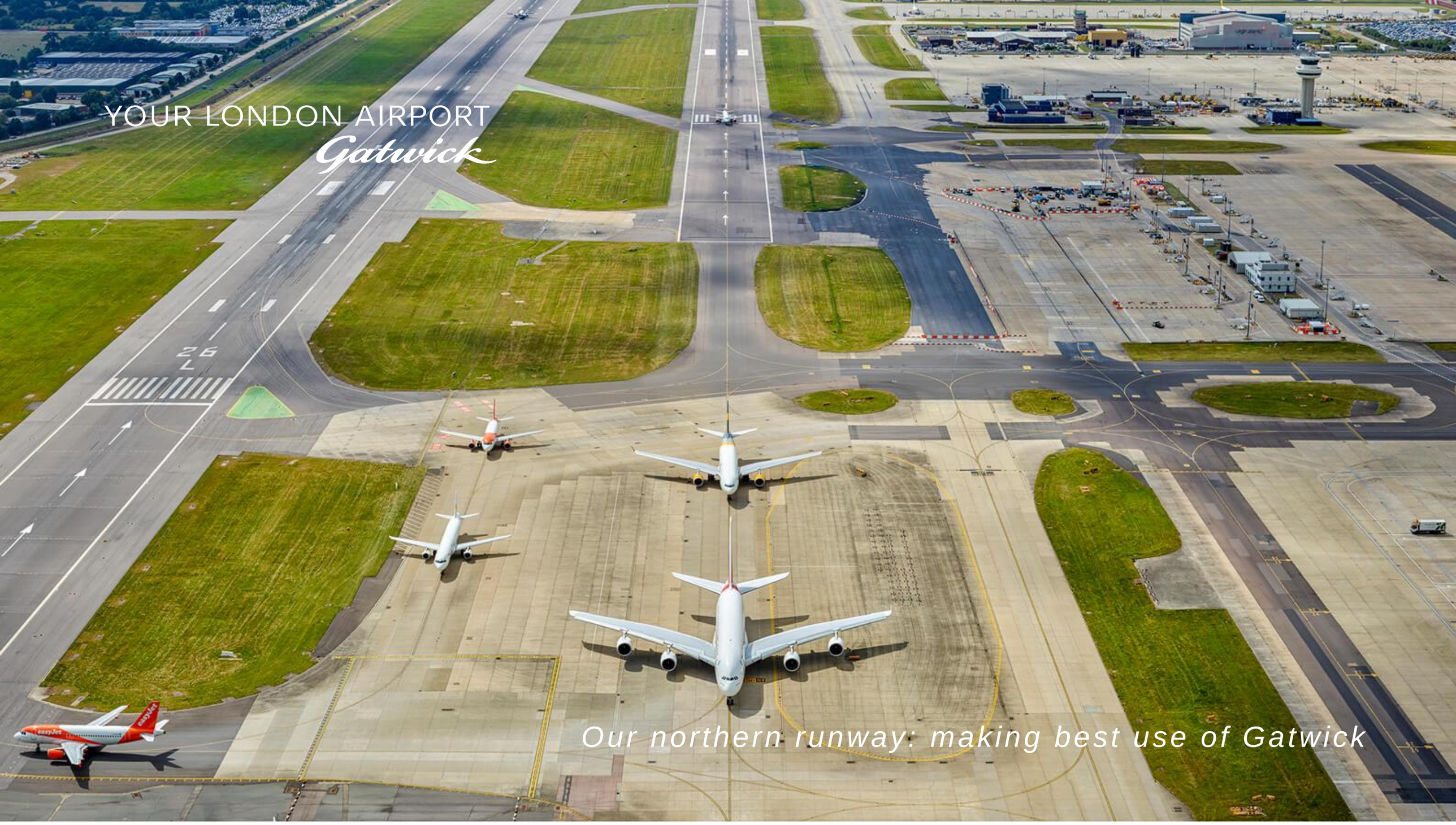
Ministry of Housing, Communities and Local Government (2021a) National Planning Policy Framework (NPPF). [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

Ministry of Housing, Communities and Local Government (2021b) National Planning Policy Framework and National Model Design Code: Consultation proposals. [Online] Available at:

https://www.gov.uk/government/consultations/national-planning-policy-framework-and-national-model-design-code-consultation-proposals

4 Glossary

Term	Description
AQMA	Air Quality Management Area
CAA	Civil Aviation Authority
DCO	Development Consent Order
EIA	Environmental Impact Assessment
EU	European Union
FRA	Flood Risk Assessment
GAL	Gatwick Airport Limited
ICAO	International Civil Aviation Authority
NPPF	National Planning Policy Framework
NPS	National Policy Statement
PEIR	Preliminary Environmental Information Report
SSSI	Site of Special Scientific Interest
Sustainable Drainage System	SuDS
UFP	Ultrafine Particles
UK	United Kingdom



Our northern runway: making best use of Gatwick

Preliminary Environmental Information Report
Appendix 3.3.1: Key Requirements for Optioneering

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 3.3.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the key requirements for optioneering for the Project.

2 Key Requirements for Optioneering

2.1 Key Requirements

Table 2.1.1: Key Requirements

Consideration	Requirement
Runways	
Safety	All options would need to comply with European civil aviation rules and regulations (European Union Aviation Safety Agency (EASA)) and international standards and recommended practices (International Civil Aviation Organization (ICAO)).
Capacity	All options would need to provide for sufficient capacity for 75.6 mppa.
Resilience	All options would need to ensure operational resilience. This enables continued operations in the event of disruption, eg adverse weather conditions, aircraft emergencies, pavement and/or infrastructure failures, as well as routine maintenance.
Environment	Options would reduce land take and avoid the removal of habitats where possible.
Taxiways (including End Around and Rapid Exit Taxiways)	
Capacity	All options should facilitate 70+ATMs / hour throughput on the airfield considering a varied mix of aircraft types and arrival / departure split.
Resilience	All options should provide sufficient choice of exits for the mix and capability of the aircraft fleet being serviced, to allow full capacity to be delivered in a variety of operational conditions.
Operations	All options should ensure there would be no single points of failure on the taxiway network, ie there should be no part of the taxiway system which, if it fails, would stop the entire system from working. All options should not constrain the runway operations.
Design Flexibility	All options should enable connectivity between all aprons and all runway ends, in all modes of operation.
Environment	Options would reduce land take and avoid the removal of habitats where possible. Consideration would be given to the location of taxiways within the airfield in relation to human.
Aircraft Holding Areas	
Capacity	All options must be capable of providing no fewer than 16 intermediate holding positions.
Operations and accessibility	All options must ensure they are compatible with dual and single runway operations, must minimise impact on taxiway and runway traffic flow and must not infringe on runway safeguarded areas.
Environment	Options would reduce land take and avoid the removal of habitats where possible. Consideration would be given to the location of holding areas within the airfield in relation to human receptors.
Terminals	
Operations	All options would need to be designed to allow for efficient operation of the airport, including considerations of accessibility.
Piers	
Safety	Options would need to be designed in accordance with EASA and ICAO.
Capacity	Options would need to provide for a capacity that allowed for up to 75.6 mppa.
Resilience	Options would need to cognisant of flood modelling and apply appropriate mitigation, meet GAL Technical Standards and meet appropriate building control compliance.
Environment	Options would reduce land take where possible.
Hangars	
Capacity	All options should provide for an area capable of facilitating a Boeing 777-9X hangar and providing the necessary manoeuvring space estimated to be 2.5 hectares in area. All options should provide direct access to the operational apron.
Environment	Options would reduce land take and avoid the removal of habitats where possible. Consideration would be given to the location of hangars within the airfield in relation to human receptors.
Offices	
Accessibility	All options would need to be in convenient locations, easily accessible by all transport modes and the terminals.
Design	All options would need to be capable of providing space for up to 9,000 m^2 of additional office space.
Environment	Options would reduce land take and avoid the removal of habitats where possible. Consideration would be given to the location of the infrastructure in terms of access, visual impact, flood risk, archaeology and community.
Hotels	
Operations and Accessibility	All options would need to be in convenient locations, easily accessible by all transport modes.

Consideration	Requirement
Capacity	Ideally one hotel to serve the north terminal and one hotel to serve the south terminal to balance the demand.
Environment	Options would reduce land take and avoid the removal of habitats where possible. Consideration would be given to the location of the infrastructure in terms of access, visual impact, flood risk, archaeology and community.
Car Parks	
Capacity	Car parks should allow for the maximum potential capacity of spaces within the identified footprint (taking into account constraints such as height restrictions, product viability etc).
Operations and Accessibility	Any options should to be located within the existing airport boundary.
Design	Car parks should allow for efficient transfer to terminals and employment locations, to minimise the volume of vehicle traffic around the airport.
Cost	All costs should be considered to meet the standard cost per built space used for MSCPs and decking (based on current projects in delivery).
Environment	Options would reduce land take and avoid the removal of habitats where possible. Consideration would be given to the location of the infrastructure in terms of access, visual impact, flood risk, archaeology and community.
Foul Water	
Compliance	Options must not result in an increase in flood risk to any receptor in accordance with the ANPS direction to meet the requirements of the National Planning Policy Framework with respect to flood risk.
Cost	All options must represent an affordable and viable solution. Options should also seek to minimise on-going operational costs.
Stakeholder	Guidance from Thames Water on likely restrictions of capacity at Horley treatment works.
Environment	Options would reduce land take and avoid the removal of habitats where possible. Consideration would be given to the location of the infrastructure in terms of disruption to highways/other infrastructure and flood risk.
Surface Water Drainage	
Compliance	Options must not result in an increase in flood risk to any receptor in accordance with the Airports National Policy Statement (Department for Transport, 2018) direction to meet requirements with respect to flood risk.
Cost	All options must represent an affordable and viable solution. Options should also seek to minimise on-going operational costs.
Environment	Options must not result in an increase in flood risk to any receptor. Consideration would be given to the value habitats affected by the options and the effect on upstream/downstream reaches of watercourses. Consideration would also be given to the potential for buried archaeology and visual impacts.
Fluvial Flood Risk Management	
Compliance	Options must not result in an increase in flood risk to any receptor in accordance with the Airports National Policy Statement (Department for Transport, 2018) direction to meet requirements with respect to flood risk and take into account the requirements of the Water Framework Directive (WFD).
Cost	All options must represent an affordable and viable solution. Options should also seek to minimise on-going operational costs.
Environment	Options must not result in an increase in flood risk to any receptor. Consideration would be given to the value habitats affected by the options and the effect on upstream/downstream reaches of watercourses. Consideration would also be given to the potential for buried archaeology and visual impacts.
Waste Management Facilities	
Operations	Options would need to be designed to allow for efficient operation of the airport, including considerations of waste flow and vehicle routing across the site.
Capacity	All options would need to provide for a waste capacity that meets the demands of 75.6 mppa.
Design	All options are to be designed to 'tie in' and be in keeping with the design of the existing airport, be forward thinking (innovative) to support delivery of Gatwick Airport's Sustainability Policy and align with the Governments Waste Management Strategy (Department for Environment, Food and Rural Affairs, 2018).
Environment	Options would reduce land take and avoid the removal of habitats where possible. Consideration would be given to the location of the infrastructure in terms of access, visual impact, flood risk, archaeology and community.
Rail Access	
Operations	All options would need to be designed to allow for efficient operation of the airport, including considerations of accessibility.
Capacity	All options would need to provide for a capacity that allowed for an increased mode share in line with targets and airport growth up to 75.6 mppa.
Cost	All options allow for efficiency to minimise costs in both construction and operation, including the value for money of any investment in third party assets.
Environment	Consideration on the disruption to rail and airport passengers and other airport operations.
Inter-Terminal Transit System (ITT)	
Capacity	Options would need to provide for a capacity up to 75.6 mppa and an increased rail mode share in line with targets.
Operations	Options would need to be designed to allow for efficient operation of the airport, including considerations of accessibility and passenger experience.
Resilience	Options should ensure there is sufficient resilience in the system to cope with variations in demand and availability.

Consideration	Requirement
Cost	Options allow for efficiency to minimise costs in both construction and operation, including the value for money of business decisions.
Other Environmental Impacts	Options should support use of sustainable modes of access and be consistent with an increase in rail mode share.
Environment	Consideration on the disruption to rail and airport passengers and other airport operations. Options would consider visual impacts to on and off airport receptors.
Construction Compounds (airfield and highways)	
Safety	Compound should be located as close as possible to the works to mitigate construction hazards and potential threats to airport operatives and passengers from the movement of vehicles and plant.
Cost	Sites should have access to existing services and utilities.
Site Area	Any option must provide at least 30,000 m^2 in area to provide the above. To deliver the works safely and efficiently, a minimum of two compounds are required – with one located north and the other south of the runways.
Community Impacts	Options would seek to avoid: ▪ congestion to the local roads; ▪ combustion to local communities due to HGV diesel powered engines; ▪ local air pollution such as particle matter from brake and tyre wear; ▪ emission of vehicle noise and light; ▪ damage to the local road infrastructure; ▪ given risks to the increase of accidents due to additional traffic.
Environment	Options would reduce land take and avoid the removal of habitats where possible. Consideration would be given to the location of the infrastructure in terms of disruption to highways/other infrastructure as well as flood risk, archaeology, visual and agriculture/recreation.

3 References

Department for Environment, Food and Rural Affairs (Defra) (2018) Resources and Waste Strategy

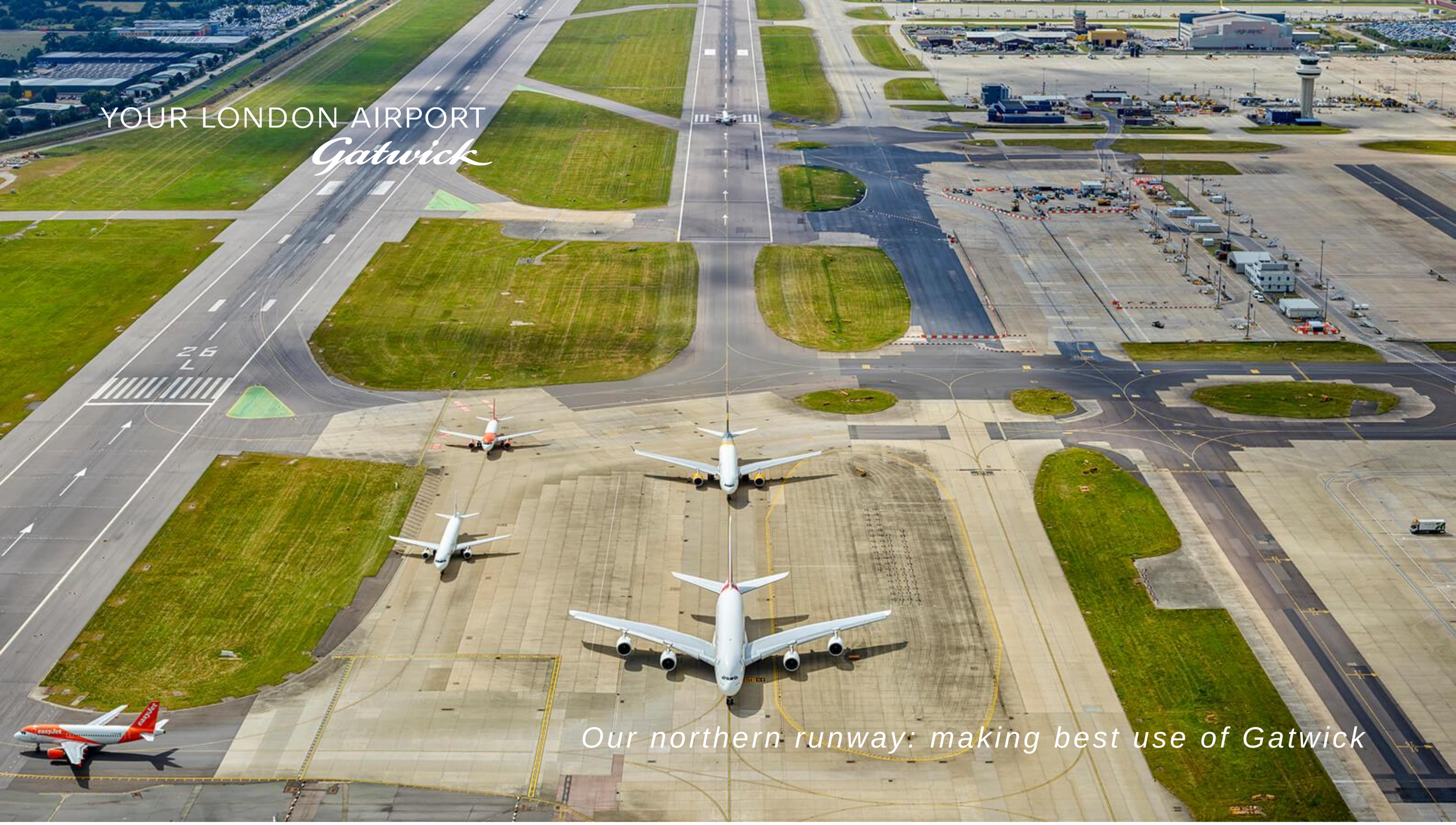
Department for Transport (2018) Airports National Policy Statement

4 Glossary

4.1 Glossary of terms

Table 4.1.1: Glossary of Terms

Term	Description
ATM	Air Transport Movement
EASA	European Union Aviation Safety Agency
EIA	Environmental Impact Assessment
GAL	Gatwick Airport Limited
ICAO	International Civil Aviation Organization
ITT	Inter-Terminal Transit System
mppa	Million passengers per annum
PEIR	Preliminary Environmental Information Report
WFD	Water Framework Directive



Preliminary Environmental Information Report
Appendix 4.3.1: Forecast Data Book

September 2021

Table of Contents

1 Introduction

1.1. Introduction

1.1.1 This document forms Appendix 4.3.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as the Northern Runway Project (or 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This data book presents air traffic and other forecasts that have been prepared for the purpose of assessing the economic, environmental and social impacts of the Project.

1.1.3 For the purposes of the assessment, two scenarios (or cases) have been formulated.

1) Existing Runway Case – assumes continued growth of Gatwick Airport based on continued use of Gatwick's existing main runway (referred to as the **'Baseline'** or **'Base' Case**)

2) Northern Runway Project Case - making best use of Gatwick's two existing runways - by bringing Gatwick's existing northern (standby) runway into operation alongside the existing main runway and operating the two runways simultaneously (referred to as the **'Northern Runway Case'**)

1.1.4 The Northern Runway Case represents the airport as it is expected to develop if development consent is granted for the Project.

1.1.5 The Baseline Case represents the airport as it is expected to develop if development consent is not granted for the Project. In this case, some further growth in airport passengers and air traffic movements would still occur on the existing runway in the years ahead, but not as much growth as would occur under the Northern Runway Case.

1.1.6 The following sections provide an overview of Gatwick's recent performance alongside wider market conditions, as well as providing insight on the future drivers and assumptions that relate to these forecasts.

2 Implications of COVID-19 Pandemic

2.1.1 The COVID-19 pandemic had a very severe impact on the global aviation industry in 2020. Gatwick, along with all other UK airports, experienced a significant reduction in passenger traffic levels as a result of both Government-imposed restrictions on air travel and reduced passenger demand driven by low consumer confidence. UK passenger volumes for the calendar year 2020 were 75% down on volumes for 2019 (75 mppa[1] v 300 mppa), with passenger numbers at Gatwick falling from 46.6 mppa in 2019 to 10.2 mppa in 2020. It is expected that Government travel restrictions will continue to have an impact on passenger demand and traffic levels throughout 2021, but that by the end of 2021 traffic levels will be starting to recover.

2.1.2 Beyond this, whilst recognising the current market uncertainty and potential structural impacts around business travel, the pandemic is not expected to alter consumer behaviours in a way that will have a significant permanent impact on the long-term demand for air travel. Therefore, it is expected that overall demand for air travel will recover to previous levels as consumer behaviours return and are driven by factors such as global and UK economic growth, disposable income, consumer confidence and the relative cost of air travel.

2.1.3 While the immediate outlook therefore remains challenging, there is confidence that passenger and airline demand at Gatwick will return to previous levels over the course of the next few years and then continue to grow thereafter.

2.1.4 Overall, the updated forecasts presented in this data book predict that it will take approximately five years for passenger traffic at Gatwick to return to levels seen in 2019 and that by the end of the 2020s, passenger levels at Gatwick will have returned broadly to where they would have been had the pandemic not occurred. This reflects the combination of ongoing capacity constraints already experienced before and during 2019 and underlying market growth across the London system. For example, Gatwick has been operating very close to its full potential in the peak summer months for several years. Gatwick's slot capacity has been oversubscribed for many years with significant levels of unmet demand from a range of airlines and business models.

3 Implications of Heathrow's Third Runway

3.1.1 An important factor that will affect the level of air traffic at Gatwick in the future is whether a third runway is brought forward at Heathrow (Heathrow R3).

3.1.2 National policy, as set out in the Airports National Policy Statement (NPS) (Department for Transport, 2018), supports the construction of Heathrow R3, and when it was published expected the new runway to be provided by 2030.

3.1.3 Since its designation, the Airports NPS has been subject to numerous legal challenges. In February 2020, the Court of Appeal ruled that the designation of the NPS was unlawful and its effect was suspended pending further Government action. In December 2020, however, the Supreme Court overturned the Court of Appeal's earlier judgement, ruling that the designation of the NPS was lawful, so reinstating its effect as Government policy.

3.1.4 During 2020, as a result of the COVID-19 pandemic, Heathrow Airport Holdings Ltd (HAHL) – the owner and operator of Heathrow and the promotors of R3 - suspended the work it had been doing to seek development consent for R3.

3.1.5 Following the Supreme Court ruling, HAHL has indicated that it will now be consulting with investors, government, airline customers and regulators on its next steps. HAHL has not provided any timeframe for recommencing its process for seeking development consent. Even if HAHL does restart the consenting process, it is considered unlikely that R3 could be operational much before the early / mid-2030s.

[1] mppa, million passengers per annum

3.1.6 Notwithstanding the Supreme Court judgement there is, therefore, still very significant uncertainty surrounding when, or indeed if, a third runway will now be developed at Heathrow.

3.1.7 The environmental studies undertaken by Gatwick in 2019 in support of the Project, prior to the pandemic, had assumed that the Gatwick northern runway would open in 2026, and that Heathrow R3 would open in 2030. Circumstances have now changed and revised forecasts have accordingly now been prepared.

3.1.8 Due to delays arising as a result of the COVID pandemic, Gatwick's northern runway is now assumed to open in 2029, three years later than originally presented. Due to uncertainty regarding when, or if, Heathrow R3 will come forward, the forecasts are now based on a 'no Heathrow R3' scenario. This approach is considered robust as it provides a realistic worst case assessment of the environmental impacts of the Project. This is because if Heathrow R3 was to come forward, traffic levels at Gatwick would be likely to decline in the period immediately following the opening of R3 and this would mean that the environmental impacts of the Project, including in relation to noise, traffic and emissions, may have been understated were Heathrow R3 to have been included in the future baseline.

3.1.9 However, as Heathrow R3 remains Government policy, it is considered within the PEIR as a cumulative development (where appropriate), in line with other proposed developments, based on the information available at this time. As GAL progresses its work and prepares its final documents, including the formal Environmental Statement in support of development consent, the status and information available regarding Heathrow R3 will be considered and taking this into account, the approach to forecasting scenarios will be kept under review.

3.1.10 Section 4 explains the basis for the updated forecasts.

4 The Basis of the Updated Forecasts, Assessment Cases and Assessment Years

4.1. Realistic Forecasts

4.1.1 Whilst there is inherent uncertainty in predicting long term aviation growth, the forecasts presented have been prepared jointly by GAL's in-house airline relations and marketing and research teams and ICF, one of the UK's foremost experts in air traffic forecasting.

4.1.2 In preparing the forecasts, regard has been had to the importance of having a realistic view of the level and characteristics of air traffic growth that would occur at Gatwick, whilst also ensuring that the environmental impacts of Gatwick's growth, some of which, such as noise, traffic and carbon, rely heavily on the forecasts, are not understated. This also accords with advice from the Planning Inspectorate to ensure that realistic 'worst case' environmental impacts are understood. For this reason, the forecasts presented are considered to represent a robust and realistic view of the level of traffic growth but are likely to be towards the upper end of the levels of growth that could occur at Gatwick in the Baseline and Northern Runway cases.

4.2. Opening Date of Northern Runway Project

4.2.1 Gatwick's Northern Runway Project is now being planned to be open in 2029.

4.3. Heathrow R3 Assumption for Northern Runway Project

4.3.1 As set out in Section 3, given the continuing uncertainty surrounding Heathrow R3, careful consideration has been given to the most robust assumption to be made in the traffic forecasts and environmental studies for Gatwick about Heathrow R3. It has been decided that the most robust assumption to adopt, at least for the purpose of preparing the PEIR, is to assume that a third runway does not come forward at Heathrow.

4.3.2 This approach is considered robust as it provides a realistic worst case assessment of the environmental impacts of the Project. This is because if Heathrow R3 was to come forward, traffic levels at Gatwick would be likely to decline in the period immediately following the opening of R3 and this would mean that the environmental impacts of the Project, including in relation to noise, traffic and emissions, may have been understated were Heathrow R3 to have been included in the future baseline.

4.3.3 The forecasts prepared by GAL for the Northern Runway and Baseline cases therefore adopt a 'No Heathrow R3' assumption.

4.3.4 As GAL progresses its work and prepares its final documents, including the formal Environmental Statement in support of development consent, the status and information available regarding Heathrow R3 will be considered and taking this into account, the approach to forecasting scenarios will be kept under review.

4.4. Northern Runway Project Assessment Cases

4.4.1 The assessment cases for the Project are therefore as follows:

- Existing Runway Case – assumes continued growth of Gatwick Airport based on continued use of Gatwick's existing main runway (referred to as the **'Baseline'** or **'Base' Case**)
- Northern Runway Project Case - making best use of Gatwick's two existing runways - by bringing Gatwick's existing northern (standby) runway into operation alongside the existing main runway and operating the two runways simultaneously (referred to as the **'Northern Runway Case'**)

4.5. Assessment Years

4.5.1 In respect of each of these two cases, forecasts have been prepared for four primary assessment years – 2029, 2032, 2038 and 2047:

- 2029: represents the opening year of the Project (and therefore the first point at which effects arising from its operation would occur).
- 2032: an interim assessment year.
- 2038: representing the year in which the development works as part of the Project would be completed.
- 2047: to meet a specific requirement of guidance in the Design Manual for Roads and Bridges to assess impacts 15 years after the last of the key highways works associated with the Project are due to be completed.

4.5.2 For operational effects, the PEIR assessment concentrates on the period 2029 to 2038, with modelling topics focussing on 2029, 2032 and 2038 as the primary assessment years. In addition, for some topics it is a requirement to assess the effects of the highways improvements 15 years after completion.

Therefore, for these topics, an assessment is provided for 2047, where appropriate. Therefore, forecasts for 2047 are included in this data book.

4.5.3 Forecasts are therefore set out in this data book for the following four 'design' years:

Cases	Design Years			
	Year 2029	Year 2032	Year 2038	Year 2047
Base Case	✓	✓	✓	✓
Northern Runway Case	✓	✓	✓	✓

4.5.4 Data are also presented for the year 2019 – the most recent full year of operations pre-COVID. Subsequent outputs are typically presented as annual numbers but represent financial years (eg where this data book quotes Year 2029, this represents forecasts for the financial year 2029/30).

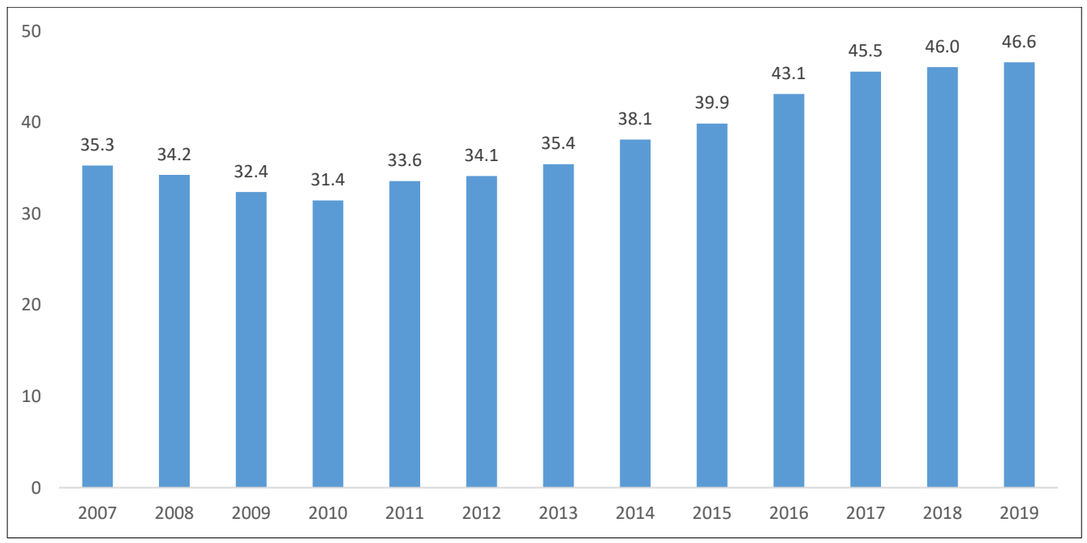
5 Recent Growth of Gatwick Airport Ltd

5.1. Introduction

5.1.1 Despite operating with a high degree of slot constraint, Gatwick has still been able to provide significant levels of growth in the years before the COVID-19 pandemic and, as explained above, GAL expects traffic to recover as the effects of the pandemic decline.

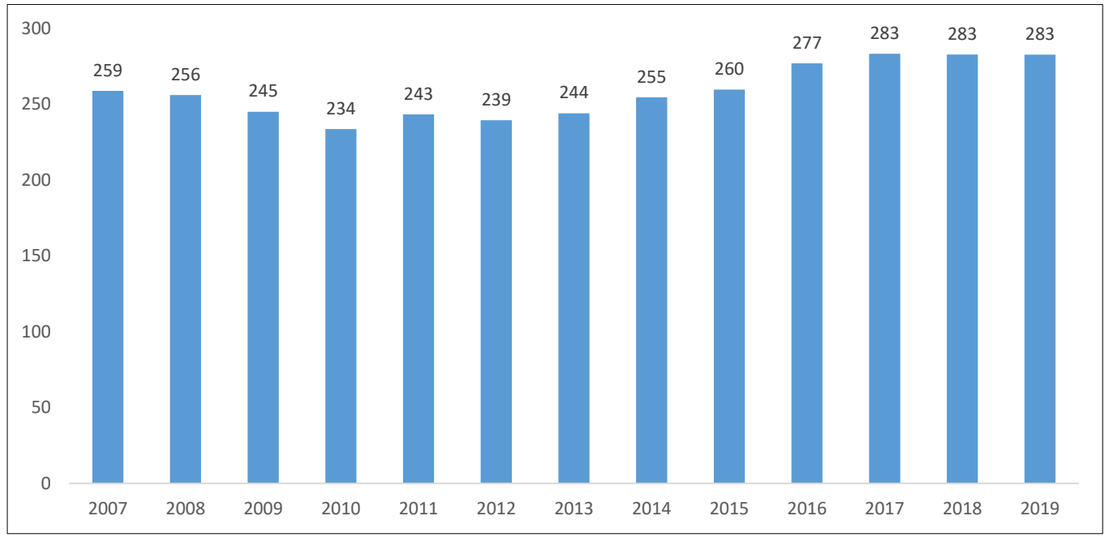
5.1.2 Over the last decade Gatwick has grown by over 14 million passengers, reaching 46.6 million in the most recent full year of operations (2019). This 44% growth in passengers resulted in a 15% growth in commercial air traffic movements (ATMs)[2] reflecting the larger and fuller aircraft now in operation.

Figure 5.1.1: Gatwick Airport Passengers (m)



Source: CAA Statistics

Figure 5.1.2: Gatwick Airport Commercial ATMs (000s)

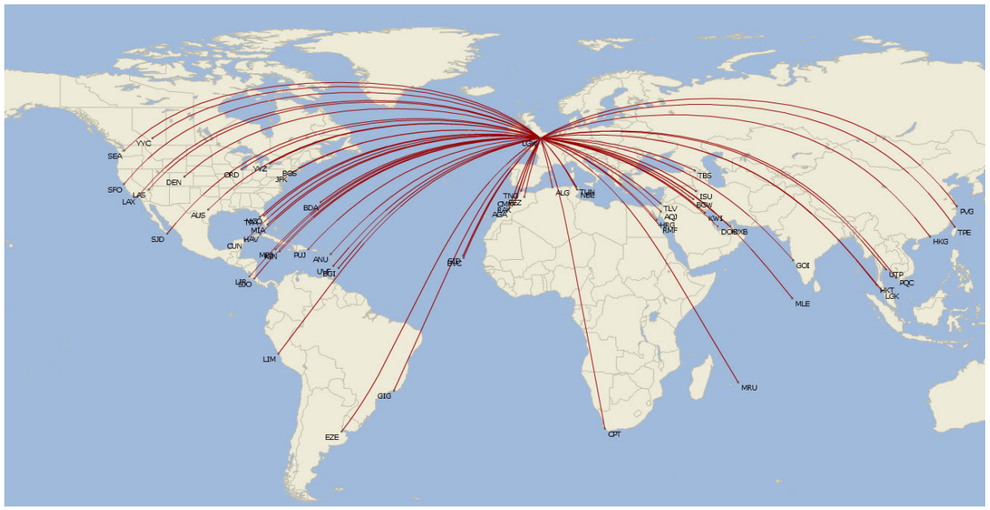


Source: CAA Statistics, Commercial (Passenger) ATMs

[2] Commercial air traffic movements (ATMs), or passenger ATMs, exclude non-commercial flights such as positioning flights and business aviation. In 2019, non-commercial flights accounted for approximately 1% of Gatwick's movements and are forecast to remain at about this level.

5.1.3 During this period, domestic volumes have remained relatively flat whilst over 10 million and 4 million passengers have been added in the short haul and long haul market categories respectively. The growth in short haul markets has been driven by ongoing growth from low cost carriers (LCCs)[3], which continue to account for a significant share of growth in the European aviation market. The long haul growth has been driven by many new intercontinental markets being added by a range of carriers (full service and LCCs) as Gatwick continues to expand its long haul connectivity.

Figure 5.1.3: Gatwick Routes (outside Europe)



Source: IATA Schedules, March 2020

5.1.4 Gatwick has also experienced several recent shocks, notably the relatively recent collapses of Monarch and Thomas Cook which have had short term impacts on Gatwick's traffic growth.

5.1.5 There have been three main drivers of growth over the past decade.

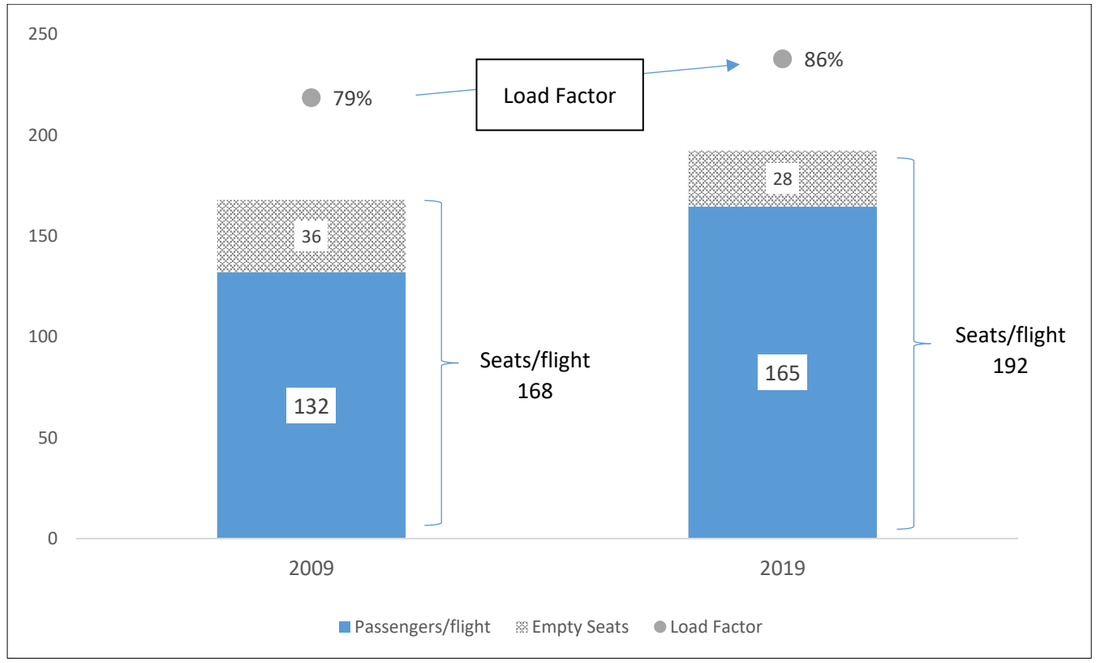
i) More passengers per flight: Average passengers per aircraft movement have grown from 132 in 2009 to 165 in 2019. This has been driven by higher load factors (the percentage of seats filled), and an increase in the average size (and therefore number of seats) of aircraft used.

ii) Peak spreading: There has been a change in the profile of flights over the year, with a higher level of growth in the traditionally quieter periods of the year. This 'peak spreading' makes use of spare capacity on the runway outside of peak months and leads to a higher level of annual utilisation of the existing assets on the airport. Gatwick is still busier in the summer months than the winter months and so there is further potential for this peak spreading to continue.

iii) Growth in peak runway capacity: The maximum number of scheduled aircraft movements that can be accommodated on the runway has grown from 53 an hour in 2012 to 55 an hour in 2019. This increase has allowed more flights, even during the busy summer period.

5.1.6 Growth in average loading and aircraft size is summarised in the following chart.

Figure 5.1.4: Gatwick Growth in Average Aircraft Size & Load Factor

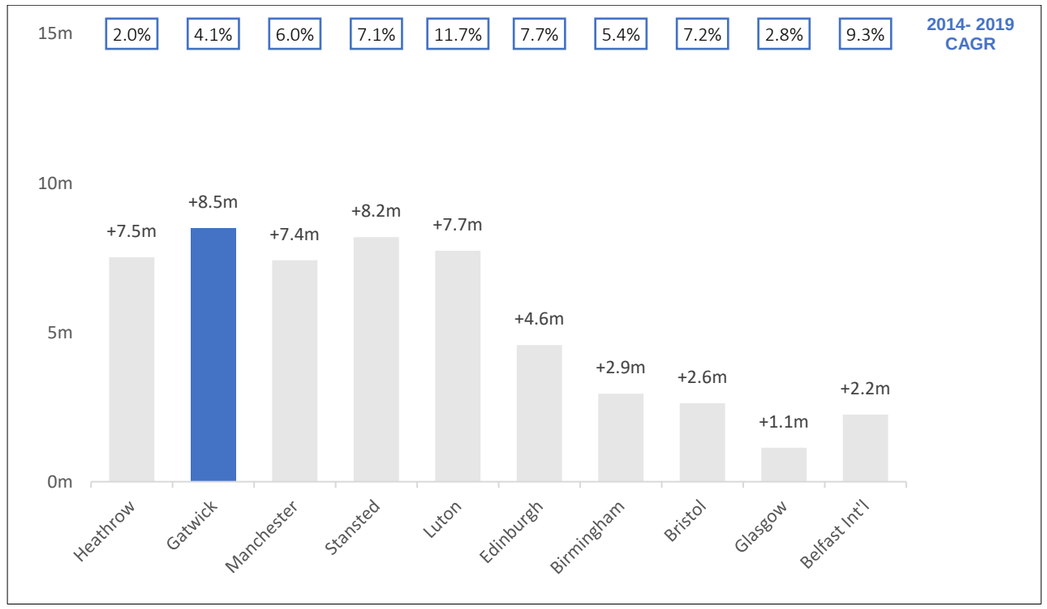


Source: CAA/GAL Statistics

5.1.7 Traffic growth has been supported by the continuing growth and diversification of airlines, including low cost carriers. Growth over the last five years (2014-2019) has averaged 4.1% per annum compared to the UK average of 4.5% over the same period. In 2019 Gatwick reached 46.6 million passengers and remained the second largest airport in the UK by passenger volume.

[3] LCCs = Low Cost Carriers (eg easyJet, Ryanair etc.)

Figure 5.1.5: Passenger Growth Comparisons, UK Market (Last 5 years: 2014 – 2019)

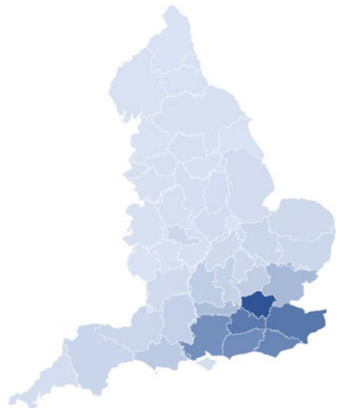


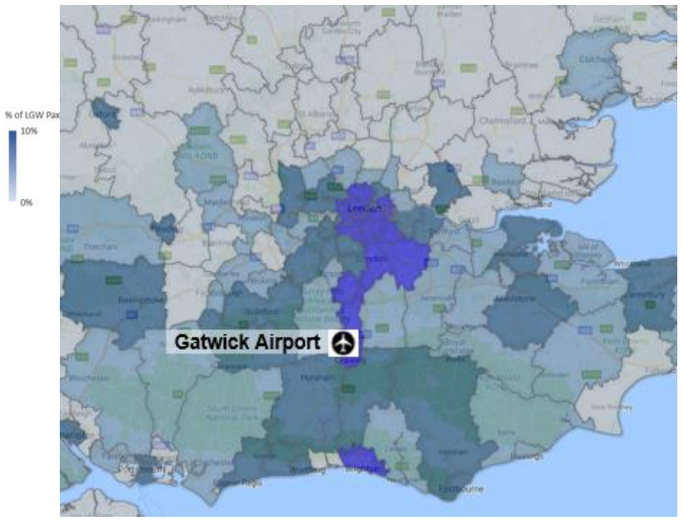
Source: CAA Statistics (Top 10 UK airports chosen based on passenger ranking in 2019)

5.2. Catchment Area

5.2.1 Gatwick's proximity to London and surface access links to the wider South East (and beyond) provide a wide catchment area. According to CAA Survey data, 81% of Gatwick's terminating passengers (ie excluding transfer passengers) were travelling to/from destinations in London or the South East. Greater London is the largest source market (42%), but the nearby counties Kent, Surrey and Sussex account for a further 27%. Of the 19% of passengers travelling to/from destinations outside of the South East, the majority were travelling to the East or South West of England.

Figure 5.2.1: Gatwick Catchment





Source: CAA Survey

6 UK Aviation Demand and Key Assumptions

6.1. Introduction

6.1.1 The UK airports handled a record 300 million passengers in 2019[4], of which the London airports[5] accounted for 181 million or 60% of total activity. Demand in the London system continues to post strong growth as over 34 million passengers have been added in just the last 5 years, representing a compound annual growth rate (CAGR) of 4.3%.

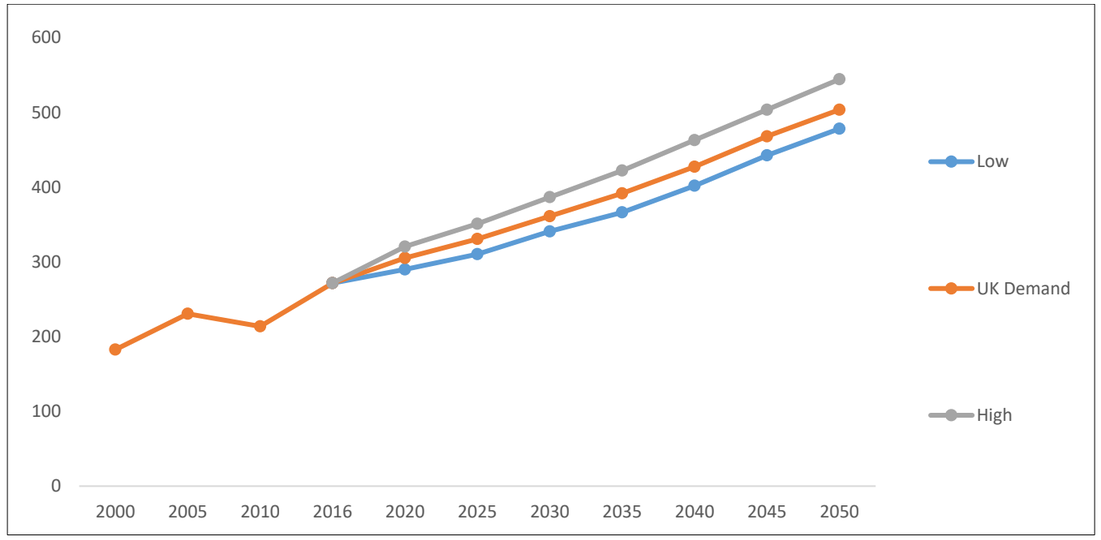
6.1.2 Some of this growth has come through up-gauging (larger) aircraft and higher load factors (seat occupancy rates), as during the same period aircraft movements grew at a rate of 2.5%.

6.1.3 The latest demand forecasts from the UK DfT[6] indicate that demand will continue to grow at around 1.7% in the long term (2016-2050). This period will therefore see demand increase by an additional 230 million passengers across the UK's airports.

[4] UK CAA Statistics for aviation activity
[5] London Airports (LHR, LGW, STN, LTN, LCY, SEN)

[6] UK DfT Forecasts October 2017

Figure 6.1.1: UK Aviation Passenger Demand Forecast (million)



Source: CAA, DfT UK Aviation Forecasts, 2017 (Note: re-based to include all UK airports)

6.1.4 Recent short-term performance prior to COVID-19 has already outperformed the DfT's projection. Annual growth rates since 2016 have been stronger than forecast (3.4% vs 2.8%[7]) resulting in demand already being at least one year ahead of the DfT's central case forecast.

6.1.5 The DfT assumes an annual capacity limit of 200 million[8] passengers for the London airports which is just 19 million above the annual throughput in 2019. Heathrow and Gatwick are already assumed 'full', whilst Luton is now operating at its planning limit. By 2030 an additional 50 million+ passengers are forecast in the London market which will be far in excess of the current available capacity, indicating significant need for capacity development.

6.2. Capacity at Other London Airports

6.2.1 In this section some of the other capacity developments within the London airport system are set out, that are assumed in the forecasts. Over the next 10 years a wide range of outcomes potentially exist, reflecting the range of capacity developments being sought as well as the likelihood of their approvals.

Heathrow

6.2.2 As has been noted in Sections 3 and 4 above, the effect of national policy support for the third runway at Heathrow has recently been reinstated, but there remains significant uncertainty surrounding when, or indeed if, a third runway will become operational.

6.2.3 In addition to these growth prospects, demand at Heathrow will continue to grow, reflecting larger and fuller aircraft as demand was approaching 81 mppa in 2019, up from 73 mppa just 5 years ago[9].

6.2.4 As set out above, the forecasts assume a third runway is not brought forward. The reasons why this approach has been adopted is described in Section 4.3 above.

6.2.5 During the next stage of its work, GAL will consider the information available and status of the potential 3rd runway at Heathrow. As GAL progresses its work and prepares its final documents, including the formal Environmental Statement in support of development consent, the status and information available regarding Heathrow R3 will be considered and taking this into account, the approach to forecasting scenarios will be kept under review.

Other Airports

6.2.6 Aside from Heathrow, other London airports have also revealed growth plans to develop beyond today's current capacity and planning limits.

- Stansted has been granted planning permission to increase its planning cap to allow growth to 43 mppa.
- An application for development consent is being progressed for growth at Luton. Its forecasts predict that it could handle 32 million passengers per year by 2038 should its current planning cap of 18 million passengers be lifted and development consent granted to support this growth.
- London City Airport as part of their development programme is seeking to increase their current planning cap of 6.5 million passengers or 111 k flights.
- Southend is also pursuing expansion plans. Whilst accounting for around 2.0 mppa in the London market (in 2019), they have plans to grow this over the next five years.

6.2.7 With the exception of Stansted, these plans do not currently have approval, whilst the planning permission granted for passenger growth at Stansted is currently the subject of a legal challenge. There is therefore little that can be concluded about these plans with any degree of certainty. Further, Gatwick Airport is, to a large extent, isolated from the impact of these plans. This is because growth at these other airports would not have any material effect on forecasts at Gatwick due to their much smaller share of London market. In contrast, Gatwick is firmly established as one of the top two airports for serving the London system as demonstrated both by the over-subscription of its slot capacity and by the sizeable long haul component.

6.2.8 Geographically, Gatwick also serves a mostly distinct catchment area when compared to Stansted, Luton and Southend, resulting in a relatively small amount of overlap in outbound (ie UK originating) markets. There is more overlap in inbound markets where a large proportion of passengers are travelling to central London destinations, but here Gatwick has the advantage of faster transport links to the centre than these other airports.

Night Flight Regime

6.2.9 In preparing these forecasts, GAL has assumed that the existing controls on night flying, as set out in the Government's 2017 Night Flight Restrictions for Heathrow, Gatwick and Stansted, which cover the period to 2022, will continue to be carried forward, with no changes to the current regime for Gatwick. This

[7] 3.4% for period 2016-2019
[8] 200m considered limit in 2030 (SEN added to DfT LON total)
[9] HAL Statistics, 73.4m in 2014.

assumption aligns with proposals set out in the Government's most recent consultation on night flying restrictions, which will establish the controls and limits until 2024[10].

6.3. Market Outlook

6.3.1 Early in 2020, the COVID-19 pandemic spread worldwide. Like other industries, aviation has been significantly impacted having experienced dramatic drops in traffic, activity and revenues threatening the viability of many companies.

6.3.2 Up until the impact of COVID-19 the UK had continued to witness strong growth across the aviation market supported by ongoing macro-economic and supply/demand side factors.

6.3.3 In the short-medium term there is expected to be significant uncertainty relating to market demand arising through a combination of travel restrictions and the underlying market demand. In the longer term the demand for aviation is expected to return to previous drivers of demand including a country's economic performance (including gross domestic product (GDP) per capita, disposable incomes, etc.) and airline strategy.

7 Gatwick's Growth With and Without the Northern Runway Project

7.1. Introduction

7.1.1 Even without any further capacity developments, it is clear that Gatwick will continue to experience further growth. Firstly, demand across Gatwick's core and wider catchment is forecast to grow in line with wider UK aviation projections of around 1.7% per annum in the long term. Secondly, the ongoing supply side trends highlighted earlier, including larger and fuller aircraft whilst making better use of the runway, will continue to deliver increased annual throughput.

7.2. Baseline Growth to 62 mppa in 2038 and 67 mppa in 2047

7.2.1 In the Baseline Case, (ie without the Northern Runway Project), it is estimated that Gatwick will be able to handle approximately 318,000 commercial ATMs in 2038, reflecting an increase of around 10% compared to the 2019 throughput. This increase in movements will be achieved through better year-round slot utilisation and further capacity release, whilst up-gauging (the use of larger aircraft) and load factor growth will also support higher passenger volumes. These trends include the impact of changes in the market mix at Gatwick, for example growth in long haul markets (larger aircraft types and less seasonal operations) and reductions in seasonal charter traffic. Beyond 2038 modest growth is assumed as approximately 326,000 commercial annual ATMs are assumed in 2047, reflecting modest improvements in capacity utilisation.

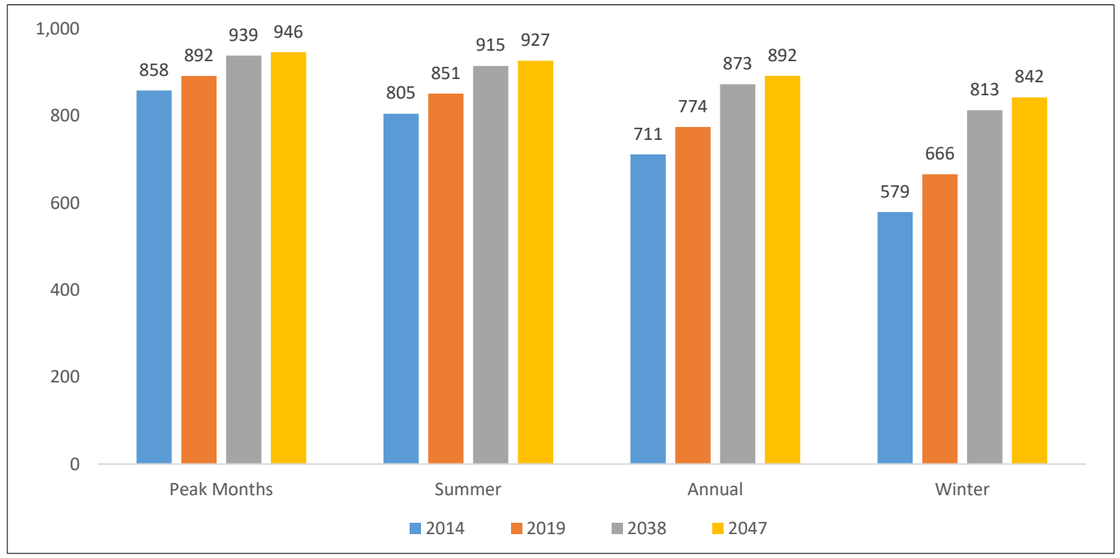
7.2.2 Growth in the Baseline Case from the current 46.6 mppa to the future forecast of 62.4 mppa in 2038 and 67.2 mppa in 2047 is anticipated to come from three main and well-established factors, set out below.

1. Growth in Runway Utilisation in Off Peak Periods

7.2.3 In the busy summer months (July, August and September), Gatwick is often already operating at, or close to, its peak capacity. In the Baseline Case GAL is anticipating only modest growth during this period as daily commercial ATMs are forecast to increase by 4% from an average of around 900 in 2019 to 939 in 2038 and to 946 in 2047.

7.2.4 For the total summer season (Apr-Oct), daily commercial ATMs are forecast to increase 7% from an average of 851 in 2019 to 915 in 2038 and to 927 in 2047. In contrast, the less utilised winter period is forecast to increase from an average of 666 in 2019 to 813 daily commercial ATMs in 2038 and to 842 by 2047. By 2038, this represents an increase of 22% versus 2019. By comparison, Gatwick's winter utilisation has increased by 15% in just the last 5 years as daily commercial ATMs have grown from 579 to 666.

Figure 7.2.1: Gatwick Daily Movement Growth – Base Case



Source: CAA Commercial/Passenger ATM Statistics

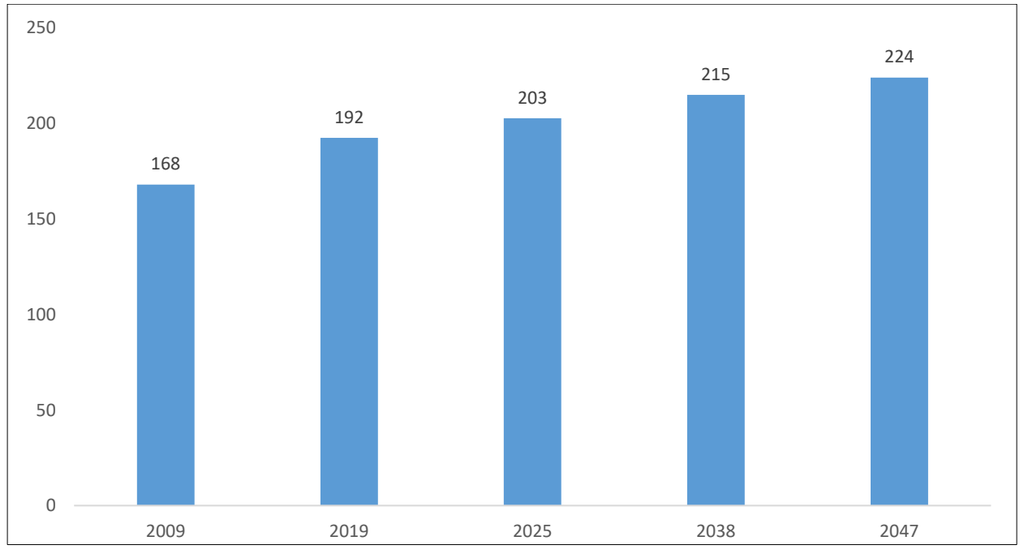
7.2.5 The increase in runway utilisation during off peak periods will result in annual traffic profiles flattening as demand spreads to the less utilised periods of the year, although some seasonality would remain. In 2038, busy month commercial ATMs are forecast to be 7% higher than the annual average compared to 17% in 2019 and 23% in 2014.

2. Up-gauging of Fleet over Time to Larger Aircraft

7.2.6 The second important and year-round factor that will drive passenger growth is the trend for airlines to up-gauge their fleets with larger aircraft. Seats per ATM are expected to increase from an average of 192 in 2019 to 215 by 2038 and to 224 in 2047, as shown in the charts below.

[10] https://www.gov.uk/government/consultations/night-flight-restrictions-at-heathrow-gatwick-and-stansted-airports-between-2022-and-2024-plus-future-night-flight-policy/night-flight-restrictions

Figure 7.2.2: Average Seats per ATM - Base Case



Source: CAA/GAL Statistics

7.2.7 Two good examples of this can be seen in Gatwick's two largest airlines easyJet and British Airways - which currently account for over 60% of Gatwick's passengers.

7.2.8 For example, easyJet is moving towards A320 and A321 aircraft (with 186 seats and 235 seats respectively) from current A319 (156 seats) and the A320 fleet (previously 180 seats). Similarly, British Airways is continuing to 'densify' its Boeing 777 fleet alongside longer term fleet replacement plans for their short haul fleet (eg the B777 densification will result in seat configurations growing from 220/275 to 232/336) which will result in significant increases in average seats per aircraft[11].

7.2.9 New long haul markets and the usage of Boeing 787s (often replacing 757/767) and Airbus A350s entering airline fleets are other examples of airlines up-gauging.

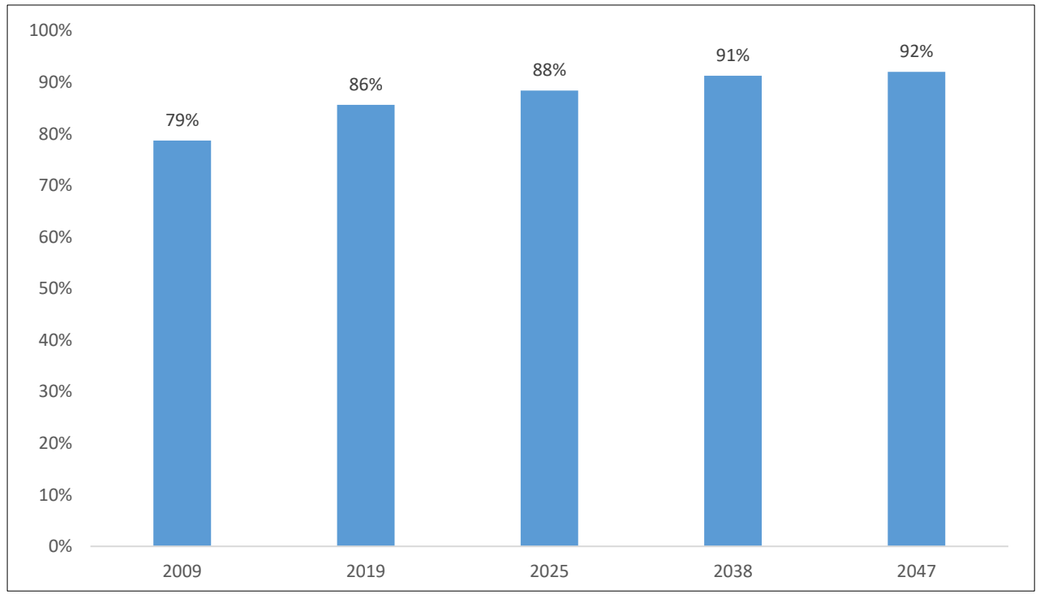
7.2.10 The above changes are already underway for easyJet and British Airways and other large carriers such as Tui and it is realistic to assume this would continue, especially as new slot capacity at UK airports continues to become scarcer and the UK aviation market demand continues to grow.

3. Higher Average Load Factors

7.2.11 Allied to the increase in average aircraft size is a predicted increase in average seat occupancy rates across the year, also referred to as load factors. In 2019, average load factors ranged between of 78-92% (averaging 86%) across the year and have increased from 79% to 86% over the previous 10 years. This increase has been supported by the growth of LCCs who have been actively increasing load factors across their networks.

7.2.12 Over the next 20 years load factors are forecast to increase at a slower rate, with the gains seen in the last 10 years not being repeated in the next 15-20 years. Factors such as seasonality, directional imbalances and no shows would continue to present challenges for airlines to increase their seat occupancy rates further. By 2038 and beyond, average load factors are forecast to increase to just over 90% which is comparable to Gatwick's most efficient carriers operating today.

Figure 7.2.3: Average Load Factor - Base Case



Source: CAA/GAL Statistics

7.2.13 When combined, the aircraft size and load factor assumptions result in the average number of passengers per flight increasing from the current 165 (in 2019) to 196 in 2038 and 206 in 2047.

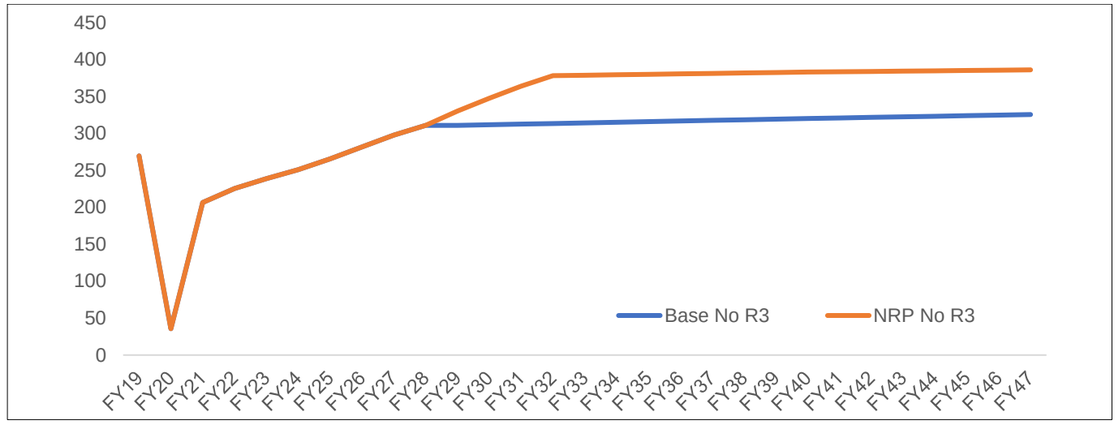
7.3. Growth with the Northern Runway Project

7.3.1 The introduction of the Project would allow both of Gatwick's runways to be used concurrently. This would release an existing capacity constraint on the airport, to allow it to receive additional aircraft movements. The northern runway would be used for departing aircraft (mostly Code C or smaller) whilst the main runway would be capable of handling all movements as it is today. This has the potential to add significant levels of capacity and accommodate the ongoing growth in demand for aviation across the wider UK market.

7.3.2 With the Project, it is estimated that approximately 63,000 additional commercial ATMs will be possible in the Baseline Case in 2038, resulting in around 382,000 commercial ATMs, and that by the end of the forecast period in 2047 the number of commercial ATMs could increase to approximately 386,000.

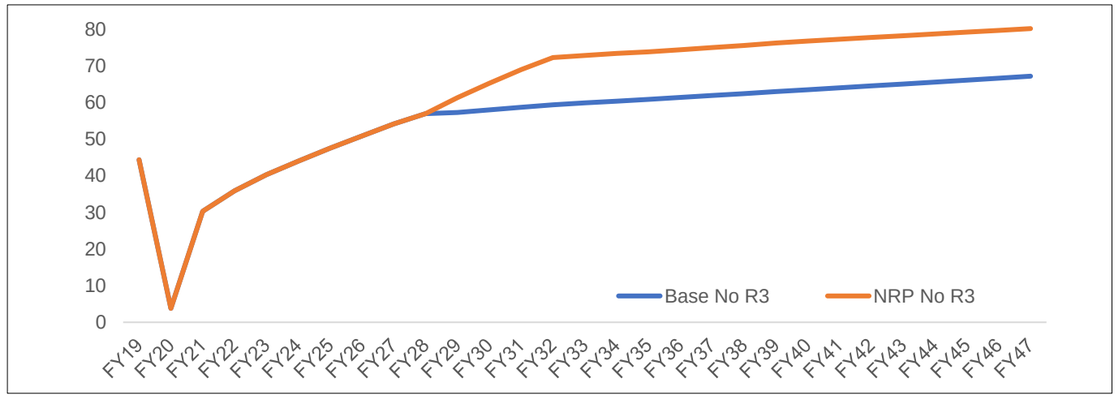
[11] BA's 777 economy class seating being reconfigured from traditional 3-3-3 configuration to 3-4-3 - increasing seating from current 220/275 seats per aircraft towards 232/336 seats. IAG announced plans to replace Gatwick fleet with larger sized short haul aircraft such as the 737Max from the early/mid 2020s

Figure 7.3.1: Gatwick Commercial Annual Air Traffic Movements ('000s)



Source: CAA/GAL Statistics (Total Commercial ATMs)

Figure 7.3.2: Gatwick Annual Passengers (million)



Source: CAA/GAL Statistics

7.3.3 In addition to the increased commercial ATM throughput, larger and fuller aircraft will be operating from Gatwick providing a larger increment in passenger throughput. By 2038 a 20% uplift in average aircraft loadings is forecast meaning that Gatwick will be able to achieve around 75.6 mppa with the Project. Further incremental growth will be possible as these trends continue resulting in the passenger forecast of approximately 80.2 mppa by 2047.

8 Annual Passengers

8.1. Introduction

8.1.1 GAL has prepared detailed annual passenger and movement forecasts for the period 2019-2047. This approach captures detailed market and airline assumptions reflecting Gatwick's pipeline of demand under various capacity scenarios. Gatwick's assumed performance has also been validated against wider London level passenger and ATM forecasts taking into account the dynamics of the wider London market including airline and supply side assumptions at the other airports.

8.2. London Market

8.2.1 As can be seen in the following table, Gatwick currently has a 26% share of the London aviation market which is forecast to decline to under 25% in 2038 and 23% in 2047 under the Baseline Case (ie without the Project).

8.2.2 In the Northern Runway Case, Gatwick would increase its market share to nearly 30% by 2038 which is equivalent to 75.6 million passengers. By 2038 with the Project, Gatwick is forecast to achieve an incremental 13.2 million passengers compared to the Baseline Case. In the 2038-47 period, Gatwick's market share is assumed to decline to 27%, which is comparable to 2019.

Table 8.2.1: Gatwick and London System Passengers 2019, 2029, 2032, 2038 and 2047 (passengers, millions)

Year / Case	Gatwick	London Total	Gatwick as % of London Total
2019 Actual	46.6	181	26%
2029 (Base Case)	57.3	218	26%
2029 (Northern Runway Case)	61.3	218	28%
2032 (Base Case)	59.4	230	26%
2032 (Northern Runway Case)	72.3	230	31%
2038 (Base Case)	62.4	255	25%
2038 (Northern Runway Case)	75.6	255	30%
2047 (Base Case)	67.2	294	23%
2047 (Northern Runway Case)	80.2	294	27%

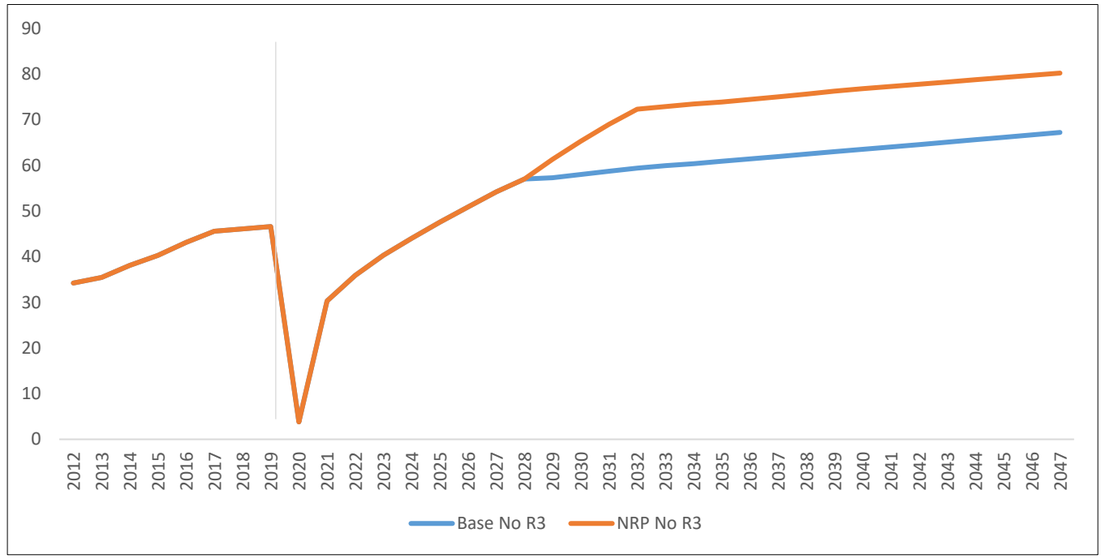
Note: London volumes taken by applying the DfT's UK growth rate to a 2019 London baseline on an unconstrained basis

8.2.3 The following chart highlights the annual growth profile assumed at Gatwick for the Baseline and Northern Runway cases. In both scenarios, passengers are assumed to return to 2019 levels around 2025 before growing towards 57 million by 2028 making best use of the existing runway / infrastructure. Beyond 2028 the growth path differs depending on whether additional capacity offered by the Project is released.

8.2.4 Under the Northern Runway Case the northern runway offers significant additional capacity. Demand is forecast to grow strongly when capacity is assumed to be released in 2029. Through the early 2030s Gatwick is forecast to grow towards 70 million passengers capturing a greater share of London demand as other airports will have relatively limited capacity to grow further. Once the majority of incremental

runway slots are full, further growth is anticipated with passenger numbers predicted to grow to some 80 million by 2047.

Figure 8.2.1: Gatwick Annual Passengers by Scenario (million)

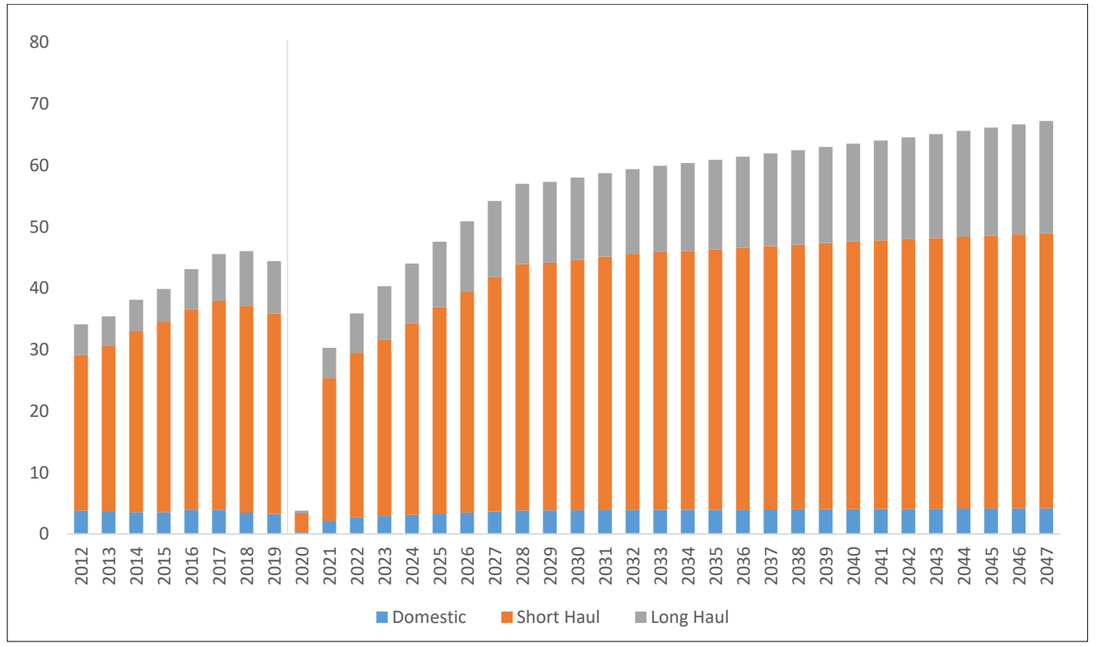


Source: CAA/GAL Statistics

8.3. Market Mix – Haul

8.3.1 In 2019, just under 20% of Gatwick's passenger demand was long haul traffic which has grown from a share of 13% just 5 years before. This period has seen long haul passengers grow from under 5 m to 9 m reflecting a CAGR of 12% which is ahead of the wider London average.

Figure 8.3.1: Gatwick Annual Passengers, Base Case (million)



8.3.2 Looking ahead, growth in long haul volume is forecast to continue taking share away from domestic and short haul markets. Long haul demand is forecast to increase to a 23% share before the introduction of any new capacity. In the Baseline Case, beyond 2029 the long haul share is assumed to remain relatively flat at around 23% as Gatwick continues to accommodate growth in this segment through substitution. In the Northern Runway Case Gatwick's share of the long haul market is forecast to grow to 26% by 2038 and 27% by 2047.

Table 8.3.1: Gatwick Passengers, Market Mix (%)

	2019 Actual	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Domestic	7%	7%	6%	7%	5%	6%	5%	6%	5%
Short Haul	73%	70%	70%	70%	70%	69%	69%	67%	67%
Long Haul	19%	23%	23%	23%	25%	25%	26%	27%	27%
Total (m)	46.6	57.3	61.3	59.4	72.3	62.4	75.6	67.2	80.2

8.4. Market Mix – Purpose/Residency

8.4.1 Passenger type forecasts have been prepared for Gatwick's local demand however the respective shares are assumed to remain comparable to 2019.

- **Business share**: This is forecast to remain at around 15% through the forecast period reflecting a combination of new routes and growth on established markets. This remains the case in both scenarios.
- **Foreign resident share**: This share is also forecast to remain relatively static at around 25% through the forecast period. Again, this holds for both scenarios.

Figure 8.4.1: Gatwick Purpose of Travel and Residency (2019)

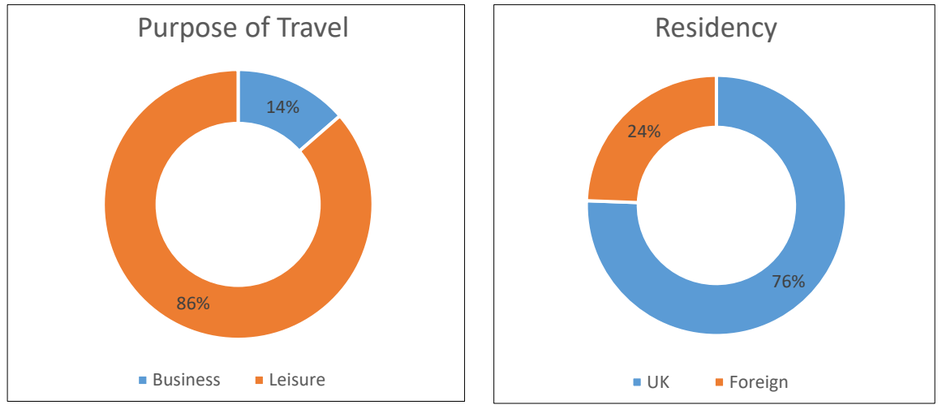


Table 8.4.1: Passenger Type: UK / Foreign / Business / Leisure split (million)

	2019 Actual	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
UK Resident									
Business	4.0	4.7	5.0	4.9	5.7	5.1	6.0	5.4	6.3
Leisure	29.9	36.7	39.2	38.1	46.7	40.1	48.9	43.3	51.9
Total	33.8	41.4	44.2	42.9	52.4	45.2	54.8	48.7	58.1
Foreign Resident									
Business	2.1	2.6	2.7	2.7	3.3	2.8	3.4	3.0	3.6
Leisure	8.8	10.9	11.7	11.3	14.0	11.9	14.7	12.9	15.6
Total	10.9	13.5	14.4	14.0	17.2	14.7	18.0	15.9	19.1

Note: Excludes Transfer Passengers

8.5. Market Mix – Transfers

8.5.1 In 2019, transfer passengers were estimated to account for approximately 4% of demand, equivalent to 1.8 million passengers. These volumes reflect flows via traditional connecting itineraries[12].

8.5.2 No significant change is forecast in the future with Gatwick remaining predominantly a point-to-point airport. Therefore, the number of connecting passengers is forecast to grow in line with the total growth as they maintain a share of around 4% of total demand across all scenarios in future years.

Table 8.5.1: Transfer Passengers (million and %)

	2019 Actual	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Transfer Passengers	1.8	2.5	2.7	2.5	2.7	2.6	2.7	2.6	2.9
% of total Passengers	3.9%	4.5%	4.7%	4.4%	3.8%	4.3%	3.7%	4.0%	3.8%

8.6. Terminal Splits

8.6.1 Terminal splits have been considered reflecting airline allocation assumptions for each scenario and the assumed growth by airline. In 2019, approximately 25 million passengers were handled in the North Terminal, with the remaining 21 million handled by the South Terminal.

8.6.2 Over the forecast horizon and respective scenarios, airlines are forecast to grow at different growth rates and the resulting passenger volumes by terminal will change. With the Project, the North Terminal is forecast to serve some 37 million passengers in 2038 whilst the South Terminal would serve some 38 million. By 2047 40 m passengers are assumed to be using each terminal.

Table 8.6.1: Passengers by Terminal (m)

	2019 Actual	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
North	25	31	32	32	36	33	37	36	40
South	21	27	29	28	36	29	38	31	40

[12] Whilst other passengers make their own connections, due to lack of available data these have not been included. This would only have a relatively minor impact on the surface access assumptions, potentially over estimating access requirements.

8.7. Surface Access Splits

8.7.1 Surface access estimates for local[13] demand have been prepared reflecting Gatwick's extensive catchment which is forecast to continue drawing on demand from the surrounding area. Greater London contributes by far the largest share of demand reflecting inbound and outbound demand and accounts for 19 million passengers, equivalent to a 42% share. Over the forecast, the splits are assumed to remain relatively stable, reflecting similar catchment characteristics as 2019, and no major changes in surface access to Gatwick.

Table 8.7.1: Passenger Surface Access Split (million, excludes transfers)

	2019 Actual	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Greater London	19	23	28	24	30	25	31	27	33
South East	17	21	25	22	27	23	28	25	30
East England	3	4	4	4	5	4	5	4	5
Other	6	7	8	7	9	7	9	8	9
Total	45	55	66	57	70	60	73	64	77

9 Annual Aircraft Movements

9.1. Introduction

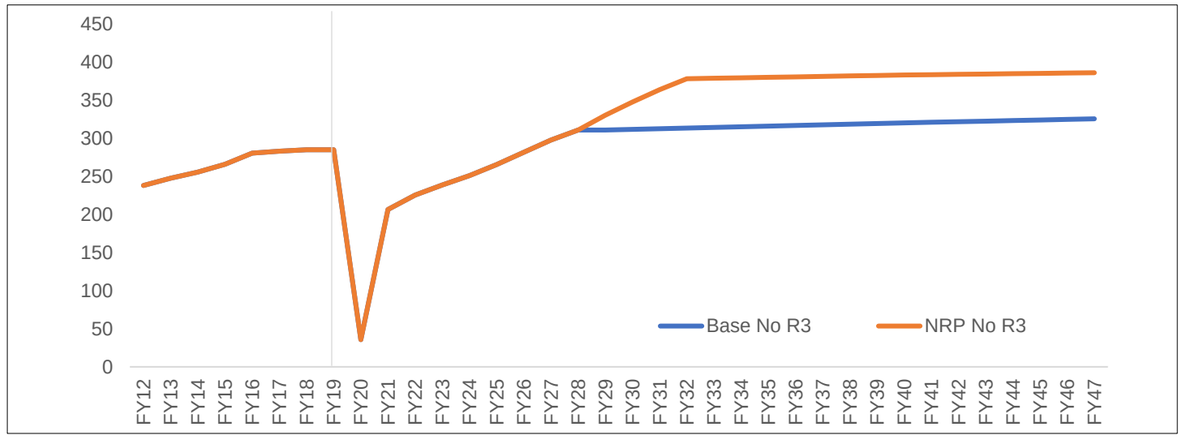
9.1.1 In addition to passengers, aircraft movements have also been forecast capturing supply side trends within the industry and of Gatwick's major airlines. Over the last five years whilst Gatwick's passengers have grown over 22%, movements have grown by 11%, reflecting a trend towards larger and fuller aircraft. In this period the average passenger loading has increased from 150 to 165, a 10% increase.

9.1.2 Looking ahead, growth in average aircraft sizes is forecast to continue recognising the aircraft order books of some of Gatwick's largest carriers. They are forecast to take delivery of aircraft with larger capacities than those currently in operation, this combined with ongoing industry growth in load factors and a growing LCC share will drive further improvement in average passenger throughput. In the next 10 years average passengers per ATM are forecast to increase by a further 12% to 184.

9.1.3 Consequently, Gatwick's annual growth in air traffic movements is lower than its passenger growth. In the Baseline Case annual commercial ATMs (excluding non-commercial flights such as positioning flights) are forecast to reach approximately 311,000 by 2029 up from around 283,000 in 2019 representing a CAGR of 0.9% compared to 2.1% for passengers.

9.1.4 The annual commercial ATM forecasts are compared in the following chart taking a comparable path to that of passengers. In both cases commercial ATMs are forecast to pass 300,000 by the late 2020s and by 2038 are able to grow towards 382,000 in the Northern Runway Case whilst reaching 318,000 in the Baseline Case. In the final period of the forecast only modest growth is assumed as by 2047 the Northern Runway Case is forecast to provide 386,000 commercial ATMs compared to 326,000 in the baseline scenario.

Figure 9.1.1: Gatwick Annual Commercial ATMs (000s)



Source: CAA/GAL Statistics, excludes non-commercial ATMs

[13] Excluding transfers

Table 9.1.1: Gatwick Commercial Air Traffic Movements and Non-Commercial Air Traffic Movements (rounded to nearest 000s)

	2019 Actual	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Commercial ATMs	283k	311k	330k	313k	378k	318k	382k	326k	386k
Non-Commercial Air Traffic Movements	2k	2k	3k	2k	3k	2k	3k	2k	3k
Total Annual Aircraft Movements	285k	313k	333k	316k	381k	321k	385k	328k	389k

9.1.5 The above table uses the following definitions.

- ATMs: Commercial Air Traffic Movements: Landings or take-offs of aircraft engaged on the transport of passengers, freight or mail on commercial terms (ie scheduled, charter and dedicated freighter flights).
- NATMs: Non-Commercial Air Traffic Movements: Landings or take-offs of aircraft movements, excluding ATMs. Includes positioning flights by commercial operators, business aviation and recreational / military flights.
- TAMs: Total Aircraft Movements = ATMs and NATMs.

9.1.6 NATMs include positioners, business aviation and other categories. Their share of movements has been falling over time whilst total movements have continued to grow. In 2019, they accounted for approximately 1% of total movements and this share is forecast to remain relatively stable.

9.1.7 The commercial ATMs are broken down into the main market types namely domestic, short haul and long haul.

Figure 9.1.2: Gatwick Commercial ATMs by Haul

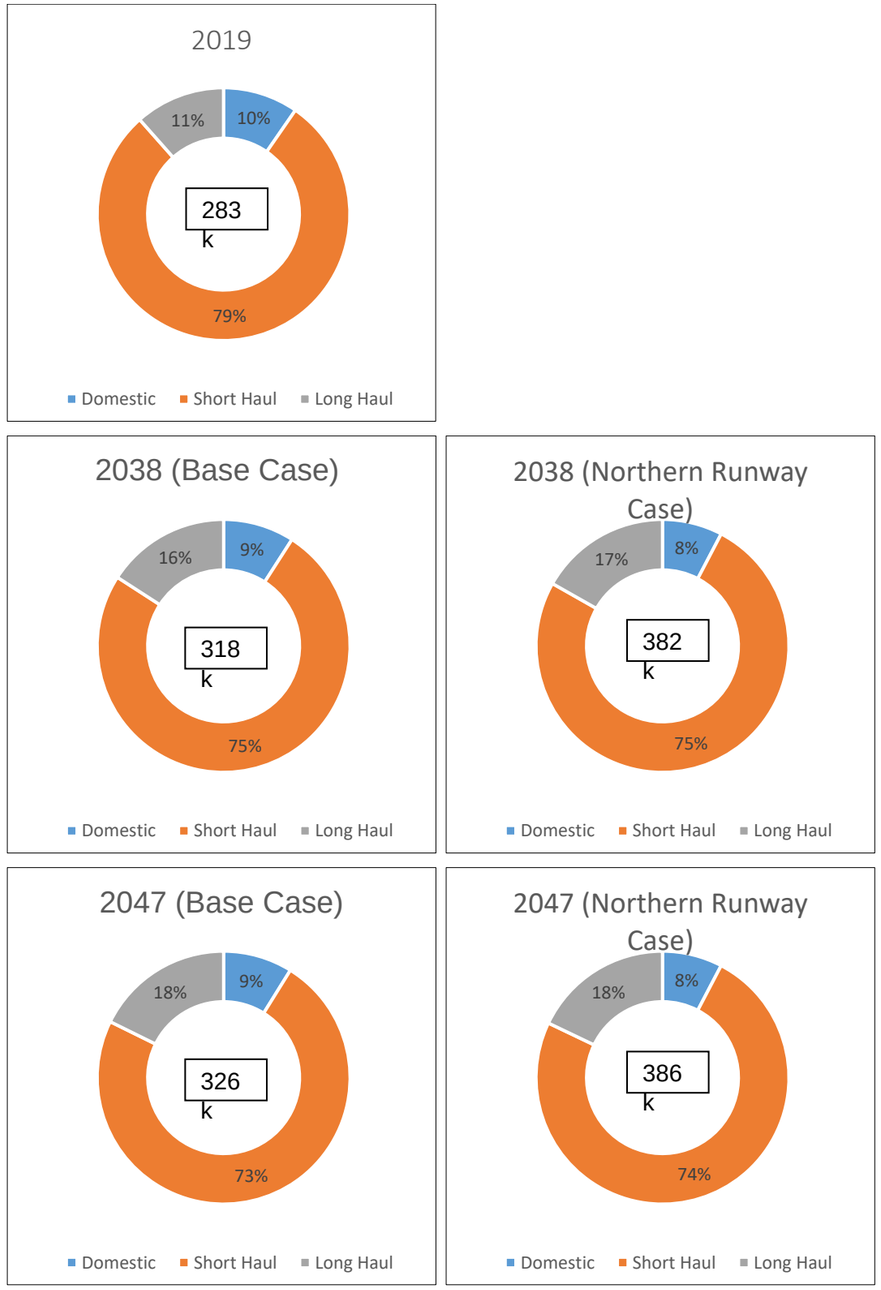


Table 9.2: Gatwick Commercial Air Traffic Movements by Market Mix (000s)

	2019 Actual	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Domestic	28k	29k	29k	29k	29k	29k	29k	29k	30k
Short Haul	222k	237k	252k	237k	288k	239k	288k	239k	287k
Long Haul	32k	45k	49k	47k	61k	51k	64k	58k	69k
Total Commercial ATMs	**283k**	**311k**	**330k**	**313k**	**378k**	**318k**	**382k**	**326k**	**386k**
Non-Commercial Air Traffic Movements	2k	2k	3k	2k	3k	2k	3k	2k	3k
Total Annual Aircraft Movements	**285k**	**313k**	**333k**	**316k**	**381k**	**321k**	**385k**	**328k**	**389k**

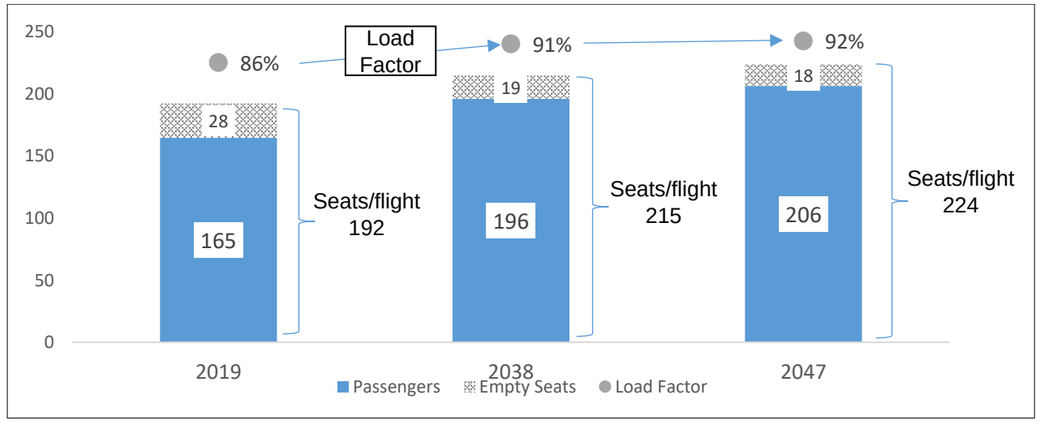
9.2. Average Aircraft Size and Passenger Loading

9.2.1 In 2019, Gatwick's average aircraft size of 192 seats per movement reflected a wide range of aircraft types (regional, narrow body and wide body) across many airline business models. This metric has been steadily increasing having grown from 180 in 2014 to the 2019 level, representing 7% growth in just 5 years. In the future, reflecting the main airlines' order books and trends for larger and more densely configured aircraft this is forecast to increase to 205 by 2029 representing a further 7% growth. By 2038 average aircraft are forecast to have increased to between 215 and 218 seats (depending on scenario) which would be approximately 15% above 2019.

9.2.2 Alongside the trend for larger aircraft, the rate at which airlines fill this capacity has also been improving. In 2019, average load factors of 86% were achieved, which is more than 3% points higher than 5 years ago. Looking ahead, the rate at which this will continue to grow is assumed to slow down, but some growth will still occur. These positive trends will be achieved through better year-round capacity management alongside the higher proportion of LCCs which operate with higher load factors. By 2038 and 2047 average load factors are assumed to pass 90%.

9.2.3 Growth in average loading and aircraft size through the forecast is summarised in the following chart.

Figure 9.2.1: Gatwick Growth in Average Aircraft Size & Load Factor (2019, 2038 & 2047 Base Case)



Source: CAA/GAL Statistics

Table 9.2.1: Gatwick Commercial Air Traffic Movements Average Loads

	2019 Actual	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Average Aircraft Loads - Seats	192	206	208	210	213	215	218	224	227
Average Aircraft Loads - %	86%	89%	89%	90%	90%	91%	91%	92%	92%

10 Air Cargo

10.1. Cargo Summary

10.1.1 High level annual cargo forecasts have been prepared considering Gatwick's evolving traffic mix. The supply side dynamics of the routes and carriers play a pivotal role in the airport's cargo performance with long haul widebody movements to markets such as Asia/Middle East providing significant opportunity.

10.1.2 Gatwick's cargo performance has been increasing in recent years reflecting the growth in the number of long haul markets and carriers. Future growth in cargo tonnage is linked to supply side assumptions around the carrier and market types being served.

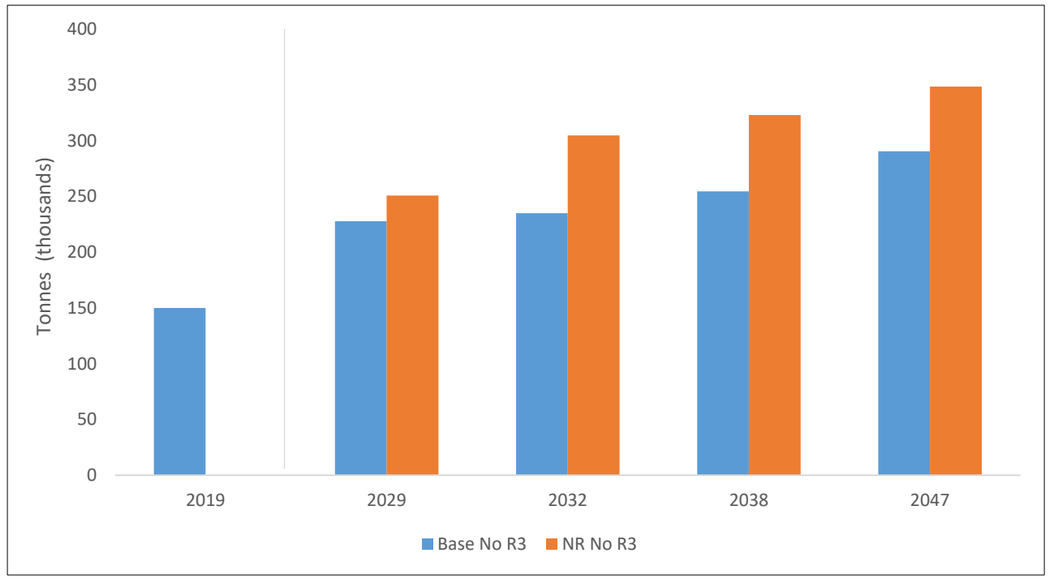
10.1.3 Published statistics for Gatwick's cargo performance have historically been unreliable, typically understating volumes as a result of many flights reporting zero when in fact they carried material volumes of cargo. To ensure the application for development consent is based on accurate figures, GAL has undertaken a one year validation exercise to identify the magnitude of this. Adjusting for the figure in 2019/20 results in an increase from the reported 118,000 tonnes to 150,000 tonnes (ie approx. 30% higher than the published figures).

10.1.4 Under the Northern Runway scenario cargo tonnages are forecast to increase to over 200 k tonnes as the northern runway enters service. Beyond this they grow steadily to over 300 k tonnes by 2038 primarily through increased long haul connectivity offered by the additional runway capacity. By 2047 cargo tonnages are forecast to be approaching 350,000 tonnes per year.

Table 10.1.1: Air Cargo (tonnes, 000s)

	2019		2029		2032		2038		2047	
	Reported	Adjusted	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Cargo	118	150	228	251	235	305	254	323	290	348

Figure 10.1.1: Gatwick Annual Cargo, Tonnes



Source: CAA/GAL Statistics

11 On Airport Employment

11.1. Employment Summary

11.1.1 Future employment has been forecast by correlating each employee grouping to an appropriate traffic metric – for example ground handling staff is most closely linked to ATMs, while cleaning staff is more closely linked to passenger volumes.

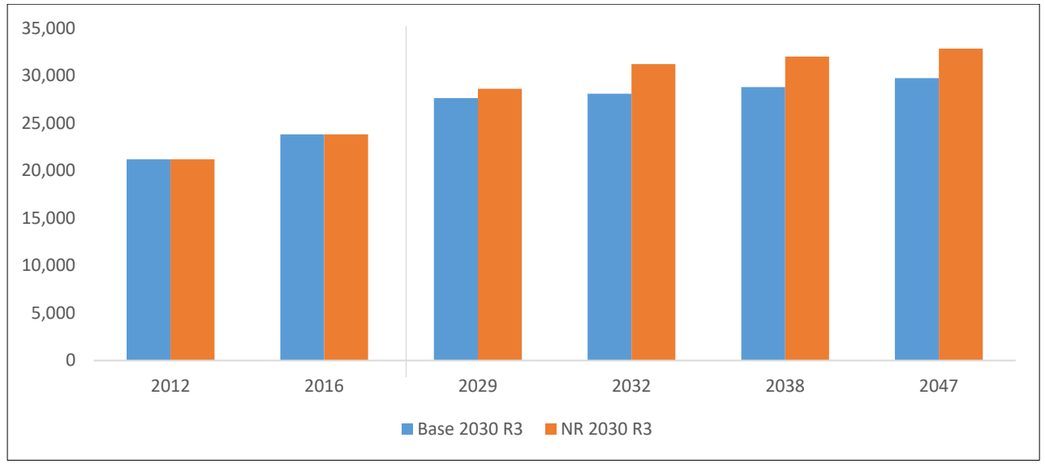
11.1.2 Around 24,000 employees worked on site in 2019 of which approximately 3,300 were employed directly by Gatwick Airport Limited (GAL). In 2020 with the prevailing pandemic conditions, the number of GAL staff fell to approximately 1,900 although this is expected to return to previous levels in line with recovering passenger numbers in the coming years and the total number of employees on site is forecast to increase to over 27,000 by 2029 and then grow towards 28,800 under the Baseline Case, or up to 32,000 under the Northern Runway Case in 2038. Modest growth is assumed in the 2038-2047 period as a further 2-3% employees are added taking the total to 29,000 under the Baseline Case or to 32,800 under the Northern Runway Project scenario.

11.1.3 This growth takes into account future efficiency gains driven by ongoing automation and new technologies. For example, ground handling technologies such as autonomous vehicles and terminal robots will drive operational efficiencies on the ground. Passenger and baggage processing technologies will continue to make the security and customs/immigration processes for passengers and luggage screening more efficient.

11.1.4 Further gains are achieved through larger aircraft and higher aircraft loadings meaning that on site employment grows at less than half the rate of passengers (1.2% vs 2.6% under the Northern Runway Project scenario). Average passengers per employee increase from 1,800 to over 2,300 by 2038 and around 2,450 by 2047 representing an increase in this ratio of 35%.

11.1.5 For comparison similar efficiency gains have been made since 2002 when average passengers per employee was 1,300, 25% below 2019 levels.

Figure 11.1.1: On-Airport Employment Forecasts (employees)



Source: GAL Statistics, baseline year of 2016 was most recent year available for analysis

Table 11.1.1: On Airport Employment

	2016 Employment Survey	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Total	23,807	27,609	28,596	28,077	31,199	28,770	31,985	29,721	32,822

12 References

Department for Transport (2018) Airports National Policy Statement: New Runway Capacity and Infrastructure at Airports in the South East of England. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/714106/airports-nps-new-runway-capacity-and-infrastructure-at-airports-in-the-south-east-of-england-web-version.pdf

Annex 1

Data Tables

A1.1 Employment

Table A1.1.1: On Airport Employment (by type)

	2016 Employment Survey	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Air Cabin Crew	5,791	7,066	7,378	7,227	8,225	7,464	8,481	7,791	8,775
Airline/Airport Management	671	756	777	767	834	783	851	805	871
Apron, Ramp, Cargo, Baggage Handling and Drivers	2,434	2,549	2,605	2,556	2,744	2,571	2,754	2,588	2,760
Catering, Cleaning and Housekeeping	3,061	3,896	4,101	4,001	4,656	4,157	4,823	4,371	5,016
Customs, Immigration, Police and Fire Staff	1,073	1,383	1,459	1,422	1,665	1,480	1,727	1,559	1,799
Information Technology	234	260	266	263	283	268	288	274	294
Maintenance Tradesmen	1,899	2,227	2,308	2,269	2,526	2,330	2,592	2,414	2,667
Management and Professional - General	1,374	1,480	1,506	1,493	1,577	1,513	1,598	1,541	1,623
Passenger Services/Sales and Clerical Staff	3,915	4,158	4,218	4,189	4,380	4,234	4,429	4,297	4,485
Pilots/Air Traffic Control/Flight Operations	1,533	1,645	1,700	1,652	1,836	1,667	1,846	1,684	1,852
Security, Passenger Search, Security Access Control	1,822	2,189	2,278	2,235	2,522	2,303	2,596	2,397	2,680
Total	23,807	27,609	28,596	28,077	31,199	28,770	31,985	29,721	32,822

A1.2 Noise

A1.2.1 Forecasts have been produced as inputs into other workstreams in order to assess air and ground noise. These forecasts for air and ground noise have been produced on an annual (Lden) basis and for the summer 92 day 'Leq' period (defined as 16 June - 15 September).

A1.2.2 Forecasts for the noise assessments have been disaggregated into the day, evening and night periods. These are defined as follows (all times are local time):

- Day = 0600 – 1759
- Evening = 1800 – 2159
- Night = 2200 – 0559

A1.2.3 The following tables provide the annual outputs relating to the 'Lden' period.

Table A1.2.1: Annual Total Movements (including Non-Commercial Movements), Noise Lden

	2019 Actual	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Annual	285k	313k	333k	316k	381k	321k	385k	328k	389k
Day	198k	222k	238k	224k	270k	229k	274k	234k	277k
Evening	56k	60k	63k	61k	76k	61k	76k	64k	77k
Night	31k	31k	31k	30k	35k	31k	35k	31k	35k

A1.2.4 The following tables provide the outputs relating to the 92 day 'Leq' period.

Table A1.2.2: Total Movements (including Non-Commercial Movements), Noise Summer Period Leq

	2019 Actual	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Leq Period	82k	86k	90k	87k	102k	87k	103k	88k	104k
Day	55k	59k	62k	59k	70k	60k	71k	60k	71k
Evening	16k	16k	16k	16k	20k	16k	20k	17k	20k
Night	12k	12k	12k	11k	13k	11k	13k	11k	13k

A1.3 Fleet Mix

A1.3.1 Fleet mix assumptions have been made to provide input to the noise and environmental analysis capturing ongoing fleet modernisation programs amongst Gatwick's airlines. Next generation aircraft include those currently entering service and benefiting from the latest engine technologies. Aircraft included in this grouping include narrow bodies such as the A320neo series and Boeing's 737Max[14], widebody aircraft include the Airbus A350 and Boeing 787 series of aircraft.

A1.3.2 In 2019 just over 12% of movements were operated by next generation aircraft with this share forecast to steadily increase. As the 737Max returns to service alongside further deliveries of other next generation aircraft, this share will continue to increase each year.

[14] In January 2021 EASA (European Union Aviation Safety Agency) gave approval for the return to service

A1.3.3 Over the forecast period the next generation share is forecast to steadily increase approaching 60% in 2029 and we expect virtually all current generation aircraft to be phased out by 2038.

A1.3.4 Beyond the mid-2030s there is the potential for future generation aircraft types to enter service (e.g. neo and MAX replacements) as well as other modes of propulsion (e.g. electric, hydrogen). Given the uncertainty surrounding these types it was assumed that future fleet transitions were relatively minor. Notwithstanding this expectation, some sensitivity testing is being undertaken in relation to the rate of fleet mix transition in the noise assessment.

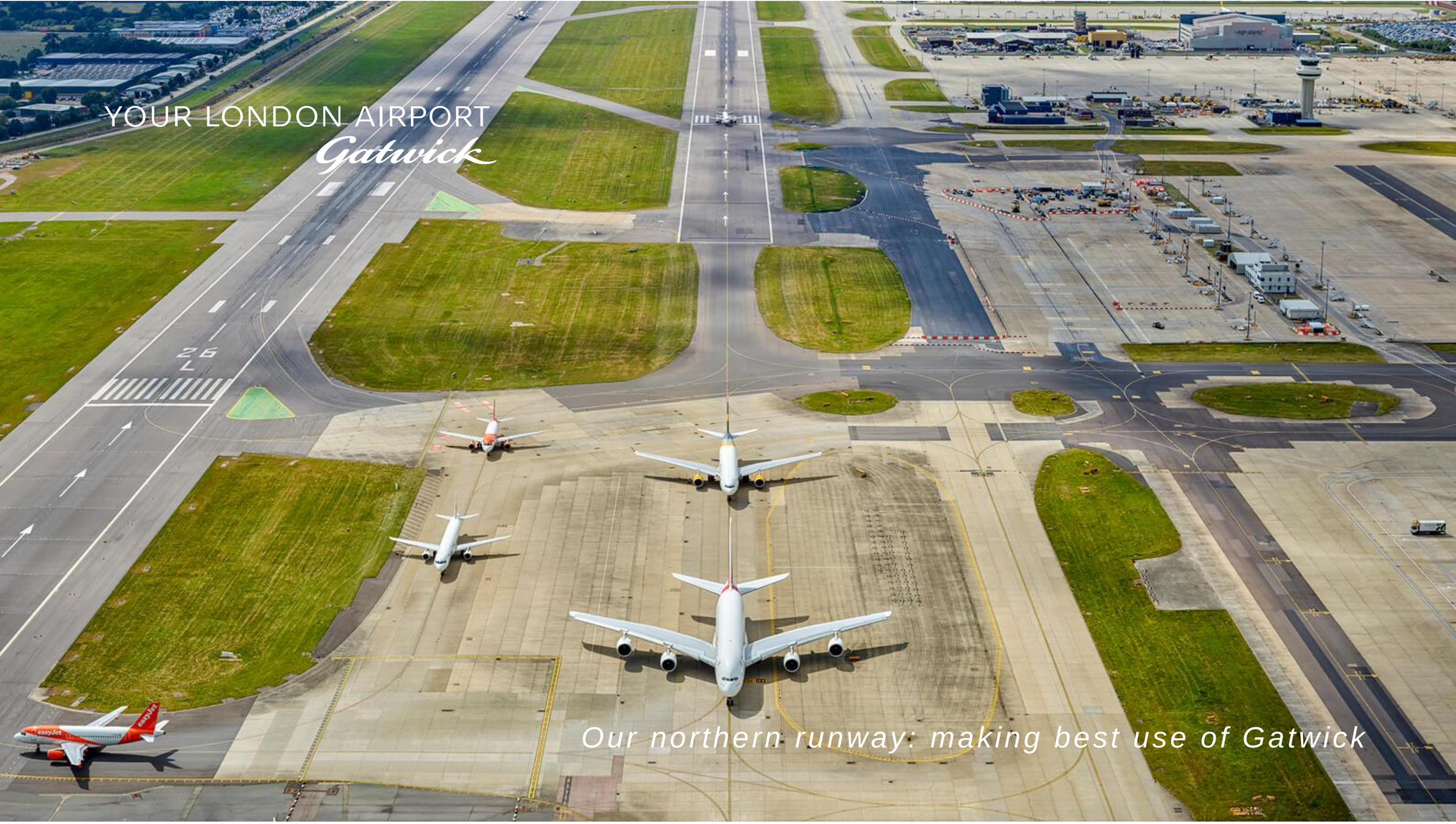
Table A1.3.1: Fleet Generation (Movements & Mix) (including Non-Commercial Movements)

	2019 Actual	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Next Gen	12%	59%	59%	80%	82%	100%	100%	100%	100%
Other	88%	41%	41%	20%	18%	0.4%	0.4%	0.2%	0.2%
Total	285k	313k	333k	316k	381k	321k	385k	328k	389k

Detailed Fleet Tables

Table A1.3.2: Fleet Types (ATMs and NATMs)

	2019 Actual	2029		2032		2038		2047	
		Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case	Base Case	Northern Runway Case
Narrow Bodied									
A320s ceo	178k	101k	107k	55k	61k	0k	0k	0k	0k
737 series	42k	11k	12k	2k	2k	0k	0k	0k	0k
Other NB CG	12k	1k	1k	1k	1k	1k	1k	1k	1k
A320s neo	20k	113k	119k	158k	192k	215k	254k	215k	254k
737 Max	0k	36k	39k	46k	51k	48k	52k	48k	52k
C Series	2k	8k	8k	9k	15k	8k	16k	8k	15k
Wide Bodied									
A330 series	5k	3k	3k	1k	1k	0k	0k	0k	0k
777 series	9k	9k	10k	2k	2k	0k	0k	0k	0k
747	2k	0k	0k	0k	0k	0k	0k	0k	0k
A380	2k	2k	3k	2k	2k	1k	1k	0k	0k
Other WB CG	2k	0k	0k	0k	0k	0k	0k	0k	0k
787 series	12k	23k	25k	33k	43k	38k	49k	44k	52k
A350 series	1k	6k	6k	6k	9k	8k	10k	9k	11k
Other WB NG	0k	0k	1k	1k	1k	3k	3k	4k	4k
All	285k	313k	333k	316k	381k	321k	385k	328k	389k



Preliminary Environmental Information Report
Appendix 5.2.1 Highway Improvement Plans

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 5.2.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the highway improvement plans for the Project.

A1

N

Legend

- Proposed Red Line Boundary
- Extent of Highway Red Line Boundary
- Proposed Bridge Structure
- Proposed Retaining Walls

0 10 20 30 40 50 100 Metres

Scale 1:2500

Do not scale

Rev	Date	By	Chkd	Appd
---	16/08/21	NW	DA	DH

ARUP

Blythe Gate Blythe Valley Park

Tel +44 121 213 3000 Fax +44 121 213 3001

Client

Gatwick Airport Ltd
Destinations Place
Gatwick Airport
West Sussex RH6 0NP

Project Title

Gatwick Airport
Northern Runway Project
Surface Access

Drawing Title

Highway Layout North Terminal
Initial Indicative
Red Line Boundary (RLB)
Sheet 1 of 2

Scale at A1: 1:2500

Role: Civil - Highways

Suitability: S0 - Initial non-contractual

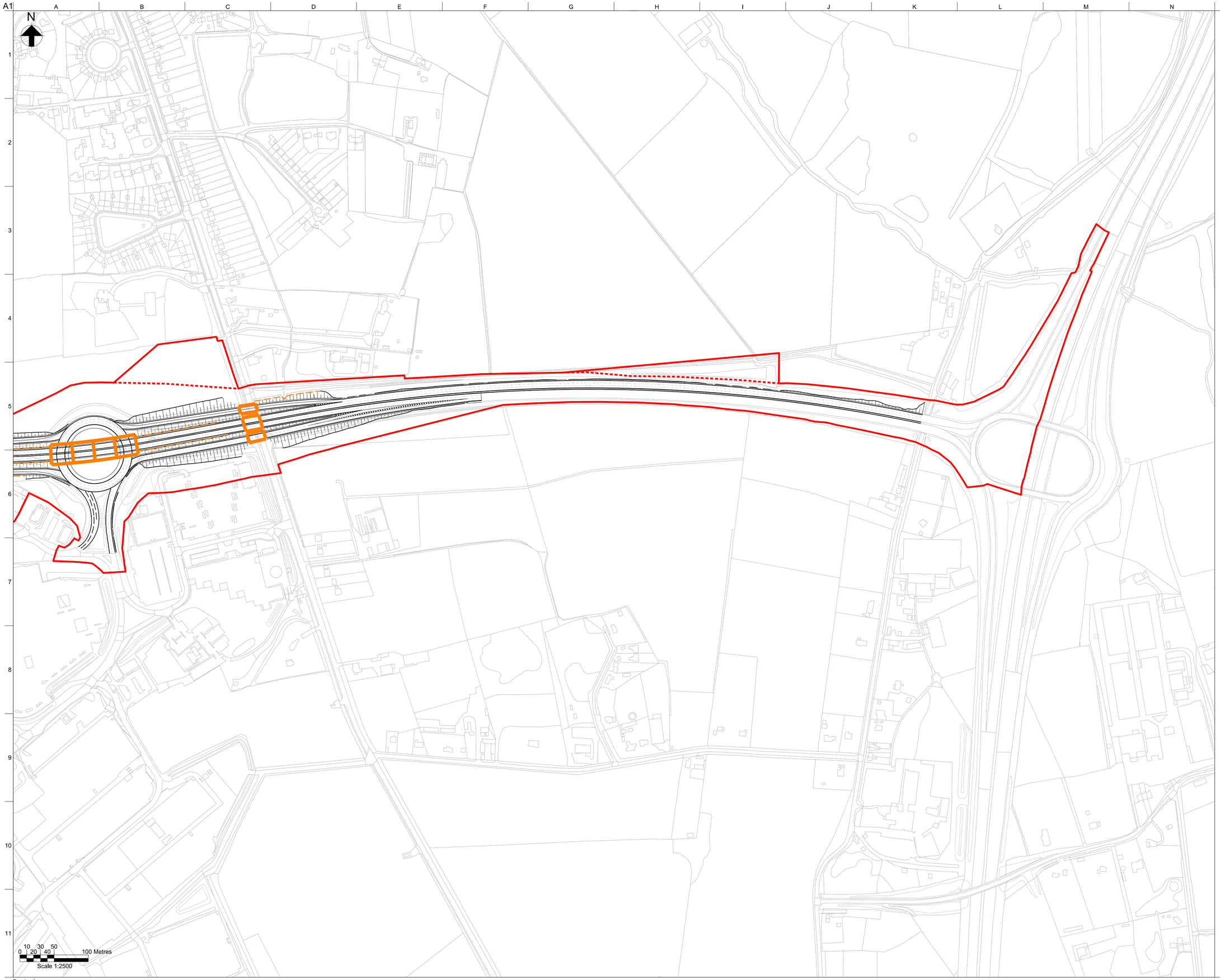
Arup Job No: **225680-84**

Rev: **P03.3**

Name: **LGW2NR-ARP-ZZ-ZZ-DR-CH-00316**

A1

N



Legend

- Proposed Red Line Boundary
- Extent of Highway Red Line Boundary
- Proposed Bridge Structure
- Proposed Retaining Walls

Rev	Date	By	Chkd	Appd
---	16/08/21	NW	DA	DH

ARUP

Blythe Gate Blythe Valley Park

Tel +44 121 213 3000 Fax +44 121 213 3001

Client

Gatwick Airport Ltd
Destinations Place
Gatwick Airport
West Sussex RH6 0NP

Project Title

Gatwick Airport
Northern Runway Project
Surface Access

Drawing Title

Highway Layout Southern Terminal
Initial Indicative
Red Line Boundary (RLB)
Sheet 2 of 2

Scale at A1 1:2500

Role Civil - Highways

Suitability S0 - Initial non-contractual

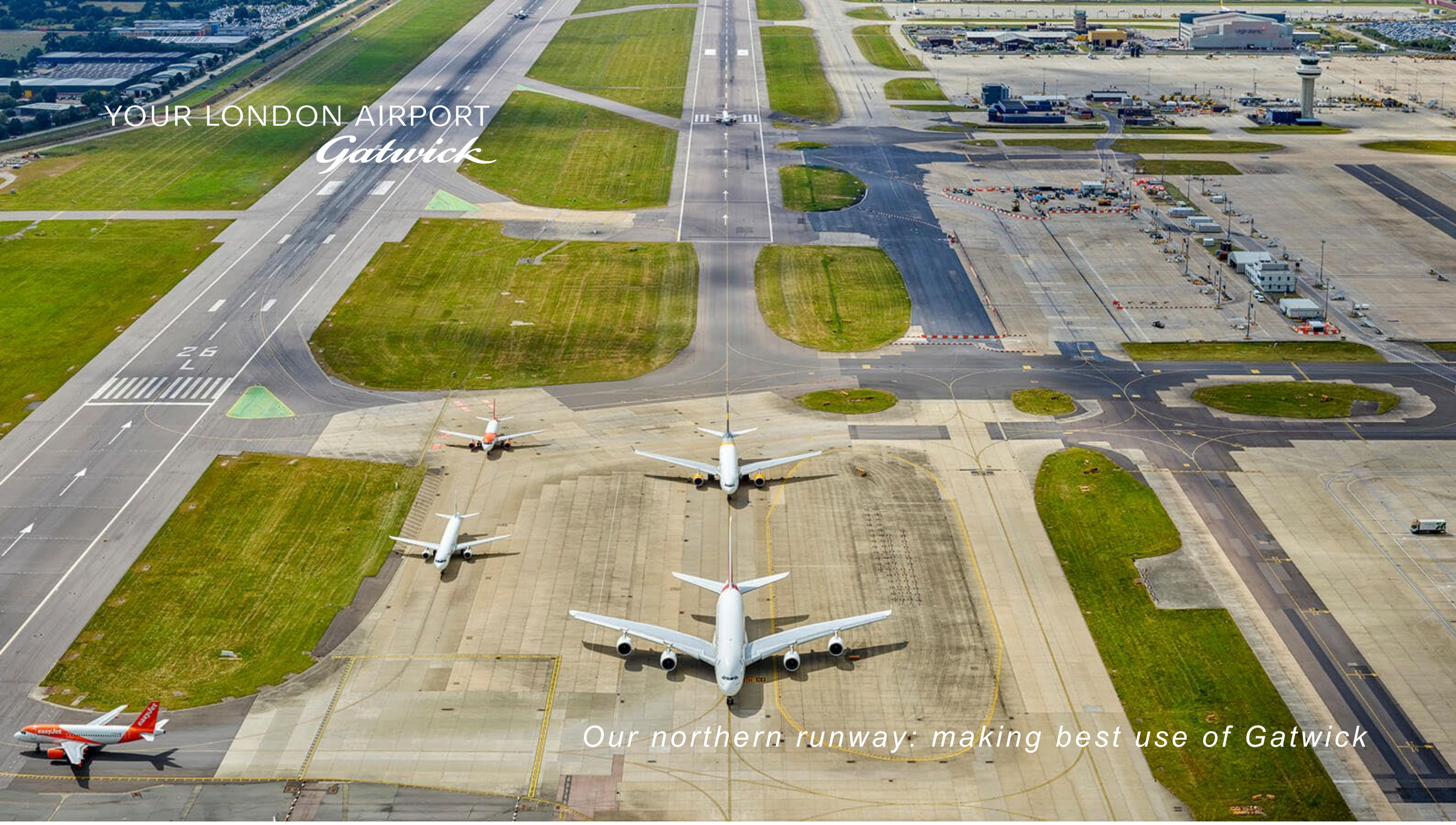
Arup Job No **225680-84**

Rev **P03.3**

Name **LGW2NR-ARP-ZZ-ZZ-DR-CH-00315**

Do not scale

pw:\MCCNTS304.global.arup.com\PW_ARUP_UK\Documents\LGW Surface Access\01 Arup\CH - Civil Engineer - Highways\DR - Drawings\LGW2NR-ARP-ZZ-ZZ-DR-CH-00315



Our northern runway: making best use of Gatwick

Preliminary Environmental Information Report
Appendix 5.3.1: Outline Code of Construction Practice

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 5.3.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase.

1.1.2 This document comprises the outline Code of Construction Practice (CoCP) and the presents mitigation measures from the PEIR. Further details about the scope of the CoCP are provided in section 1.3.

1.2 Project Overview

Project Components

1.1.1 The Project includes the following key components:

- amendments to the existing northern runway including repositioning its centreline 12 metres further north to enable dual runway operations;
- reconfiguration of taxiways;
- pier and stand alterations (including a proposed new pier);
- reconfiguration of other airfield facilities;
- extensions to the existing airport terminals (north and south);
- provision of additional hotel and office space;
- provision of reconfigured car parking, including new car parks;
- surface access (including highway) improvements;
- reconfiguration of existing utilities, including surface water, foul drainage and power; and
- landscape/ecological planting and environmental mitigation.

1.2.1 Further details of the Project are set out in Chapter 5: Project Description.

Construction Timeframe

1.2.2 The timing of the Project would be dependent on the timing of securing development consent and the discharge of the associated requirements. The indicative construction programme is based on construction commencing in 2024. The programme for the main airfield construction works would be of approximately five years duration enabling the altered northern runway and taxiways to be complete and fully operational in combination with the main runway in 2029. During the construction period the northern runway would not be available as a standby runway for a period of several months.

1.2.3 Indicative phasing of the construction works is set out in the table below.

Table 1.2.1: Indicative Phasing

Component of the Project	Anticipated Phasing
2023	Pre-construction activities (including surveys for any unexploded ordnance and any necessary pre-construction surveys)
2024	Early works, including establishment of compounds, fencing, early clearance and diversion works and re-provision of essential replacement services.
2024-2029	Reconfiguration of existing maintenance airfield facilities (Phase 1) Alterations to the existing northern runway Airfield works to support use of the realigned northern runway
2024-2030	Extensions to North and South Terminals
2024-2032	Hotel and commercial facilities
2024-2035	Car parking
2024-2038	Flood compensation areas
▪ 2029-2032	Surface access improvements including: ▪ South Terminal roundabout improvements (2029-2030) ▪ North Terminal roundabout improvements (2029-2032) Works to Longbridge roundabout (2030-2032)
2029-2034	Ongoing reconfiguration of existing maintenance airfield facilities (to final state) Further improvements to airfield facilities
2030-2034	Pier 7

Pre-construction Activities

1.2.4 The following activities would be undertaken prior to construction works being undertaken. These may include the following.

- Unexploded ordnance survey(s).
- Pre-construction ecological surveys to confirm the findings of the EIA process and to inform any protected species licensing that may be required.
- Programme of archaeological desk-based assessment and field evaluation will be undertaken in order to provide a greater level of understanding of the archaeological potential of such areas. Where appropriate and following consultation with the relevant consultees, further archaeological evaluation and/or detailed excavation may be undertaken at specific locations in advance of any construction works being allowed to progress in that area.
- General pre-construction site investigation surveys to support the development of the design, eg topographical surveys, trial holes, contamination and geotechnical testing.

Construction Activities

1.2.5 Key construction activities would include the following:

- demolition;
- concrete breaking;
- earthworks;
- stockpiling of excavated and demolished material for re-use;
- concrete crushing/screening;
- concrete/asphalt batching;
- cutting;
- excavation;
- dewatering;
- installation of utilities, including water, power, drainage and lighting;
- piling;
- placement of concrete foundations;
- installation of precast concrete panels;

- erection of buildings including portal frames, cladding and roofing;
- buildings fit out;
- internal road construction;
- paving;
- road planning.
- external road construction including temporary traffic management arrangements;
- disposal of materials arising from the works; and
- environmental and ecological activities (site clearance, landscaping, seeding, tree planting, river diversions etc.)

1.3 Scope of the Outline CoCP

1.3.1 The scope of this outline CoCP applies to construction activities during all construction phases of the Project. For the purpose of this outline CoCP, the term 'construction' includes all site preparation, demolition, remediation, engineering and construction activities (including deliveries by Heavy Goods Vehicle (HGV) and waste removal) and mitigation measures within the Project site. Work on the CoCP will continue throughout the EIA process and the document submitted as part of the ES will relate to the extent of the development as authorised by the Development Consent Order (DCO) within the Order Limits. Land within the DCO application boundary extends to approximately 820 hectares, of which approximately 747 hectares lies within the ownership of GAL.

1.4 Structure of the Outline CoCP

1.4.1 This outline CoCP follows the structure below:

- Section 2 – Purpose of the Outline CoCP;
- Section 3 – Implementation of the CoCP;
- Section 4 - Environmental Management and Principles;
- Section 5 –Plans Accompanying the CoCP;
- Section 6 – General Requirements;
- Section 7 – Roles and Responsibilities; and
- Section 8 - Management of Environmental Issues.

2 Purpose of the Outline CoCP

2.1 Introduction

2.1.1 This outline CoCP sets out the management measures that GAL and its contractors would be required to implement for all construction activities associated with the Project. These measures have been identified during the design of the Project and as part of the EIA process. They include strategies, control measures and monitoring procedures for managing the potential environmental impacts during the construction phase and limiting disturbance from construction activities as far as reasonably practicable.

2.1.2 This outline CoCP incorporates legislative requirements and best practice measures to define the standards of construction practice that contractors would be required to adopt and implement. These would be updated in the full CoCP. However, compliance with the CoCP would not absolve GAL or its contractors from compliance with legislation and byelaws relating to their construction activities.

2.1.3 This outline CoCP is an information document for local residents, businesses and the general public about how GAL would manage and minimise disturbance and other environmental impacts from demolition and construction activities. It also provides reassurance that best practice standards would be applied and that there is a system in place for managing concerns and complaints.

2.1.4 This outline CoCP is also an important tool in facilitating discussions with key stakeholders regarding mitigation measures. It gives reassurance to stakeholders that the design of the Project incorporates measures to avoid or minimise adverse environmental impacts and that the measures would be implemented. The design of the mitigation measures will be discussed and agreed with the key stakeholders, where practicable.

2.2 Implementation of the CoCP

Outline and Full CoCPs

2.2.1 This outline CoCP is based on design information available at the time of the PEIR. It is a 'living' document that will be updated as appropriate during the EIA process and following the submission of the DCO application and during the Examination Period following further engagement with stakeholders.

2.2.2 Following the granting of the DCO, the outline CoCP would be developed into a full CoCP. The full CoCP would be prepared during the detailed design stage (post consent) and would reflect the main construction methodologies and techniques required for the Project.

2.2.3 The full CoCP would be incorporated into the contracts for the Principal Contractor(s). The Principal Contractor, subcontractors and their suppliers would be required to observe the relevant provisions of the CoCP and provide evidence on how they would ensure its requirements are implemented and monitored.

2.2.4 Construction activities would not commence until the full CoCP has been agreed with the relevant local planning authorities in consultation with the relevant highways' authority (to be secured under a requirement to the DCO). For those construction activities scheduled to occur later in the programme, amendments to the full CoCP (as a result of the detailed design and construction methodologies) would be agreed separately with the relevant local planning authorities to avoid delay in the overall construction programme.

Construction Method Statements

2.2.5 Prior to commencing specific construction activities related to the Project, the Principal Contractor would prepare a Construction Method Statement setting out the construction activity to be undertaken, the associated environmental, and health and safety issues and the appropriate mitigation measures. The mitigation measures would be based on the information in the full CoCP.

Training

2.2.6 All construction staff would receive training on their responsibilities for minimising the risk to the environment and implementing the measures set out in the CoCP.

2.2.7 The Principal Contractor would ensure that contractors employ an appropriately qualified and experienced workforce. The Principal Contractor would also be responsible for identifying the training needs of their personnel to enable appropriate training to be provided. The training would include site briefings and toolbox talks to equip the workforce with the necessary knowledge on health, safety and environmental topics, and the relevant environmental control measures pertinent to works to be carried out that day.

2.2.8 In addition to meeting the commitments in the CoCP, the Principal Contractor would be required to sign up to, and implement, the Considerate Contractors' Scheme (CCS) or a locally recognised certification scheme. The CCS scheme is a voluntary code of considerate practice which seeks to minimise disturbance caused by construction sites to the immediate. neighbourhood and recognises GAL's commitment to raise standards of site management.

3 Environmental Principles

3.1 Environmental Management System

3.1.1 GAL's construction and operation teams operate an Environmental Management System (EMS), which is certified to British Standard (BS) EN ISO 14001.

3.1.2 Underlying the EMS is GAL's Environment, Health and Safety (EHS) Policy (2020), which confirms that GAL would continue to reduce the risk to the environment by:

- "*Driving continuous improvement in our EHS performance by setting and monitoring clear, measurable objectives that are visible and meaningful to our employees;*
- *Protecting the environment including preventing pollution by managing and minimising pollution risks and continuing our industry leading approach to managing our biodiversity areas; and*
- *Incorporating EHS risk and opportunity identification, into our lifecycle decision-making including the planning, design, construction, operation and decommissioning of our activities, facilities and assets*."

3.1.3 GAL has a sustainability strategy (Decade of Change to 2030) (GAL, 2021) which sets a number of sustainability targets. Performance against these targets and other initiatives undertaken are reported on an annual basis.

3.1.4 Each Principal Contractor would be required to have an EMS accredited to ISO 14001. As part of the EMS, the Principal Contractors would be required to plan their works in advance to ensure that, as far as is reasonably practicable, measures to reduce environmental effects and ensure that the principles established in the CoCP are complied with.

3.2 Construction Strategy

3.2.1 The Project would be constructed in an environmentally sensitive manner and would meet the requirements of all relevant legislation, codes of practice and standards as identified in the DCO, ES and any updates to legislation or standards adopted at the time of construction to limit the adverse impacts on the local community and environment as far as reasonably practicable.

4 Plans Accompanying the CoCP

4.1.1 The CoCP would be implemented across all phases of the construction programme. To support the principles set out within this outline CoCP, it would be supported through the preparation of the documents listed below. It is anticipated that each of these documents will also be secured by a requirement to the DCO submitted as part of the Application.:

- Waste Strategy (see Appendix 5.3.3: Draft Waste Strategy) to include:
  - information on the measures for managing wastes likely to be generated from the construction (and operation) of the Project; and
  - how the wastes would be managed to meet legislative and policy requirements.
- Construction Traffic Management Plan developed in accordance with the principles set out in Volume 1, Chapter 12: Traffic and Transport and this CoCP (see paragraph 7.6.3) to 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, .
  - Timing 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.
  - Use of Delivery Management Zones, where appropriate, to consolidate materials onto the least number of vehicles and to hold vehicles away from sensitive areas until deliveries are required.
  - Measures to encourage the highest possible public transport use for the construction workforce.
  - Time shift patterns such that those workers who need to come by road would be using roads and highways outside of peak periods.
- Landscape and Ecological Management Plan (LEMP) to be developed in accordance with the principles set out in Chapter 8: Landscape, Townscape and Visual Resources and Chapter 9: Ecology and Nature Conservation and will include:
  - designated sites and habitats and protected species;
  - mitigation measures to be implemented during pre-construction, construction and post constriction;
  - the design and management objectives of the landscape scheme including planting specification and mixes;
  - long term management of habitats and protected species; and
  - post-construction monitoring.
- Travel Plan for construction workers

5 General Requirements

5.1 Working Hours

5.1.1 In order to maintain safety and minimise disruption to the operation of the airport, any work in close proximity to existing runways and taxiways would require the closure of facilities as operationally necessary and hence are likely to be scheduled to take place overnight.

5.1.2 During construction, the airport would continue to operate on a 24 hour, seven days per week basis. This would include use of the construction compounds and construction working areas on a daily 24-hour basis. It is acknowledged that the use of specified construction equipment and construction processes in sensitive locations, in close proximity to residential properties, and at noise sensitive times, may need to be subject to restrictions in relation to operating hours and limits for operating noise levels, or other mitigation measures, as necessary and practicable. Potential restrictions will be discussed with the relevant regulator and will be subject to agreement with the relevant local authority. .

5.1.3 Where necessary and practicable, closures and lane restrictions on the highways network would be undertaken outside peak periods (in terms of traffic flow). To ease congestion on the public highways, deliveries of some materials and movement of workforce may need to be outside of standard day time peak hours (eg overnight and at weekends).

5.1.4 Elsewhere, the core working hours would be 07:00 to 19:00 Monday to Friday and 07:00 to 13:00 on Saturdays.

5.2 Good Housekeeping

5.2.1 A good housekeeping policy would be applied to the construction areas at all times. As far as reasonably practicable the following principles would be applied:

- all working areas would be kept in a clean and tidy condition;
- adequate welfare facilities would be provided for construction staff;
- smoking areas at site offices/compounds or work sites would be equipped with containers for smoking wastes – these would not be located at the boundary of working areas or adjacent to neighbouring land;
- wheel washing facilities would be cleaned frequently;
- open fires would be prohibited at all times;
- all necessary measures would be taken to minimise the risk of fire and the contractor would comply with the requirements of the local fire authority and the Health and Safety Executive's (HSE) HSG 168 Fire safety in construction (HSE, 2010);
- waste from the construction areas would be stored securely to prevent wind blow; and
- waste (particularly food waste) would be removed from the welfare facilities at frequent intervals.

5.3 Site Induction

5.3.1 A site induction would be provided for all personnel prior to working onsite. As well as covering safety issues, the site induction would highlight the environmental constraints onsite, environmental protection measures, and good practice measures.

5.3.2 Specific toolbox talks would be included where relevant to cover specific environmental topics and the associated mitigation covered in Section 7 of this CoCP.

5.3.3 Principal Contractors would be responsible for ensuring all personnel working onsite have been properly inducted.

5.4 Site Security, Screening and Fencing

5.4.1 Construction compounds would be secured to protect against unauthorised entry. The type of fencing would be selected to suit the location and purpose, including airport security considerations.

5.4.2 All boundary fences/screens would be maintained in a tidy condition and would be fit for purpose.

5.4.3 All temporary screening and fencing would be removed as soon as reasonably practicable after completion of the works.

5.4.4 Where possible, access to construction areas would be limited to specified entry points and all personnel entries/exits would be recorded for security and health and safety purposes.

5.5 Construction Lighting

5.5.1 Lighting of the construction sites would be required to ensure that construction work is able to continue safely and effectively during the night-time works and other periods of insufficient natural light. This would include lighting to the construction working areas, storage and circulation areas and access points.

5.5.2 As far as possible, task lighting would be used for specific works to direct light towards the working areas during the night time. Such task lighting would be positioned at low level on posts and directed at the most frequently used areas of work. Lighting is likely to include the following.

- Trailer mounted, mobile, generator powered light plant.
- More permanent lighting. For the main/satellite construction compounds, electricity would be provided from the local grid, allowing the use of:
  - mounted floodlights;
  - street lanterns;
  - linear battens; and
  - wall luminaires.

5.5.3 Lighting for construction compounds and workforce areas would incorporate restricted upwards light spillage and energy efficient fittings. Checks would be carried out on a regular basis to ensure that lighting has not been repositioned.

5.5.4 A lighting strategy for the construction period will be developed to identify the type of lighting to be used and measures to be implemented to reduce light spill, taking into account effects on nearby sensitive receptors and the safety of ongoing aircraft operations.

5.5.5 Specific lighting measures to minimise impacts to bats are outlined in paragraph 7.3.16.

5.6 Pest Control

5.6.1 The risk of pest/vermin infestation would be reduced by ensuring any putrescible waste (eg food waste) is stored appropriately and is regularly collected from the construction areas. Effective preventative pest control measures would be implemented; any pest infestation would be dealt with promptly and notified to the relevant local authority as soon as practical.

5.7 Temporary Areas Supporting Construction

Construction Compounds

5.7.1 The construction process would be facilitated by the temporary construction compounds and storage areas. The following main/satellite compounds are anticipated:

- main contractor compound (known as MA1);
- airfield satellite compound (and laydown area); and
- surface access satellite contractor compounds.

5.7.2 In addition, a number of smaller compounds would be associated with construction of each of the elements of the Project.

5.7.3 All compounds are anticipated to cease use in 2035. All temporary compounds would be restored to their previous land use following completion of the works.

Construction Logistics Consolidation Centre

5.7.4 A temporary logistics facility may be required in order to allow scheduling of deliveries to the appropriate work sites. This would comprise an existing secure fenced area, including a warehouse type facility with loading/unloading docks, secure airside screening area, material laydown area, HGV parking, electric vehicle charging stations, driver welfare facilities and some limited parking.

5.7.5 The use of a logistics facility would allow HGV deliveries to the airport to be consolidated, reducing the overall number of deliveries on the local road network. If such a facility is required, it is likely that the location would be an existing facility or a site with an existing consent for such use.

5.8 Emergency Planning and Procedure

5.8.1 Emergency procedures would be developed by the Principal Contractor(s) for construction of the Project. The procedures would consider the anticipated hazards and the site conditions, and would have regard to Appendix 5.3.3: Major Accidents and Disasters and GAL's existing emergency procedures. The procedures would include emergency pollution control measures (based on Environment Agency guidelines where appropriate), fire and site evacuation, and instructions to workforce. The emergency procedures would also contain emergency phone

numbers and the method of notifying local authorities and statutory authorities. The procedures would be displayed at the work sites and all site staff would be required to follow them.

5.9 Pollution Prevention

5.9.1 The Principal Contractor(s) would develop and implement appropriate measures to control the risk of pollution due to construction works, materials and extreme weather events. The measures would consider the risk of pollution from construction activities and present pro-active management practices to ensure that any pollution that may occur is minimised, controlled, reported to the relevant parties and remediated. These measures would be based on paragraphs 7.4.8 to 7.4.10 and would be documented in the full CoCP.

5.10 Community Engagement

5.10.1 The Principal Contractor(s) would adopt a proactive approach in communications with the local community and stakeholders. Occupiers of nearby properties and relevant planning authorities would be informed in advance of works taking place (in particular, those affecting PRoW and local roads), including the duration of the works. The means of notification would be confirmed in the full CoCP post-consent.

5.10.2 A 24-hour help line would be set up to provide information on the Project. Details of the help line would be promoted by various means including press releases.

5.10.3 A complaints procedure would be implemented during the construction process. Complaints would be investigated and, where required, mitigation would be implemented. All calls would be logged and the response would be recorded.

5.11 Aerodrome Safeguarding

5.11.1 The construction of the Project would be undertaken in accordance with the safeguarding requirements of the Aerodrome Manual for Gatwick Airport (GAL, 2019). Construction activities would be managed through GAL's Permits to Work system and Daily Work Requests, which set out the type of activity, start/stop times, location, people and competencies, risk and method statements, change control and hazardous activities permits. All construction staff would be required to comply with airside and personnel rules and instructions given in respect of the Daily Airfield Works Permit.

5.11.2 Safeguarding of Aerodromes is the process to ensure that the operation and development of aerodromes is not inhibited by new developments in their vicinity. In particular, the process contributes to the safe operation of aircraft during the approach, take-off and landing procedure, whilst flying in the vicinity of the aerodrome, or while manoeuvring on the ground. The objectives of aerodrome safeguarding at Gatwick most pertinent to the construction of the Project are:

- to ensure the airspace around the aerodrome is maintained free of obstacles so as to permit aircraft operations to be conducted safely;
- to maintain the integrity of visual and radio-based aids to air navigation; and
- to contain other hazards such as birds, wildlife and the uncontrolled use of construction equipment (eg cranes).

5.11.3 To achieve these objectives, the aerodrome has a series of safeguarded surfaces and areas (eg Obstacle Limitation Surfaces) that define the height limits for temporary obstacles that may endanger aircraft in flight or interfere with any visual or radio aids to air navigation. The siting of temporary construction buildings and equipment associated with the construction of the Project would be in accordance with these safeguarded surfaces/areas. Regular checks of temporary obstacles on and around the aerodrome would be undertaken and the use of cranes would be in accordance with the Gatwick Airport Directive (GAD) 'Procedure for the Approval of Cranes and Other Tall Construction Equipment'.

5.11.4 The planning and undertaking of construction activities would take into account GAL's procedures for managing the risk of bird strike. The Principal Contractor(s) would be made aware of the existing sites used by birds within the bird hazard area and appropriate measures would be taken to reduce the risk of construction activities attracting birds eg providing covered storage and regular removal of putrescible waste, and the management of earthworks and spoil storage areas, and work next to water bodies.

6 Roles and Responsibilities

6.1 Project Team

Site Manager

6.1.1 The Site Manager would be responsible for maintaining the CoCP document as a working document; ensuring environmental standards are adhered to and monitoring compliance during construction; carrying out regular monitoring and inspections of construction work activities; and undertaking staff induction courses on environmental issues.

Environmental Co-ordinator

6.1.2 The Environmental Co-ordinator would be responsible for the interface between the environmental specialists and the Principal Contractor(s). They would have the primary responsibility for managing environmental issues through the construction and post-construction monitoring and for obtaining the relevant licences and consents.

Clerk of Works

6.1.3 The Clerk of Works would be the site representative and would be responsible for overseeing construction activities to ensure all environmental commitments are met and compliance with the conditions of all licences and permits.

Ecological Clerk of Works

6.1.4 The Ecological Clerk of Works (ECoW) would report on ecological matters and would be responsible for undertaking pre-construction surveys and monitoring.

7 Management of Environmental Effects

7.1 Historic Environment

Objectives

7.1.1 To eliminate or minimise the effect of the Project on the setting of the existing heritage assets and archaeological remains.

Management Measures

Pre-Construction Surveys

7.1.2 Mitigation against potential impacts to buried archaeological remains would principally comprise avoidance through design (ie relocation or micro-siting of proposed activities) or protection by placing material over the archaeological remains such that the impact of construction activities does not extend as far as the remains. The placement of materials may be permanent or may be temporary, with the materials being removed following completion of the construction activities. For example, at the contractor compounds on undeveloped ground, it may be possible to avoid stripping of soils in some of the materials laydown areas. Instead, geotextile matting (or an equivalent) would be placed on the topsoil and a layer of crushed stone would be added.

7.1.3 Programmes of archaeological investigation (eg trial trenching and watching briefs) may be undertaken prior to or during construction to offset impacts of the Project. The location and scope of archaeological investigation would be determined by the investigations to be undertaken ahead of the final ES and in consultation with the archaeological advisors to the relevant planning authority. The results of these investigations will be examined, and any opportunities for mitigation through avoidance or reduction of impact on buried archaeological remains will be identified and considered alongside other factors influencing the design process.

Archaeological Protection

7.1.4 In some cases, materials may be placed over known archaeological remains such that the impact of construction activities does not extend as far as the remains. The placement of materials may be permanent or may be temporary, with the materials being removed following completion of the construction activities.

7.2 Landscape, Townscape and Visual Resources

Objectives

7.2.1 To ensure that:

- green infrastructure assets are retained wherever possible;
- adverse impacts on the important features and locally distinctive patterns of development at Gatwick Airport are minimised;
- adverse impacts on the character of surrounding landscapes and townscapes are minimised;
- important urban green spaces including Riverside Garden Park are protected; and
- visually significant vegetation is retained where practicable to minimise adverse effects on visual receptors, and important views are protected.

Management Measures

7.2.2 A Vegetation Retention Strategy would be implemented for all elements of the Project, that coincide with existing significant hedgerows, woodland, trees, shrubs, wetland and amenity planting or elements of the Project that lie immediately adjacent to significant vegetation that may be affected during the construction phase. As part of the strategy, buffers would be created around the vegetation to be retained. Fencing would be provided in accordance with BS 5837:2012 (Trees in relation to design, demolition and construction) and machinery/vehicles would be prohibited from entering the buffer areas.

7.2.3 Lighting of the construction sites would be required to ensure that construction work is able to continue safely and effectively during night-time works and other periods of insufficient natural light. Further details on construction lighting is provided in section 5.5.

7.3 Ecology and Nature Conservation

Objectives

7.3.1 To minimise the impact of construction on features of ecology and nature conservation value.

Management Measures

Pre-construction surveys

7.3.2 Additional breeding bird surveys would be undertaken prior to construction commencing to determine the presence or absence of Schedule 1 species, in particular; peregrine, little ringed plover and firecrest.

Habitats and Species

7.3.3 The locations of all pre-construction archaeology, ground investigation and unexploded ordnance surveys would be assessed for their potential impacts on ecology and nature conservation and appropriate mitigation would be implemented. This would include altering survey locations to avoid damage to features of high value and watching briefs to ensure such features are not impacted upon.

7.3.4 Measures would be put in place to ensure that a minimum 15 metre buffer is retained between ancient woodland and construction areas. Appropriately sturdy fencing (in accordance with BS 5837) would be erected around the 15-metre buffer to prevent access by people, materials or machinery.

7.3.5 The measures outlined in paragraph 7.4.8 *et seq.* for the appropriate storage of materials and fuels and the management of dust during construction activities (such as the breaking up of the existing runway) and runoff would be implemented to avoid the pollution of designated sites and the local water environment during construction.

7.3.6 Any other existing trees, scrub and hedgerows proposed to be retained and incorporated into the design for the site would be protected during construction. Measures would be put in place to ensure that bat foraging/commuting habitat and retained areas of trees, hedge or scrub are adequately protected from damage or destruction during the construction phase of the Project. Sufficiently sturdy protective fencing (in accordance with BS 5837) would be erected around these features to prevent access by people, materials or machinery. This would reduce the risk of accidental damage during construction activities.

7.3.7 Suitable habitat for breeding birds would be cleared between October and mid-February (outside of the breeding bird season) as far as practicable. Where this is not feasible, the vegetation, building or structure due to be removed would first be inspected by a suitably qualified ecologist. Any active nests would be retained along with a minimum 5 metre buffer around them. The buffer around more sensitive and Schedule 1 bird nests would be increased, to avoid disturbance.

7.3.8 Any nest of a Schedule 1 species found to be active during construction works would be protected by a suitably sized buffer that would be identified by a suitably experienced ornithologist. Where necessary, such nests would be monitored during construction by the ornithologist for signs of disturbance and where necessary methods would be altered to prevent it.

7.3.9 Where practicable, semi-natural broadleaved woodland due to be lost would be cleared sensitively so that bluebell bulbs could be collected and replanted within new woodland.

7.3.10 Works undertaken along the margins of Pond F, or within close proximity to it, would be undertaken following an ecology method

statement and with an Ecological Clerk of Works present to reduce the likelihood of effects on pennyroyal.

7.3.11 Receptor areas for great crested newts and grass snake would be prepared, and the species translocated into these areas, using appropriate methods and timings prior to construction commencing within suitable habitats.

7.3.12 Areas of lower value reptile habitat that could support low numbers of grass snake, such as the drainage ditches and tree lines around and within car parks, would be cleared sensitively with an ecological clerk of works present.

7.3.13 Active badger setts that would be damaged or destroyed, or which could result in badgers using them being disturbed, would be closed using appropriate methods and timings. This would include setts affected by the alterations to the northern runway and taxiways, realigning them to the north of their current position and the realignment of the River Mole.

7.3.14 The following measures would be implemented to ensure that no badgers are harmed during the construction phase:

- suitable sturdy fencing to be erected around all construction works to deter foraging badgers from the works areas;
- any excavated holes would have a wooden board placed in them overnight so as to provide a means of escape should any badgers accidentally enter the excavation; and
- any chemicals to be securely stored at night in a locked container.

7.3.15 In order to avoid attracting badgers to the works area any food waste would be disposed of in appropriate bins or removed from site at the end of each day.

7.3.16 Lighting during construction would be designed in order to avoid disturbance to areas of value for bats, by directing lighting towards working areas and shielding adjacent habitats of value.

7.3.17 A strip of woodland between the Gatwick Stream and new highway alignments would be retained during construction to protect the dark corridor and well-used bat foraging and commuting route.

7.4 Geology and Ground Conditions

Objectives

7.4.1 To ensure that any contamination on site is identified and dealt with appropriately to avoid adverse impacts to sensitive receptors, eg construction workers, members of the public, and surface and ground water.

Management Measures

Ground Contamination

7.4.2 A structured approach would be followed to determine which development areas within the Project site require further assessment/ground investigation. The approach comprises the following elements:

- discovery strategy; and
- ground investigation.

Discovery Strategy

7.4.3 The discovery strategy would comprise a watching brief that would be undertaken by an experienced environmental consultant during construction activities such as ground clearance and earthworks. The strategy would also include a procedure for construction workers to follow in the event that previously unknown contamination is discovered.

Ground Investigations

7.4.4 Where assessment of historical data cannot demonstrate that the risk of contamination is low, intrusive ground investigations would be undertaken. The scope of the investigation would be agreed with the Environment Agency/relevant local planning authority prior to its implementation. Where appropriate, the investigations would include geotechnical testing to provide information on land stability. An appropriate slope stability assessment will be undertaken where considered necessary.

Remediation Strategy

7.4.5 Where the results of the ground investigation determine that remediation is required to ensure that the site is suitable for its proposed use, a remediation strategy would be prepared. The strategy would comprise the following:

- the proposed remediation technique;
- implementation plan setting out the objectives and requirements of the remediation;
- validation sampling to confirm that remediation objectives have been met; and
- a verification report.

7.4.6 The scope of the remediation strategy would be agreed with the Environment Agency/relevant local planning authority prior to its implementation. The verification report would also be sent to the Environment Agency/relevant local planning authority for approval. Subject to the scope and results of the remediation strategy, the following would be undertaken where appropriate to inform construction activities and the detailed design of buildings:

- piling risk assessment (in accordance with the Environment Agency guidance) including control measures (where appropriate) to mitigate risk to controlled waters during piling installation;
- detailed ground gas risk assessment and gas control measures during construction and to be incorporated into building design (where appropriate); and
- groundwater and/or surface water monitoring.

Soils

7.4.7 A Materials Management Plan would be prepared to document the management of soils on the site and include a risk assessment procedure to demonstrate the soils do not present a risk to human health or the environment. The Materials Management Plan will be undertaken in accordance with the CL:AIRE Code of Practice (CL:AIRE, 2011).

Contamination from Site Activities

7.4.8 Implementation of measures to prevent and control the spillage of oil, chemicals and other potentially harmful liquids would ensure appropriate storage and handling of materials and products in accordance with the Control of Pollution (Oil Storage) (England) Regulations 2001. Measures would include:

- avoidance of oil storage within 50 metres of a spring, well or borehole, within 10 metres of a watercourse or where oil could run over hard ground into a watercourse;
- secondary containment system that can hold at least 110% of the oil volume stored; and
- avoidance of storage of oil in areas at risk of flooding.

7.4.9 Refuelling of machinery would be undertaken within designated areas where spillages can be easily contained. Machinery would be routinely checked to ensure it is in good working condition; and any tanks and associated pipe work containing oils and fuels would be double skinned and be provided with intermediate leak detection equipment.

7.4.10 Implementation of measures to protect groundwater during construction, including good environmental practices based on legal responsibility and guidance on good environmental management guidance in CIRIA C532 Control of Water Pollution

from Construction Sites – Guidance for Consultants and Contractors (CIRIA, 2001).

Unexploded Ordinance (UXO)

7.4.11 A UXO mitigation strategy would be developed using guidance within C681 Unexploded Ordnance (UXO) and appended to the CoCP: A Guide for the Construction Industry (CIRIA, 2009). The strategy would utilize information from the Explosive Ordnance Threat Assessment Report (Bactec, 2013).

7.5 Water Environment

Objectives

7.5.1 To prevent increasing flood risk onsite and offsite, along with protecting hydrological receptors.

Management Measures

7.5.2 Mitigation measures and best practices would be applied prior to and during construction works, including the following.

- Constructing adequate temporary Sustainable Drainage Systems (SuDS) or conventional drainage to contain surface water and silt during the construction period.
- Identifying the location of services before any work commences to avoid any damage during construction.
- Ensuring adequate dewatering takes place during excavation activities or construction of subsurface features and foundations, in line with any permitting requirements.
- Ensuring dewatering does not mobilise existing contamination or lead to settlement or other such effects.
- Ensuring piling works do not create preferential pathways for contamination through a piling risk assessment.
- Ensuring the drainage system has adequate capacity to store any additional surface water runoff or groundwater required to be pumped out of excavations.
- Implementation of water efficiency measures to minimise additional water use, such as pressure management, grey water recycling and rainwater harvesting, and water efficient controllers on tap and urinals.
- Where river realignment is proposed, construction activities should be planned to ensure no increase in fluvial flood risk, with temporary mitigation provided if required.
- Where the construction of Project elements within the floodplain is proposed, phasing would be developed to ensure adequate mitigation is provided prior to the loss of any floodplain as a result of construction activities, where reasonably practicable. Where this is not practical, ensure temporary floodplain compensation is provided if the construction activities would increase flood risk elsewhere.
- Constructing the River Mole diversion offline and leave to vegetate over before flow is initiated down the channel. This would reduce the release of fine sediment and the likelihood of any unexpected large-scale channel change.
- Preparing an incident response plan prior to construction. This would be present on site throughout construction, informing all site workers of required actions in the event of a flooding incident.
- Using site materials free of contamination, avoiding any potential contamination of local surface water flow paths.
- Ensuring that wet cement does not come in to contact with surface water or groundwater.
- Bunding of the airfield satellite contractor compound which is located within a floodplain.

7.5.3 The measures outlined in paragraph 7.4.8 *et seq.* for the appropriate storage of materials and fuels and the management of runoff would be implemented to avoid the pollution of surface water receptors construction.

7.6 Traffic and Transport

Objectives

7.6.1 To carry out construction works in such a way that maintains highway safety and avoids or minimises adverse effects on local communities and highway users.

Management Measures

7.6.2 Prior to the commencement of any construction works associated with the Project, a Construction Traffic Management Plan (CTMP) would be prepared in consultation with the relevant local planning authorities, local highway authority and Highways England. The CTMP is a traffic management strategy to minimise any negative environmental and community impacts and set out measures that will be introduced to manage construction traffic in accordance with the wider principles established in this outline CoCP. The CTMP would be in accordance with Transport for London guidance.

7.6.3 The CTMP would include the following measures.

- 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 use of rail 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 (where agreed) 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.
- Time shift patterns such that those workers who do need to come by road to use roads and highways outside of peak periods (where required).

7.6.4 In addition to the CTMP, a Travel Plan would be implemented with measures to encourage construction workers to use more sustainable travel patterns. An Outline Construction Workforce Travel Plan has been prepared.

7.6.5 Temporary diversion routes for traffic and pedestrians to facilitate the construction process would meet the appropriate requirements.

7.7 Air Quality

Objectives

7.7.1 To ensure that impacts to air quality receptors are minimised.

Management Measures

General Measures

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the local planning authorities.
- Develop and implement a stakeholder communications plan that includes community engagement before works commences on site.
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.
- Display the head or regional office contact information.

Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emission in a timely manner, and record the measures taken.
- Make the complaints log available to the local planning authorities when asked.
- Record any exceptional incident that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book.
- Hold regular liaison meetings with other high risk construction sites within 500 metres of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

Monitoring

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local planning authorities when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 metres of site boundary, with cleaning to be provided if necessary.
- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local planning authorities when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Agree monitoring strategy with the local planning authorities. Where possible commence baseline monitoring at least three months before work commences on site or, if it is a large site, before work on a phase commences.

Site Preparation/Maintenance

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible.
- Erect solid screens or barriers around dusty activities or the site boundary and cover, seed or fence stockpiles to prevent wind whipping.
- Fully enclosed site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site runoff of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on-site. If they are being re-used on-site cover, seed and fence stockpiles to prevent wind whipping.

Operating Vehicle/Machinery and Sustainable Travel

- Ensure all on-road vehicles comply with the requirements of the London Low Emission Zone and the London Non-Road Mobile Machinery (NRMM) standards, where applicable.
- Ensure all vehicles switch off engines when stationary – no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local planning authorities, where appropriate).
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials. (This requirement would be met within the CTMP).
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car sharing).

Operations/Waste Management

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction eg suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.
- Ensure equipment is readily available on site to clean and dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- Bonfires and burning of waste materials are prohibited.

Demolition Activities

- Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust).
- Ensure effective water suppression is used during demolition operations. Hand held sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.
- Bag and remove any biological debris or damp down such material before demolition.

Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable.
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable.
- Only remove the cover in small areas during work and not all at once.

Construction Activities

- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
- For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.

Trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of

the site. This may require the sweeper being continuously in use.
- Avoid dry sweeping of large areas.
- Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.
- Record all inspections of haul routes and any subsequent action in a site log book.
- Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).
- Access gates to be located at least 10 metres from receptors where possible.

7.8 Noise and Vibration

Objectives

7.8.1 To control and limit noise and vibration levels, so far as is reasonably practicable, to minimise disturbance to sensitive receptors.

Management Measures

7.8.2 To manage noise generating construction activities, all works would be carried out in accordance with the following principles.

- Construction works would be undertaken in accordance with best practicable means (BPM) as defined by the Control of Pollution Act 1974 (CoPA) and Environmental Protection Act 1990 (EPA), which would be applied during construction activities to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors.
- As part of BPM, mitigation measures would be applied in the following order:
  - noise and vibration control at source: for example, the selection of quiet and low vibration equipment, review of construction methodology to consider quieter methods, location of equipment on-site, control of working hours, the provision of acoustic enclosures and the use of less intrusive alarms, such as broadband vehicle reversing warnings;
  - screening: for example, local screening of equipment or perimeter hoarding or the use of temporary stockpiles; and
  - where, despite the implementation of BPM, the noise exposure exceeds the criteria defined during the consenting process, noise insulation or ultimately temporary re-housing will be offered at qualifying properties.
- Lead contractors would seek to obtain prior consent from the relevant local authority under Section 61 of the CoPA for the proposed construction works. The consent application would set out BPM measures to minimise construction noise and vibration, including control of working hours, and provide a further assessment of construction noise and vibration, including confirmation of noise insulation/temporary re-housing provision.
- Contractors would undertake and report monitoring as is necessary to assure and demonstrate compliance with all noise and vibration commitments. Monitoring data would be provided regularly to, and be reviewed by GAL and made available to the local authorities.
- Contractors would be required to comply with the terms of the CoCP and appropriate action will be taken by the nominated undertaker as required to ensure compliance.

7.8.3 Noise insulation would be offered for qualifying buildings, where noise levels exceed defined criteria, which will be defined in the full CoCP submitted with the ES. Noise insulation or, if other measures are not possible, temporary re-housing would avoid residents being significantly affected by levels of construction noise inside their dwellings. The assessment reported in the ES will provide an estimate of the buildings that are likely to qualify for noise insulation or to qualify for temporary rehousing, if any.

7.8.4 Qualification for noise insulation and, where appropriate, temporary re-housing would be confirmed as part of seeking prior consent from the local authority under Section 61 of the CoPA. Qualifying buildings will be identified so that noise insulation can be installed, or where appropriate any temporary re-housing provided, before the start of the works predicted to exceed noise insulation or temporary re-housing criteria.

7.8.5 Construction traffic routes would be chosen to avoid routing lorries through villages and past NSRs on minor roads.

7.9 Socio-economic Effects

Objectives

7.9.1 To carry out construction works in a way that minimises disturbance to the community and local business.

Management Measures

7.9.2 Measures for community engagement would be included in the full CoCP to guide how potential effects on facilities and services could be mitigated through measures agreed with the local community, and to ensure they remain informed as the Project progresses.

7.9.3 Worker Code of Conduct measures would be developed to help mitigate the potential adverse effects of introducing a temporary workforce into the local study by ensuring construction workers conduct themselves in an appropriate manner. The code of conduct would be in line with the Considerate Contractors Scheme (see paragraph 2.2.8).

7.10 Health and Wellbeing

Objectives

7.10.1 To minimise health impacts for local residents and construction staff.

Management Measures

7.10.2 Measures to protect human health are discussed under the topic specific sections, eg air quality, noise and vibration and geology and ground conditions.

7.10.3 However, to alleviate the potential for pressure 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.

7.10.4 Appropriate Personnel Protective Equipment would be provided to construction workers as identified through the risk assessment process.

7.11 Agricultural Land Use and Recreation

Objectives

7.11.1 To maintain the quality of agricultural land and maintain the operation of farming enterprises temporarily affected during the construction process.

Management Measures

7.11.2 A soil management strategy would be prepared to ensure:

- the conservation of soil resources;
- avoidance of damage to soil structures;

- maintenance of soil drainage; and
- the reinstatement, where required, of soil profiles as near as possible to their former condition.

7.11.3 The soil management strategy would be written in accordance with Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Defra, 2009) and Good Practice Guide for Handling Soils (Defra, 2000).

7.11.4 Measures would be implemented to reduce, as far as possible, the effects of construction activities on farm holdings. Where appropriate, these would include the maintenance of farm access locations; provision of appropriate fencing; maintenance of water supplies; co-ordination of timings of construction works to facilitate farming operations; and measures to address the potential risks of the spread of animal and plant diseases.

7.11.5 In relation to public rights of way, management measures would be implemented at the following locations to avoid severance and to maintain safe public access:

- along National Cycle Route 21 and the Sussex Border Path during construction activities associated with the North Terminal roundabout improvements;
- along the Sussex Border Path during construction activities associated with the South Terminal roundabout improvements; and
- along footpaths around the perimeter of Pentagon Field during construction of the new car parking area and the filling of Pentagon Field.

7.11.6 Management measures or temporary diversions would also be implemented to maintain safe access along the rights of way in the vicinity of the proposed construction compound to the south of the M23 Spur, east of the South Terminal roundabout should this compound be taken forward.

7.11.7 A permanent diversion to the Sussex Border Path would be provided to the south of the A23 arising from the new North Terminal roundabout.

8 References

Legislation

Control of Pollution Act 1974

Construction (Design and Management) Regulations 2015

Environmental Protection Act 1990

Control of Pollution (Oil Storage) (England) Regulations 2001

Published Documents

Bactec (2013) Explosive Ordnance Threat Assessment Report, June 2013.

British Standards Institution (2012) BS 5837 Trees in relation to design, demolition and construction. London, British Standards Institution

British Standards Institution (2014) BS EB 12464-2:2014 Light and lighting. Lighting of work places. Outdoor work places. London, British Standards Institution.

Construction Industry Research and Information Association (CIRIA) (2001) C532 Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors. London, CIRIA

Construction Industry Research and Information Association (CIRIA) (2009) C681: Unexploded Ordnance (UXO): A guide for the construction industry. London, CIRIA.

Contaminated Land: Applications in Real Environments (CL:AIRE) (2011) The Definition of Waste: Development Industry Code of Practice v2, March 2011.

Department for Environment, Food and Ra Affairs (Defra) (2000) Land use planning: Good practice guide for handling soils. London, Defra.

Department for Environment, Food and Rural Affairs (Defra) (2009) Code of Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/716510/pb13298-code-of-practice-090910.pdf

Gatwick Airport (2021) Second Decade of Change to 2030. https://www.gatwickairport.com/globalassets/company/sustainability/reports/2021/decade-of-change-policy-to-2030.pdf

Health and Safety Executive (HSE) (2010) HSG 168 Fire safety in construction. Guidance for clients, designers and those managing and carrying out construction work involving significant fire risks.

Institute of Air Quality Management (IAQM) (2014) Guidance on the assessment of dust from demolition and construction.

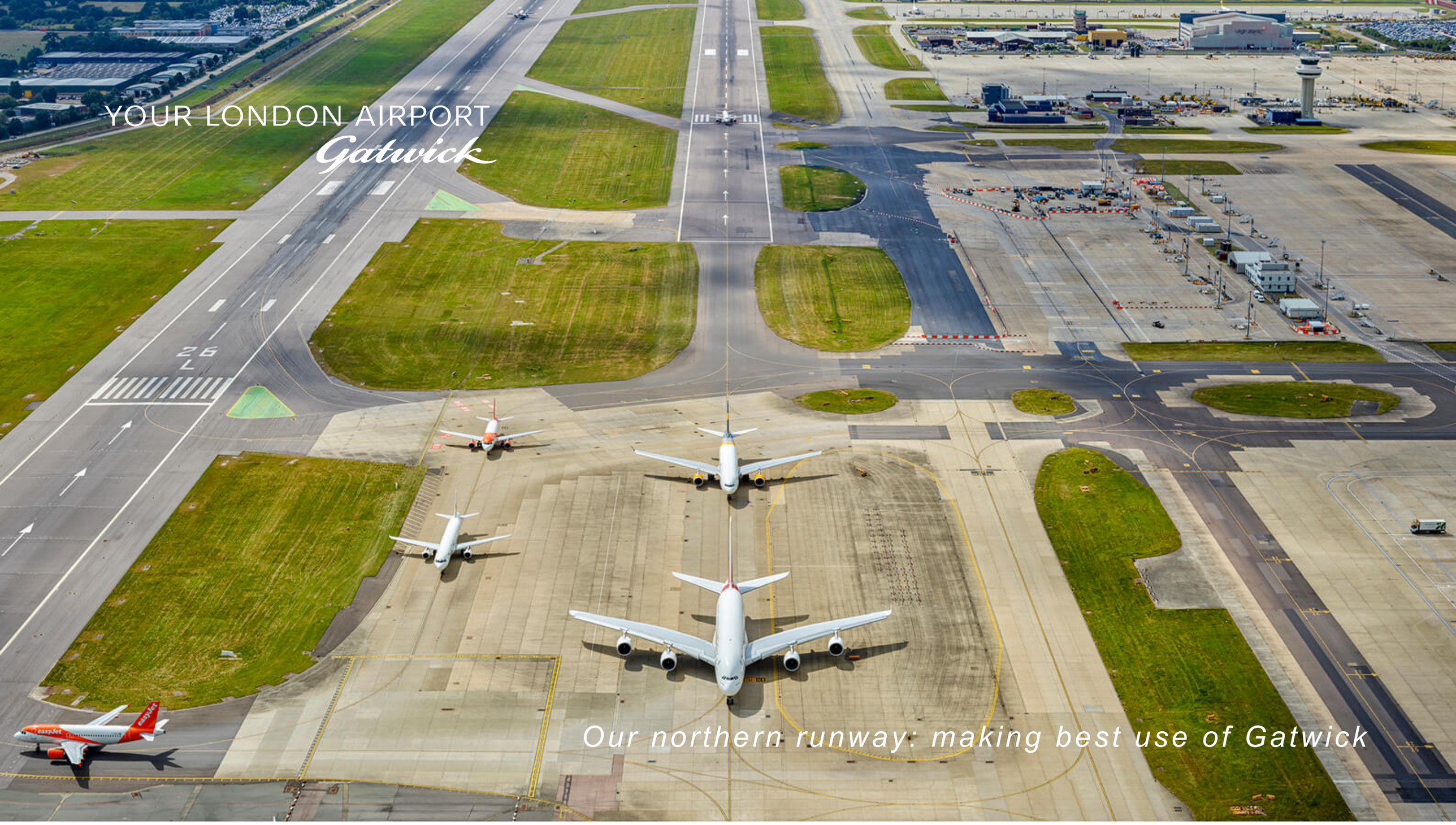
Institute of Lighting Professionals (2011) Guidance for the Reduction of Obtrusive Light. [Online] Available at: https://www.theilp.org.uk/documents/obtrusive-light/

The Office of the Deputy Prime Minister, The Department for Transport, The National Assembly for Wales (2003) Safeguarding Aerodromes, Technical Sites and Military Explosives Storage Areas: The Town and Country Planning (Safeguarded Aerodromes, Technical Sites And Military Explosives Storage Areas) Direction 2002.

9 Glossary

9.1 Glossary of Terms

Term	Description
BPM	Best Practicable Means
BS	British Standard
CCS	Considerate Contractors' Scheme
CoCP	Code of Construction Practice
CPOA	Control of Pollution Act 1974
CTMP	Construction Traffic Management Plan
DCO	Development Consent Order
DMP	Dust Management Plan
ECoW	Ecological Clerk of Works
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMS	Environmental Management System
EPA	Environmental Protection Act 1990
ES	Environmental Statement
FMP	Flood Management Plan
FRA	Flood Risk Assessment
GAL	Gatwick Airport Limited
HGV	Heavy Goods Vehicles
HSE	Health and Safety Executive
IAQM	Institute of Air Quality Management
LEMP	Landscape and Ecological Management Plan
NRMM	Non-Road Mobile Machinery
PRoW	Public Right of Way
UXO	Unexploded Ordinance



Our northern runway: making best use of Gatwick

Preliminary Environmental Information Report
Appendix 5.3.2: Draft Waste Strategy

September 2021

Table of Contents

1 Introduction

1.1 Background

1.1.1 This document forms Appendix 5.3.2 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the number of airport passengers and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the draft Waste Strategy for the Project.

1.2 Purpose of the Waste Strategy

1.2.1 The purpose of the Waste Strategy is to demonstrate how waste has been considered in terms of the design of the Project and sets out measures for managing waste during construction and operation to meet legislative and policy requirements.

1.3 Scope and Structure of the Waste Strategy

1.3.1 The scope of the Waste Strategy considers the waste generated during construction and operation of the Project but excludes wastewater which is covered in Chapter 11: Water Environment. The estimates of waste types and quantities are based on information available at the Preliminary Environmental Information Report (PEIR) stage. The waste management measures set out in the Strategy are in accordance with legislative obligations, planning policy and best practice guidance.

1.3.2 Section 2 of the Waste Strategy sets out the regulatory framework for managing waste in the UK and also considers national and local policy requirements to provide the context for how the wastes would be managed. Section 2 also summarises the key principles for sustainable waste management, ie the waste hierarchy principle and the self sufficiency principle.

1.3.3 Section 3 provides a summary of scoping responses related to waste and Section 4 summarises the existing waste management facilities and the predicted capacity in the future.

1.3.4 Section 5 considers the waste arisings during the construction phase and the approach for managing wastes in accordance with the waste hierarchy principle. This also includes waste from the demolition/relocation of buildings and structures; a schedule of the buildings/structures has been provided that will be used in the future to identify the types of waste that would be generated from these works. Section 5 also introduces the Site Waste Management Plan (SWMP) (see Annex 1) as the tool for recording waste movements from the site during the construction process.

1.3.5 Section 6 discusses the waste arisings during the operation of the Project. A description of the baseline waste management measures is provided together with a summary of the proposed measures following completion of the Project.

1.4 Implementation of the Waste Strategy

1.4.1 The information presented in this draft Waste Strategy is based on information available at the PEIR stage. The Strategy will be updated for the Environmental Statement (ES), with further refinements post-consent as the detailed design process progresses.

1.4.2 Gatwick Airport would retain overall responsibility for implementing the Waste Strategy during construction and the Principal Contractor would be responsible for recording movements of waste from the site in the SWMP. The SWMP would be made available to the local authorities during the construction process on request.

1.4.3 During operation, GAL would be responsible for implementing the Strategy via a third-party in-line with the existing approach.

2 Regulatory Framework

2.1 Definition of Waste

2.1.1 The definition of waste is important because the classification of substances as a waste is the basis for the application of regulatory controls to protect the environment and human health. For the purpose of this Waste Strategy, "waste" has been defined in accordance with Article 3(1) of the revised European Waste Framework Directive (2008/98/EC), which states that waste is:

'any substance or object which the holder discards or intends to discard or is required to discard'.

2.1.2 "Discard" includes the recovery and recycling of a substance as well as its disposal in order to ensure that recovery operations are carried out in a way which protects the environment and human health. The decision on whether something is discarded must take account of all the circumstances (for example, the nature of the material, how it was produced and how it will be used) and have regard to the aims of the Waste Framework Directive, which are:

'the protection of human health and the environment against harmful effects caused by the collection, transport, treatment, storage and tipping of waste'.

2.1.3 Guidance on the interpretation of the Waste Framework Directive definition of "waste" is taken from Department for Environment, Food and Rural Affairs (Defra's) published guidance 'Guidance on the legal definition of waste' (Defra, 2012) and the recently updated part 2 of the guidance 'Decide if a material is a waste or not: general guide' (Defra, 2021), which provide a practical guide to help organisations make decisions about whether a material is a waste or not.

2.1.4 The Waste Strategy also takes into account the definition of waste by Contaminated Land: Applications in Real Environments (CL:AIRE) 'Definition of Waste: Development Industry Code of Practice (CoP) (CL:AIRE, 2011). CL:AIRE is an independent body that promotes the sustainable remediation of contaminated land. The CoP provides a consistent and transparent process which enables the reuse of excavated materials on site or their movement between sites. It sets out good practice for the development industry to use when:

'Assessing on a site-specific basis whether excavated materials are classified as waste or not; and

Determining on a site-specific basis when excavated waste can cease to be waste for a particular use.'

2.1.5 The Environment Agency will take the CoP into account when deciding whether to regard materials as a waste. If materials are dealt with in accordance with the CoP, the Environment Agency considers that those materials are unlikely to be waste if they are used for the purpose of '*land development*'.

2.1.6 In order to implement the CoP, a Materials Management Plan (MMP) must be prepared. The MMP should be based on an

appropriate risk assessment to demonstrate that the material will not harm human health or the environment.

2.1.7 The CoP relates to excavated material, which includes:

- soil, both topsoil and subsoil, parent material and underlying geology;
- ground based infrastructure that is capable of reuse within earthworks projects, eg road base, concrete floors;
- made ground;
- source segregated aggregate material arising from demolition activities, such as crushed brick and concrete, to be reused on the site of production within earthworks projects or as a sub-base or drainage materials; and
- stockpiled excavated materials that include the above.

2.2 Legislative Framework

2.2.1 The UK legislative framework for the management of construction wastes comprises the following:

- Environmental Protection Act 1990;
- Environment Act 1995;
- Hazardous Waste (England and Wales) Regulations 2005 (as amended);
- Waste Management (England and Wales) Regulations 2006;
- Waste (England and Wales) Regulations 2011 (as amended); and
- Environmental Permitting (England and Wales) Regulations 2016 (as amended).

2.2.2 The framework of waste management legislation in the UK is currently shaped by the Waste (England and Wales) Regulations 2011 (as amended). These regulations require all businesses and organisations that produce waste to take all reasonable measures to prevent waste, to apply the waste hierarchy (refer to Section 2.5) when transferring waste using the definitions in Article 3 of Directive 2008/98/EC and include a declaration on their waste transfer notes or consignment notes to that effect. Standard Industry Classification (SIC) Codes (Companies House, 2018) of the waste producer must also be provided in the waste transfer note. The SIC is a system for classifying industries by a four-digit code.

2.2.3 The Waste Regulations 2011 (as amended) also require that any organisation which collects waste paper, metal plastic or glass must do so using separate collections to facilitate or improve recovery of these materials and where it is technically, environmentally and economically practicable.

2.2.4 The Hazardous Waste (England and Wales) Regulations 2005 (as amended) set out the requirements for controlling and tracking the movement of hazardous waste and bans the mixing of different types of waste. Under the Regulations "mixing" includes mixing of different categories of hazardous waste, non-hazardous wastes or any other substance or material.

2.3 Planning Policy

National Planning Statement for Airports

2.3.1 The Airports National Policy Statement (NPS) (Department for Transport, 2018) considers resource and waste management impacts associated with the construction of airport infrastructure. It refers to the waste hierarchy (see Section 2.5 of this report) and states that the Waste Framework Directive (2008/98/EC) targets to divert construction and demolition waste from landfill (by preparing for re-use and recycling) should be considered as the 'minimum acceptable practice' for the construction and operation of any new airport infrastructure.

2.3.2 According to the Airports NPS, applications for development consent should set out the proposed arrangements for managing any waste produced and include information on the proposed waste recovery and disposal system for all waste generated by the development. The application should seek to minimise the volume of waste sent for disposal and set out a suite of mitigations to eliminate or significantly reduce the risk of adverse impacts associated with resource and waste management.

2.3.3 The application must provide assurances that waste from the proposed development can be dealt with by the existing or proposed waste infrastructure, whilst not having an adverse effect on the capacity of the infrastructure.

National Policy Statement for National Networks

2.3.4 The National Networks NPS (Department for Transport, 2015) considers waste management impacts associated with the construction of nationally significant infrastructure projects on the national road and rail networks in England[1]. It states that Government policy on waste management is intended to protect human health and the environment by generating less waste, and to use waste as a resource wherever possible.

2.3.5 According to the National Networks NPS, applications for development consent should identify the measures for managing waste produced by the development and include information on the proposed recovery and disposal system for all wastes generated by the development. The application should describe the steps taken to minimise the volume of waste produced and how the existing or proposed waste infrastructure can manage waste that is generated. In accordance with the waste hierarchy, the volume of waste sent for disposal should be minimised unless it is demonstrated that it is the best overall environmental outcome.

Our Waste, Our Resources: A Strategy for England

2.3.6 The Government published its 'Our Waste, Our Resources: A Strategy for England' in December 2018 (Defra, 2018). It builds on the commitments in the 25 Year Environment Plan and sets out the policies that will help achieve the vision of moving to a circular economy. The Strategy is underpinned by natural capital thinking and is guided by two overarching objectives:

- to maximise the value of resource use; and
- to minimise waste and its impact on the environment.

2.3.7 The Strategy sets out the Government's priorities for preserving material resources, minimising waste, promoting resource efficiency and moving towards a circular economy. The priorities provide a useful insight into how organisations will be required to reduce and manage their waste in the future and to follow a more considered approach to procurement.

2.3.8 The Strategy will contribute to the delivery of five strategic ambitions:

- to work towards all plastic packaging placed on the market being recyclable, reusable or compostable by 2023;
- to work towards eliminating food waste to landfill by 2030;
- to eliminate avoidable plastic waste over the lifetime of the 25 Year Environment Plan;
- to double resource productivity by 2050; and

[1] It is noted that the Transport Decarbonisation Plan published by Department for Transport (DfT) on 14 July 2021 announced DfT's intention to review the NPS for National Networks in due course once demand patterns post-pandemic become clearer. It is understood DfT intends to commence the review by the end of 2021 and complete it by Spring 2023. In the interim and whilst the review is undertaken, DfT has confirmed the NPS for National Networks remains relevant government policy and has full force and effect for the purposes of the Planning Act 2008."

- to eliminate avoidable waste of all kinds by 2050.

National Planning Policy for Waste (2014)

2.3.9 The National Planning Policy for Waste (Department for Communities and Local Government (now Ministry for Housing, Communities and Local Government), 2014) provides guidance to local planning authorities when determining applications for non-waste related development. Local planning authorities are required to ensure that the '*likely impact of proposed non-waste related development on existing waste management facilities and on sites and areas allocated for waste management, is acceptable and does not prejudice the implementation of the waste hierarchy and/or the efficient operation of such facilities*'.

2.3.10 Local planning authorities are also recommended to consider the following factors during determination:

- new, non-waste development makes sufficient provision for waste management and promotes good design with the integration of waste management within the rest of the development (for example, providing adequate storage facilities); and
- the handling of waste arising from the construction and operation of the development maximizes reuse and recovery opportunities and minimises off-site disposal.

Waste Management Plan for England (2021)

2.3.11 The Waste Management Plan for England (Defra, 2021) fulfils the requirements of the Waste (England and Wales) Regulations 2011 (as amended) for the waste management plan to be reviewed every six years. It provides an analysis of the current waste management situation in England and evaluates how it will support the implementation of the objectives and provisions of the Waste (England and Wales) Regulations 2011 (as amended). The Plan also provides an overview of the type, quantity and source of waste generated within England; existing waste collection schemes and major disposal and recovery installations; an assessment of the need for new collection schemes; and general waste management policies. The 2021 Plan supersedes the previous waste management plan for England and includes changes to waste management plan requirements which have been made by the Waste (Circular Economy) (Amendment) Regulations 2020 where appropriate.

West Sussex Waste Local Plan (2014)

2.3.12 The West Sussex Waste Local Plan (2014) is a collaboration between West Sussex County Council and the South Downs National Park Authority (the 'Authorities'). It was adopted in April 2014 and is part of the statutory 'development plan'. The Plan provides a background to waste in West Sussex including the types of waste, assumptions about waste arisings, current waste management capacity within the county and any shortfalls in capacity.

2.3.13 The Waste Local Plan covers the period to 2031 and sets out the vision and strategic objectives. It allocates strategic waste sites and includes a monitoring and implementation framework.

2.3.14 The existing and proposed waste management infrastructure are discussed in Section 4 of this report.

2.3.15 The Waste Local Plan was subject to a five-year review in 2019 as required by national policy, which identified that the policies within the Plan remain consistent and effective.

Surrey Waste Local Plan 2019 - 2033

2.3.16 The Surrey Waste Local Plan 2019-2033 (Surrey County Council, 2020) was adopted by Surrey Council in December 2020 and replaces the Surrey Waste plan adopted in 2008.The Plan shows how and where waste will be managed in Surrey in the future. It sets out the planning framework for the development of waste management facilities and provides policies to ensure that these facilities are well located - ie do not result in significant adverse impacts on amenity and the environment.

2.3.17 Targets set in the plan for wastes relevant to the Project are:

- from a baseline of 58% in 2017, the target for recycling CD&E waste increases to 65% by 2020; 70% by 2025 and 75% by 2030;
- from a baseline of 62% in 2017, the target for recycling commercial and industrial (C&I) waste increases to 65% by 2020; to 70% by 2025 and remains the same for 2030;
- from a baseline of 25% in 2017, the target for disposing of CD&E waste to landfill decreases to 15% by 2020; 10% by 2025 and 5% by 2030; and
- from a baseline of 30% in 2017, the target for disposing of C&I waste to landfill decreases to 20% by 2020, 10% by 2025 and 5% by 2030.

2.4 Guidance Documents

2.4.1 The following guidance documents relevant to waste management will be considered:

- Waste Duty of Care: Code of Practice (Defra and Environment Agency, 2018);
- Definition of Waste: Development Industry Code of Practice version 2 (CL:AIRE, 2011); and
- Designing Out Waste: A Design Team Guide for Civil Engineering (WRAP, n.d.).

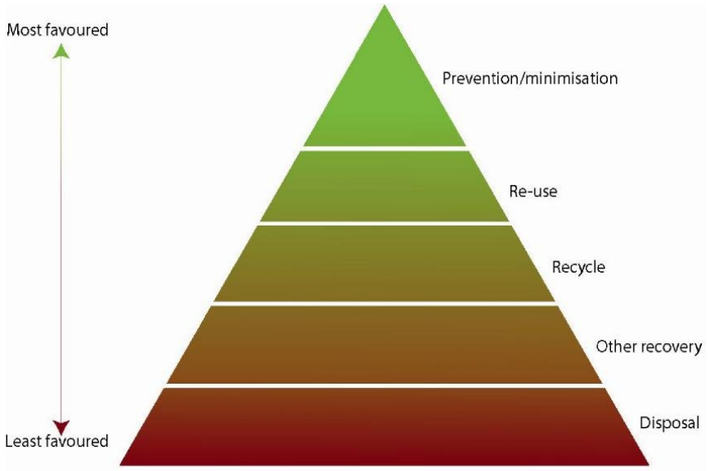
2.5 Waste Hierarchy

2.5.1 The waste hierarchy ranks waste management options according to what is best for the environment. It gives top place to waste prevention. When waste has been generated, priority is given to preparing it for re-use, then recycling, then recovery, and last of all disposal (for example, landfill). The waste hierarchy is a key element of sustainable waste management and is a legal requirement of the Waste (England and Wales) Regulations 2011 (as amended).

2.5.2 Defra has published guidance on how the waste hierarchy should be applied to a range of common wastes (Guidance on applying the Waste Hierarchy, Defra, 2011). It summarises the findings of current scientific research on the environmental impacts of various waste management options for a range of materials and products. The guidance states that for most materials the waste hierarchy ranking applies. However, the evidence suggests that for some materials, the preferred waste management option (ie with the lowest environmental impact) does not follow the waste hierarchy order. This is true for lower grades of wood, where energy recovery options are more suitable than recycling.

2.5.3 All waste generated by the Project would be managed in accordance with the waste hierarchy unless it can be demonstrated that the alternative is the best overall environmental outcome.

Diagram 2.1: Waste Hierarchy



2.6 Gatwick Airport Sustainability Strategy

2.6.1 Gatwick Airport's Sustainability Strategy (Decade of Change) was launched in 2010 and sets a number of targets (such as materials waste management) to be achieved by 2020. The targets are based on a series of environmental performance indicators which are monitored and reported on an annual basis. An updated Decade of Change document was published in June 2021.

2.6.2 This Waste Strategy takes into account the Decade of Change in terms of its targets, the reported monitoring data up to 2019 and any new relevant initiatives for 2019. The Strategy will be reviewed and updated in accordance with the updated June 2021 Decade of Change targets for the ES.

3 Consultation

3.1 Scoping Opinion

3.1.1 In September 2019, GAL submitted a Scoping Report to the Planning Inspectorate, which described the scope and methodology for the technical studies being undertaken to provide an assessment of any likely significant effects and, where necessary, to determine suitable mitigation measures for the construction and operational phases of the Project. It also described those topics or sub-topics which are proposed to be scoped out of the EIA process and provided justification as to why the Project would not have the potential to give rise to significant environmental effects in these areas.

3.1.2 Following consultation with the appropriate statutory bodies, the Planning Inspectorate (on behalf of the Secretary of State) provided a Scoping Opinion on 11 October 2019.

3.1.3 Key issues raised during the scoping process specific to waste are listed in Table 3.1.1.

Table 3.1.1: Summary of Scoping Responses

Details	How/where addressed in the waste strategy
The Inspectorate agrees that the issue of waste arising from the extraction, processing and manufacture of construction components can be scoped out of the assessment. However, the Inspectorate notes that the Applicant would implement sustainable procurement practices in line with the relevant principles of BREEAM.	Noted
The baseline in the ES should include the current levels of waste being produced by the current airport operation and how much waste is being managed as well as the current levels of waste being managed by individual facilities.	The baseline data are presented in Section 6.1.
The Scoping Report identifies that impacts of breaking up concrete will need to be cross referenced in the Air Quality assessment. The ES should also cross reference other relevant aspect Chapters such as ecology and noise and vibration.	Whilst breaking up of concrete is not specifically referred to in these chapters, the impacts of construction dust from construction activities have been assessed.
Since the CARE facility processes airport waste, the ES should set out how waste would be managed during the relocation of the CARE facility and assess any potential impacts and effects arising from them.	The new CARE facility would be established before the existing facility is decommissioned. Further details will be provided in the ES.
There is significant uncertainty regarding the location and scale of the CARE waste management facility. The installation of an Energy from Waste (EfW) facility has the potential for significant environmental effects. The EIA must include full details of the EfW and CARE facility including the type of waste managed.	Two options have been identified for the CARE facility, as set out in Chapter 5: Project Description. A single option will be described within the ES, together with further details of the CARE facility and its components (including the types of waste managed).
The Surrey Waste Plan (2008) and the emerging Surrey Waste Local Plan should be included	The Surrey Waste and Local Plans have been taken into account.
Opportunities to reuse waste within the site should be explored.	This draft strategy considers opportunities to reuse waste. These opportunities will be explored further as the detailed design progresses.
The applicant should demonstrate compliance with the waste hierarchy. For wastes arising from the development the ES should assess the implications and wider environmental and public health impacts of different waste disposal options; and disposal and transport methods,	The wastes generated by the Project would be managed in accordance with the waste hierarchy. The environmental and public health and transport implications of the proposed management option would be assessed as part of the EIA process. A waste technology options appraisal is not included in the waste strategy.

4 Waste Management Infrastructure

4.1 Existing Waste Facilities

4.1.1 The Environment Agency were asked to provide details of the existing waste management facilities within 15 km of Gatwick Airport. Table 4.1.1 lists these facilities and their location is shown on Figure 4.1.1.

Table 4.1.1: Existing Waste Management Facilities

Existing Waste Management Facilities within 15 km of the Site				
Ref	**Permit**	**Operator**	**Site Name**	**Site Type**
1	83609	Viridor Waste Management Ltd	Crawley Recycling Site	Household and C&I waste transfer station
2	400201	United Grab Hire	United Yard	Physical treatment yard
3	83315	UK Power Networks	Stephenson Way	Special waste transfer station
4	101261	DHL Supply Chain Ltd	Gatwick Waste Care Centre	Special waste transfer station
5	403702	Platinum International Ltd	Platinum International Ltd	Metal recycling site
6	103454	Day Group Ltd	Day Aggregates Depot	Treatment of waste to produce soil
7	103736	Cook and Son Ltd	Rowley Farm	Treatment of waste to produce soil
8	83157	Simmonds	Elliott Metals	Metal recycling site
9	401997	Britaniacrest Recycling Ltd	Former Wealden Brickworks	Household and C&I waste transfer station
10	400796	Biffa Waste Services Ltd	Brookhurst Wood	Physical treatment facility
11	19668	Langridge	Parsonage Farm	Metal recycling site
12	404639	Bell & Sons	Bell & Sons Construction Yard	Treatment of waste to produce soil
13	19584	Cox Skips Ltd	Burleigh Oaks Farm	Household and C&I waste transfer station
14	102086	TJS Services	Copthorne Yard	Physical treatment facility
15	104417	Royal Botanical Gardens Kew	Royal Botanical Gardens, Wakehurst	Composting facility
16	103488	Cook & Son Ltd	Holmsted Farm	Deposit of waste to land as recovery

Existing Waste Management Facilities within 15 km of the Site				
Ref	**Permit**	**Operator**	**Site Name**	**Site Type**
17	100690	Sustainable Cabin Services	Sustainable Cabin Services	HCI waste transfer & treatment
18	19674	Suez Recycling	Capel Landfill Site	Co-disposal landfill site
19	83195	J&J Franks Ltd	Reigate Road Sandpit Landfill	Landfill taking non-biodegradable waste
20	83667	J&J Franks Ltd	Reigate Road Quarry	Special waste transfer station
21	402284	Ford	Swires Farm	Composting biodegradable waste
22	83594	Fuller Grab Hite Ltd	Hurstridge	Physical treatment facility
23	405037	Enlightened Lamp Recycling	Mercury Recovery	Physico- chemical treatment facility
24	402355	J&J Franks Ltd	Mercers South Quarry	Deposit of waste onto land as recovery
25	83204	Britaniacrest Recycling Ltd	Britaniacrest Recycling Ltd	Special waste transfer station
26	83596	J&J Franks Ltd	Betchworth Sand Quarry Ltd	Inert landfill
27	83202	Reigate & Banstead Council	Earlswood Depot	Household and C&I waste transfer station
28	402814	PJ Brown	Lomond Equestrian Centre	Deposit of waste onto land as recovery
29	103661	Motion Hire Ltd	Perrylands Lane	Treatment of waste to produce soil
30	104457	Biffa Waste	Redhill Landfill	Treatment of waste to produce soil
31	83374	Etherington Ltd	Materials Recycling Facility	Household and C&I waste transfer station
32	104100	Egap Recycling Ltd	Egap Recycling Centre	Transfer station

Existing Waste Management Facilities within 15 km of the Site				
Ref	**Permit**	**Operator**	**Site Name**	**Site Type**
33	403284	Blockade Services Ltd	South Godstone Quarry	Transfer station
34	10038/ 19578	County clean Waste Recycling	Unit 35, Hobbs Ind. Estate	Physical treatment facility
35	402432	DJ Grab Services	Ellerton Yard	Physical treatment facility
36	402329	Cook & Son Ltd	Churchill Farn	Deposit of land as recovery
37	403172	J&J Franks Ltd	Glebe Lake	Deposit of waste as recovery
38	403470	Blockade Services Ltd	South Godstone Brickworks	Deposit of waste as recovery
39	104918	R Exall & Sons	R Exall and Sons	Treatment of waste to produce soil
40	120003	Fisher Recycling Ltd	Fisher Recycling Ltd	Treatment of waste to produce soil

4.2 Waste Streams

Existing

4.2.1 The waste streams identified in the Waste Local Plan (West Sussex County Council and South Downs National Park Authority, 2014) which are relevant to the Project are as follows.

- Construction, Demolition and Excavation (CD&E) waste: this waste stream accounts for approximately 48% (949,000 tonnes) of all waste generated in West Sussex (2010/11). It predominantly comprises inert materials such as soils, concrete and rubble much of which can be recycled on site using mobile plant.
- Commercial and Industrial (C&I) waste: this includes a wide range of waste types from shops, industrial and business premises (eg waste food and waste packaging). In 2010/11 C&I waste accounted for approximately 31% (605,000 tonnes) of all waste generated in West Sussex.
- Hazardous waste: this includes waste which has hazardous properties or requires specialist techniques to avoid handling or disposal problems. Approximately 30,400 tonnes of hazardous waste were generated in West Sussex in 2010, of which around 25,000 tonnes were

exported out of the county. This waste stream has been included in the figures for CDE and C&I waste above.

4.2.2 According to the Review of the Waste Local Plan (West Sussex County Council and South Downs National Park Authority, 2019), West Sussex was a net-importer of waste, with approximately 270,000 tonnes more imported than exported. However, the 2017 waste data shows that a large proportion of these imports were of CD&E waste, which were used in the restoration of sites, and therefore had some beneficial use.

Forecast

4.2.3 Waste arisings to 2031 have been forecast in the West Sussex Waste Local Plan (West Sussex County Council and South Downs National Park Authority, 2014) taking into account factors such as the impact of economic recession and the impact of waste reduction initiatives. The methodology used in the Waste Local Plan to forecast waste growth was based on the 'point of production' method. Since then, a more accurate method (the 'reconcile method') has been applied and the updated forecasts reported in the Review of the Waste Local Plan (West Sussex County Council and South Downs National Park Authority, 2019) are as follows:

- in 2031, CD&E waste arisings (under the high growth scenario) are predicted to be up to 1.4 million tonnes; and
- in 2031, C&I waste arisings (at the highest growth rates) are predicted to be 524,000 tonnes.

Capacity

4.2.4 According to the West Sussex Waste Local Plan (West Sussex County Council and South Downs National Park Authority, 2014) there is insufficient capacity at existing waste management facilities in West Sussex to secure the maximum recovery of waste through recycling, composting or energy generation.

4.2.5 The aspiration of the Waste Local Plan is to become a 'zero waste to landfill' county, however it acknowledges that there will continue to be a need for some landfill capacity to deal with residual waste before new recycling waste and treatment facilities are commissioned.

4.2.6 The Waste Local Plan (West Sussex County Council and South Downs National Park Authority, 2014) has identified a number of potential sites within the County for future waste management infrastructure, which will be safeguarded from future development.

4.2.7 The Review of the West Sussex Waste Local Plan (West Sussex County Council and South Downs National Park Authority, 2019) identified that shortfalls in waste management capacity have reduced as permissions for new waste management sites have been granted and the remaining allocated sites within the Plan will meet the remaining shortfall.

4.2.8 By 2031, waste arisings may be higher than initially forecast; most of this waste is likely to be CD&E waste. This waste stream will continue to be managed via a combination of permanent and temporary recycling sites and inert recovery projects which are not included in the Waste Local Plan's list of allocated sites.

4.2.9 The review also identified that non-hazardous landfill capacity has fallen to zero, however an allocation for a further landfill remains in the Plan and the situation continues to be monitored.

4.2.10 The Review of the West Sussex Waste Local Plan (West Sussex County Council and South Downs National Park Authority, 2019) reports that the overall waste management capacity in West Sussex is currently 0.75mt higher than that expected to arise in 2031, whilst there remains 0.25mt of capacity within the allocations (reported under Policy W10 of the Plan). This suggests that there will be sufficient capacity in West Sussex, in line with the principle of net self-sufficiency.

5 Construction Waste

5.1 Schedule of Buildings/Structures to be Demolished/Relocated

5.1.1 Based on Chapter 5: Project Description of the PEIR, the following buildings and structures would be demolished or relocated.

- Decommissioned airfield operations building, including emergency air traffic control tower (2026-2031).
- CARE (recycling area) and motor transport, surface transport and ground maintenance facilities (2025).
- Former TCR Snowbase building (2024).
- Substations A, BK, J, BP, BR, BJ and BM (2025-2030).
- Pumping stations 2, 3, 4, 5, 17 and 45 (2024-2031).
- Part of Purple Parking decked structure (2025-2026).
- Pond A (removal and infill) (2024-2025).
- Parts of the existing fire training area (2024).

5.1.2 In addition to the above, redundant areas of hardstanding would be removed.

5.2 Schedule of Buildings/Structures to be Constructed

5.2.1 Based on Chapter 5: Project Description of the PEIR the following buildings and structures would be constructed:

- alterations to the existing northern runway, including construction of a new 12 metre strip to the north of the northern runway and resurfacing of the 33 metre wide strip of retained existing runway;
- reconfiguration of taxiways, including extension/alterations to Taxiways Juliet, Lima, Tango, Whiskey, Victor and Uniform and Zulu;
- construction of new aircraft holding area (Charlie (modified beta) box);
- new/altered exit taxiways;
- new end around taxiways;
- new Pier 7;
- reconfiguration of existing aircraft stands and construction of new intermediate hold/remote stands;
- relocation of CARE, motor transport, grounds maintenance and surface transport facilities;
- relocation of fire training ground and training equipment;
- construction of new satellite airport fire service;
- construction of new hangar;
- construction of noise mitigation bund/barrier;
- changes to internal access routes;
- highway improvements;
- extensions to North and South Terminals and forecourt enhancements;
- new hotel and commercial facilities - including a new hotel at the North and South Terminals and at the existing car rental location; and three new office blocks to serve internal airport uses;
- new car parks – including new multi-storey car parks, decked car parks and surface car parking; and
- new substations.

5.3 Other Works

5.3.1 In addition to the reconfiguration of buildings and structures within Gatwick Airport, the Project involves other works that would also generate waste. These works are outlined below.

- Water management – including realignment of the existing surface water drainage infrastructure along Taxiway Yankee to connect to Pond D, creation of additional runoff treatment and storage area (ie underground storage area under car park Y); and relocation of Pond A.

- Provision of additional floodplain capacity – including lowering Museum Field, diverting the River Mole and creating a flood compensation area, lowering car park X and creating a new flood storage area east of the Gatwick Stream.
- Improvements to foul drainage system – including new pumping stations.
- Surface access improvements – including a new junction at the South Terminal providing full grade separation, a new grade-separated junction at the North Terminal removing the A23 westbound traffic from the North Terminal roundabout and improvements to the Longbridge roundabout.
- Increased capacity of the Inter-Terminal Transit System between the North and South Terminals.

5.4 Estimated Waste Arisings

Waste Categories

5.4.1 At a strategic level, the key waste types generated from the construction of the Project can be classified as follows.

- INERT – wastes that will not cause adverse effects to the environment when disposed of, or do not decompose and they have no potentially hazardous content when deposited in a landfill. Examples of inert wastes are rocks, concrete, mortar, glass, uncontaminated soils and aggregates.
- NON-HAZARDOUS – wastes that will decompose when buried resulting in the production of methane and carbon dioxide. Examples of non-hazardous wastes include timber, paper and cardboard.
- HAZARDOUS – wastes that are harmful to human health of the environment (for example, causing pollution of watercourses) if they are incorrectly handled, stored, treated or disposed of. Hazardous wastes may have one or more of the following properties: explosive, corrosive, flammable, highly flammable, infectious, oxidising or sensitising.

5.4.2 Table 5.4.1 contains the general List of Waste Categories (also known as the waste classification codes) for construction wastes. The list has been taken from the 'Guidance on the classification and assessment of waste (1st Edition v1.1). Technical Guidance WM3' (Environment Agency *et al.* 2018). During the construction phase, the relevant waste code would be provided on each waste transfer note that would accompany every movement of waste from the site.

Table 5.4.1 List of Waste Categories for Construction Wastes

17 Construction and demolition wastes (including excavated soil from contaminated soils)	
17 01	**Concrete, bricks, tiles and ceramics**
17 01 01	Concrete
17 01 02	Bricks
17 01 03	Tiles and ceramics
17 01 06*	Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics containing dangerous substances
17 01 07	
	Mixtures of, or separate fractions of concrete, bricks, tiles and ceramics
17 02	**Wood, glass and plastic**
17 02 01	Wood
17 02 02	Glass
17 02 03	Plastic
17 02 04*	Glass, plastic and wood containing or contaminated with dangerous substance
17 03	**Bituminous mixtures, coal tar and tarred products**
17 03 01*	Bituminous mixtures containing coal tar
17 03 02	Bituminous mixtures other than those mentioned in 17 03 01
17 03 03*	Coal tar and tarred products
17 04	**Metals (including their alloys)**
17 04 01	Copper, bronze, brass
17 04 02	Aluminium
17 04 03	Lead
17 04 04	Zinc
17 04 05	Iron and steel
17 04 06	Tin
17 04 07	Mixed metals
17 04 09*	Metal waste contaminated with dangerous substances
17 04 10*	Cables containing oil, coal tar and other dangerous substances
17 04 11	Cables other than those mentioned in 17 04 10
17 05	**Soil (including excavated soil from contaminated sites), stones and dredging spoil**
17 05 03*	Soil and stones containing dangerous substances
17 05 04	Soil and stones other than those mentioned in 17 05 03
17 05 05*	Dredging spoil containing dangerous substances
17 05 06	Dredging spoil other than those mentioned in 17 05 05
17 05 07*	Track ballast containing dangerous substances
17 05 08	Track ballast other than those mentioned in 17 05 07
17 06	**Insulation materials and asbestos-containing construction materials**
17 06 01*	Insulation materials containing asbestos
17 06 03*	Other insulation materials consisting of or containing dangerous substances
17 06 04	Insultation materials other than those mentioned in 17 06 01 and 17 06 03
17 06 05*	Construction materials containing asbestos
17 08	**Gypsum-based construction materials**
17 08 01*	Gypsum-based construction materials contaminated with dangerous substances
17 08 02	Gypsum-based construction materials other than those mentioned in 17 08 01
17 09	**Other construction and demolition wastes**
17 09 01*	Construction and demolition wastes containing mercury
17 09 02*	Construction and demolition wastes containing PCB (for example, PCB-containing sealants, PCB-containing resin-based floorings, PCB-containing sealed glazing units, PCB-containing capacitors)
17 09 03*	Other construction and demolition wastes (including mixed-wastes) containing dangerous substances
17 09 04	Mixed construction and demolition wastes other than those mentioned in 17 09 01, 17 09 02 and 17 09 03

*denotes a hazardous waste

5.4.3 Prior to construction, the types and quantity of wastes likely to be generated during the demolition and construction of buildings, structures and other works (see Sections 5.1, 5.2 and 5.3 above) would be set out in the Waste Forecast sheets (see Annex 1). The forecast is a useful planning tool to record the types of waste that would be generated. Targets can then be set for different waste types and entered into a Waste Estimates Data Sheet. This provides a more detailed breakdown of how the wastes would be managed (eg reused on site, recycled on site, recycled off site).

5.4.4 Once construction is underway, the principal contractor would complete the Waste Management Data Sheet (see Annex 1). These sheets would be updated every time waste is removed from the site and would record:

- the types and quantities of waste produced;

- the types and quantities of waste that have been re-used/ recycled/ recovered/ landfilled or otherwise disposed of on or off site;
- the registration number of the waste carrier;
- a copy of or reference to the written description of the waste; and
- details of the site where the waste is taken to and its permit number.

5.4.5 The tables in Annex 1 comprise the SWMP, which would be used as the main tool for estimating waste quantities and recording waste movements during the construction process. The SWMP would be reviewed during construction to check progress in meeting the reuse/recycling targets and to identify whether any changes are required to the waste management measures.

5.4.6 On completion of construction, a comparison of the estimated waste arisings and the actual waste management data would be undertaken. Any differences between the estimated and actual waste arisings would be used to assess the effectiveness of the waste minimisation and management measures as part of a lessons learnt exercise.

Setting Targets to Divert Waste from Landfill

5.4.7 The following targets have been set for construction and demolition waste generated by the Project:

- divert 90% of demolition materials from landfill; and
- divert 80% of construction waste (ie non-demolition waste) from landfill.

5.4.8 These targets are in line with the good practice targets set in the Building Research Establishment Environmental Assessment Methodology BREEAM New Construction Manual (BRE Global Ltd, 2018). The targets exceed the target set by the Waste (England and Wales) Regulations 2011 (as amended) , which requires that a minimum of 70% of construction and demolition waste should be prepared for reuse, recycling or other material recovery.

5.4.9 Where applicable, further targets would be set during the detailed design stage to reduce, reuse or recycle key waste materials on and off site. The targets will be incorporated into the contract specifications with contractors post consent.

5.5 Waste Management Measures

Minimisation

5.5.1 The design of the new buildings and structures would take into account guidance from industry body The Waste and Resources Action Programme (WRAP) to reduce the amount of waste produced:

- design for reuse and recovery;
- design for off site construction;
- design for materials optimisation;
- design for waste efficient procurement; and
- design for deconstruction and flexibility

5.5.2 The majority of opportunities to minimise the amount of waste generated by a development occur during the design stage. The following design measures would be implemented where practicable:

- using pre-fabricated materials for on-site assembly;
- buildings/structures designed to standard dimensions of blocks or frames to avoid off-cuts; and
- internal materials and fittings would be pre-cut to reduce the need for site cutting.

5.5.3 As part of the flood risk mitigation strategy (see Chapter 5: Project Description) spoil would be generated as a result of works to create additional floodplain capacity. This would include lowering existing ground levels in areas known as Museum Field and in Car Park X, and the provision of a new flood storage area to the east of Gatwick Stream.

5.5.4 The design of the Project aims to retain spoil on site, where practicable. Where spoil has to be removed from the site steps would be taken to keep the amounts to a minimum and opportunities to recycle the material in the local area would be investigated. A MMP would be prepared to document the management of excavated material on the site and provide the evidence needed to avoid this material being deemed to be a waste.

5.5.5 Decisions taken to minimise waste through the design process will be documented in the Waste Strategy submitted as an appendix to the ES.

5.5.6 Waste would also be minimised by improving wastage rates when ordering materials. Waste allowances are generally included within material orders to take into account design waste and construction process waste. These waste allowances are often generic and not project specific and, therefore, run the risk of being inaccurate. This can lead to a surplus of materials, which typically ends up being discarded (ie waste). A system would be put in place to enable the accurate estimates of material requirements (and waste allowances) at the detailed design stage.

5.5.7 On appointment of the construction team, the buyer would discuss the purchasing requirements with the site manager to identify priorities and review the quotations received. Materials would be checked against the material specifications as part of the quality control system. Where possible, hazardous materials would be substituted for less hazardous alternatives.

5.5.8 Waste minimisation measures would be implemented by the principal contractor and site manager during construction in order to achieve the waste allowance targets. These measures include:

- a logistics system which allows ‘just-in-time’ deliveries to minimise the length of time materials are stored on site and co-ordinate with other trades;
- providing suitable and secure storage for materials where ‘just-in-time’ deliveries cannot be set up;
- mechanical systems and machinery would be considered for moving materials to reduce the risk of damage; and
- programming and monitoring construction activities to avoid overlap of incompatible trades working in the same area and to reduce the potential for waste to be generated from replacing damaged work.

5.5.9 The target for construction waste resource efficiency for new buildings is ≤11.1 tonnes of waste generated per 100 m^2 (gross internal floor area) and is in line with BREEAM New Construction Manual (BRE Global Ltd, 2018).

Preparing for Reuse

5.5.10 A pre-demolition audit would be undertaken for all buildings and structures to be demolished to identify the type, location and condition of hazardous materials. A similar record of all salvageable and recyclable materials would also be prepared.

5.5.11 Prior to demolition, all hazardous waste would be removed from the buildings and the fittings etc would be stripped out and sorted for salvage/recycling. All movements of waste from the site would be recorded using the SWMP.

5.5.12 Materials from the demolition of buildings and structures on site would be stockpiled to allow pre-treatment for reuse on or off-site, or they would be removed off-site for recycling or disposal.

Recycling

5.5.13 Wastes generated during the construction process would be segregated into waste types to facilitate off-site recycling (for example, metals, wood, plastic). The layout of the construction site would be designed to allow sufficient space for separate containers of key waste materials to be stored. These containers would be clearly labelled and construction staff would be given training on waste segregation.

5.5.14 Concrete from the redundant areas of hardstanding, including the redundant strip of runway/redundant sections of taxiways would be excavated to an agreed depth and crushed on site for re-use in the construction process.

5.5.15 Green waste generated during site preparation works would be composted off-site at an appropriate facility. Opportunities would be investigated to retain woody material on site for landscaping and ecological planting.

5.5.16 The principal contractor would consider the use of recycled materials where possible, subject to cost and availability (for example, recycled aggregate and secondary aggregates for use in concrete, or granular fill).

Disposal

5.5.17 All waste that cannot be reused, recycled or recovered would be collected by the licensed waste management contractor and disposed of at a permitted site suitable for the type of waste. Burning of surplus material or material arising from the site construction would not be permitted.

Storage of Waste

5.5.18 Waste storage areas would be provided at the at the construction site. Each skip/container would be clearly marked to indicate the intended contents and would be suitable for the storage of the specified contents. All skips/containers would be covered to prevent the escape of waste by wind blow or vandalism. If liquid waste is being stored, an appropriate bund and drip pans would be in place.

5.5.19 Storage areas would be located away from potential contaminant pathways such as drains, and excavations and trenches. Any hazardous waste would be stored safely in a designated area away from non-hazardous and inert wastes and labelled accordingly.

Registered Carriers

5.5.20 To meet the requirements of Section 34 of the Environmental Protection Act 1990, waste materials arising from the construction of the proposed development would only be transported by waste carriers and hazardous waste carriers holding a valid registration with the Environment Agency. Each consignment of waste removed from the construction site would be accompanied by a waste transfer note (or hazardous waste consignment note as appropriate), which correctly describes the waste using the European Waste Catalogue code, identifies the waste carrier and where the waste will be transported to. Requirements for transferring waste and registered waste carriers are set out in Part 8 and 9 of the Waste (England and Wales) Regulations 2011. The waste would only be transferred to facilities that have the benefit of a registered waste exemption, or an environmental permit. Periodic audits would be undertaken of these facilities.

Invasive species

5.5.21 Himalayan Balsam was identified on the banks of the watercourses on site. This invasive species and any others encountered would be managed in accordance with Natural England and Defra guidance (Natural England and Defra, 2019). Guidance is also available from the Environment Agency (Environment Agency, 2013 Managing Japanese Knotweed on Development Sites: The Knotweed Code of Practice) and whilst the document has been withdrawn, it still remains a useful source of information.

6 Operational Waste

6.1 Baseline

Central Area Recycling Enclosure

6.1.1 Operational waste from Gatwick Airport (both airside and landside) is taken to the existing CARE facility, which is located within an area of the existing airfield known as the Oscar area to the north of Taxiway Juliet. Facilities include the existing waste processing building (including a biomass boiler) and compound area extending to 2,600 m^2 and bin store covering a further 2,500 m^2.

6.1.2 The CARE facility services 120 commercial partners and around 47 million passengers per annum (mppa). In 2019, 13,493 tonnes of operational and commercial waste was collected and taken to the CARE facility for processing. 70.87% of this waste was recycled/reused and 29.13% was recovered for energy. Commercial and operational waste tonnage was also reduced by 2%.

6.1.3 70% of the current waste is generated airside (including 17% of Category 1 non-EU generated waste) and the remaining 30% is generated from landside areas. On completion of the Project, the proportion of Category 1 non-EU waste is likely to increase in response to the change in the long-haul/short-haul balance.

6.1.4 The CARE facility is operated by DHL Supply Chain Limited under permit reference EPR/EB3001HN. The permit was first authorised in 2010 (for Grundon Waste Management Limited) and the most recent variation was determined in November 2017. In accordance with the condition of the permit, the facility is licensed to accept up to 15,000 tonnes of waste per year. The permitted activities are as follows.

- The transfer loading or non-hazardous wastes within a building.
- The sorting and storage of recyclable materials from the waste.
- The baling of recyclable materials (eg cardboard).
- Sorting and separation of the confiscated wastes, including a bottle crusher.
- Storage of waste oils and contaminated materials (eg from the vehicle maintenance facility).
- Fluorescent tube storage area.
- Fridges and Waste Electronic and Electrical Equipment (WEEE) storage.
- Battery segregation and storage.

Waste Categories

6.1.5 Under the permit, the CARE facility is licensed to accept the wastes listed in Annex 2.

Processes

6.1.6 Waste is collected on a daily basis from around the airport (including the restaurants within the terminals, office buildings, hangars, fire station and car parks) and is taken to the CARE facility for processing.

6.1.7 Cabin waste from international flights arriving at Gatwick Airport (with the exception of flights travelling in EU territory only) is classed as a high-risk Category 1. The waste has to be managed separately from the other waste streams and is treated under strict safety standards set by Defra. The Category 1 waste is visually inspected: waste that is too contaminated with metal (eg cans and bottles) is compacted and packaged

into containers which are covered, leak-proof and clearly labelled. The waste is then transported off site for incineration at Newhaven. Where the Category 1 waste is not heavily contaminated, it is dried and turned into fuel for the biomass boiler (see paragraph 6.1.13). The biomass boiler can cope with the first level of food packaging (eg crisp packets) but the system becomes clogged where plastic/metal contamination exceeds approximately 15%. The amount of Category 1 waste that is processed through biomass boiler depends on the availability of resources to undertake the visual inspections, ie if the airport is busy (eg during the summer holiday period) less Category 1 waste is processed on site.

6.1.8 The main purpose of the CARE facility is to separate commingled waste streams into recyclable materials to be transported off-site for recycling. The sorting is undertaken in the processing building where waste is fed along a conveyor belt and is hand sorted into separate recyclable materials. Providing this facility on site reduces the pressure on the capacity of existing waste management infrastructure in the local area.

6.1.9 The waste is separated into the following key materials:

- glass,
- plastics,
- paper,
- cardboard; and
- metals.

6.1.10 Waste is also sorted to remove hazardous materials such as lighters, needles and batteries.

6.1.11 Hazardous materials are stored in separate secure containers, which are appropriate for the waste they contain, for example aerosols are stored in a vented box.

6.1.12 In some cases, the waste has already been separated at source and is bulked together at the CARE facility before being sent for recycling off site. For example, cardboard, oily rags from the vehicle maintenance areas and cooking oil from the restaurants. Used cooking oil is taken off-site for heating, cleaning and filtering before it recycled into biodiesel.

6.1.13 Food waste from the terminal restaurants and EU flights is hand sorted to remove metal fragments, before it is lifted by a bin lift into the shredder. After it has been shredded, the organic waste is dried over a 15 hour period and then passed through a trommel to remove any oversized or plastic waste. Water from the drier is reused in the process. The cooled material is used as a fuel in the biomass boiler. The heat from the boiler is fed back into the drier and boiler as required, with the excess heat discharged to the atmosphere. A diesel storage tank provides a standby fuel when shutdowns occur.

6.1.14 The ash from the boiler is taken off-site for re-use in concrete manufacture.

6.1.15 The non-recyclable wastes and the rejects from the organic waste processing are bulked up as general waste and sent off site for incineration

6.2 Proposed Waste Facilities

6.2.1 The CARE facility is proposed to be relocated in the north western part of the airport. The relocated CARE facility would process the majority of airport waste (with the exception of Category 1 waste) and is likely to include:

- a replacement/relocated biomass boiler or alternative on-site process to manage organic waste;
- an additional biomass boiler or alternative on-site process to manage organic waste;
- a material recovery facility (MRF) to allow sorting of waste;
- card baling facilities;
- vehicle weigh in/weigh out platform (a weighbridge);
- office accommodation and welfare facilities; and
- hard standing area for recycling storage, quarantine area and manoeuvring area for supplier collection vehicles and vehicle movements

6.2.2 The proposed CARE building is likely to occupy an area of approximately 4,300 m^2 within a compound of approximately 21,600 m^2.

6.2.3 Waste generated at Gatwick Airport would be managed at the new CARE facility. The existing CARE facility would remain in operation until the new CARE facility had been commissioned. Opportunities to increase the level of recycling and recovery of waste would be explored. For example, the new biomass boilers at the CARE facility would be designed to capture the excess heat generated from the boilers and reuse the heat within the CARE buildings. The potential to capture the dry recyclable materials from the non-EU flights is being investigated.

6.2.4 Opportunities to reduce the amount of non-recyclable waste being generated at Gatwick Airport would also be investigated. For example, phasing out single-use plastic from offices and buildings, and the provision of drinking water fountains. These opportunities will be presented in the Waste Strategy at the ES stage.

6.2.5 The targets within Gatwick's first Decade of Change Sustainability Framework (2010 – 2020), to recycle 70% of Gatwick Airport's operational waste and that no untreated waste will be sent to landfill have both been met. The targets from the Second Decade of Change, published in June 2021, will be incorporated into the Waste Strategy accompanying the ES.

6.2.6 A central reporting system would be implemented to record the quantity of wastes generated on site and how they are managed in order to monitor performance against targets.

7 Next Steps

7.1.1 Between the PEIR and the ES, estimates of construction waste types and volumes will be recorded within the waste strategy and the further details on waste management procedures will be provided. The design and operating procedures of the CARE facility will be agreed and documented in the waste strategy. The types and quantities of waste generated during the operational phase will be set out and targets for diverting waste from landfill will be confirmed. The strategy will also include a plan for how the key types of waste would be managed.

8 References

Building Research Establishment Environmental Assessment Methodology (2018) BREEAM New Construction Manual (BRE Global Ltd,

CL:AIRE (2011) Definition of Waste: Development Industry Code of Practice (CoP). London

Companies House (2018) SIC List [Online] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/527619/SIC07_CH_condensed_list_en.csv/preview

Department for Environment Food and Rural Affairs (Defra) (2011) Guidance on applying the Waste Hierarchy, London

Department for Environment Food and Rural Affairs (Defra) (2012) Guidance on the legal definition of waste and its application. London

Department for Environment Food and Rural Affairs (Defra) (2021) Waste Management Plan for England

Department for Environment Food and Rural Affairs (Defra) (2018) Our Waste, Our Resources: A Strategy for England

Department for Environment Food and Rural Affairs (Defra) and Environment Agency (2018) Waste Duty of Care: Code of Practice. [Online] Available at: https://www.gov.uk/government/publications/waste-duty-of-care-code-of-practice/waste-duty-of-care-code-of-practice

Department for Communities and Local Government (2014) National Planning Policy for Waste

Department for Transport (2015) National Policy Statement for National Networks

Department for Transport (2018). Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England. London

Environment Agency, Scottish Environmental Protection Agency, Natural Resources Wales and Northern Ireland Environment Agency (2018) Guidance on the classification and assessment of waste (1st Edition v1.1). Technical Guidance WM3

Ministry for Housing, Communities and Local Government (2014) National Planning Policy for Waste

Natural England, Defra and Environment Agency (2019) Stop Invasive Plants from Spreading [Online] Available at: www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants

Surrey County Council (2020) Surrey Waste Local Plan 2019 - 2033

West Sussex County Council and South Downs National Park Authority (2014) West Sussex Waste Local Plan

West Sussex County Council and South Downs National Park Authority (2019) Review of the Waste Local Plan

WRAP (n.d.) Designing Out Waste: A Design Team Guide for Civil Engineering. [Online] Available at: http://www.wrap.org.uk/sites/files/wrap/Designing%20out%20Waste%20-%20a%20design%20team%20guide%20for%20civil%20engineering%20-%20Part%201%20%28interactive%291.pdf

9 Glossary

9.1 Glossary of terms

Table 9.1.1: Glossary of Terms

Term	Description
C&I	Commercial and Industrial
CARE	Central Area Recycling Enclosure
CDE	Construction, Demolition and Excavation
CL:AIRE	Contaminated Land: Applications in Real Environments
CoP	Code of Practice
Defra	Department for Environment and Rural Affairs
EfW	Energy from Waste
ES	Environmental Statement
MMP	Materials Management Plan
mppa	Million passengers per annum
MRF	Material Recovery Facility
mtpa	Million tonnes per annum
NPS	National Policy Statement
PEIR	Preliminary Environmental Information Report
SIC	Standard Industry Classification
SWMP	Site Waste Management Plan
WEEE	Waste electronic and electrical equipment

Annex 1

Site Waste Management Plan

A1.1.1 The following tables make up the Site Waste Management Plan (SWMP). The Waste Forecast tables will be completed for each building/structure listed in sections 5.1 and 5.2 and the other works in section 5.3. The Waste Forecast tables and the Waste Estimates Data Sheet will be completed prior to construction to document how waste has been considered with regard to the likely types and quantities of waste to be generated during construction and how they will be managed.

A1.1.2 The Waste Management Data Sheet will be completed during construction to document every consignment of waste removed from the site. It will also record where waste has been reused and/or recycled on the site.

A1.1 Waste Forecasts

Building or Structure	Waste Category	Type of Waste	EWC Code	Estimated Quantity	Target for Reuse/Recycling %

A1.2 Waste Estimates Data Sheet (to be completed pre-construction)

Project Component:									
Waste Category & Type	**EWC Code**	**Reused On Site (m^3)**	**Reused Off Site (m^3)**	**Recycled On Site (m^3)**	**Treatment Required (Y/N & Type)**	**Recycled Off Site (m^3)**	**Recovered (On/Off Site) (m^3)**	**Sent to Permit Exempt Site**	**Sent to Landfill Site for Disposal**
INERT									
Sub TOTAL									
NON-HAZARDOUS									
Sub TOTAL:									
HAZARDOUS									
Sub TOTAL									
TOTAL VOLUMES									

A1.3 Waste Management Data Sheet (to be completed each time waste is removed off site/track reuse on site)

Project Component:														
Waste Category & Type	**EWC Code**	**Date**	**Waste Transfer Note (Y/N)**	**Waste Carrier Registration Number**	**Name and Location of Waste Site**	**Permit number**	**Reused On Site**	**Reused Off Site**	**Recycled On Site**	**Treatment Required**	**Recycled Off Site**	**Recovered On/Off Site**	**Landfill**	**Load Cost**
INERT														
Sub TOTAL														
NON-HAZARDOUS														
Sub TOTAL														
HAZARDOUS														
Sub TOTAL														
TOTAL														

Annex 2

Permitted Wastes at the CARE Facility

Code	Waste Type
02 02	**Wastes from the preparation and processing or meat, fish and other foods of animal origin**
02 02 02	Animal-tissue waste
02 02 03	Materials unsuitable for consumption or processing
02 03	**Wastes from fruit, vegetables, cereals, edible oils, cocoa, coffee, tea and tobacco preparation and processing; conserve production; yeast and yeast extract production**
02 03 04	Materials unsuitable for consumption or processing
02 06	**Wastes from the baking and confectionery industry**
02 06 01	Materials unsuitable for consumption or processing
02 06 02	Wastes from preserving agents
06 01	**Wastes from the manufacture, formulation, supply and use (MFSU) of acids**
06 01 01*	Sulphuric acid and sulphurous acid
06 01 02*	Hydrochloric acid
06 01 03*	Hydrofluoric acid
06 01 04*	Phosphoric and phosphorous acid
06 01 05*	Nitric acid and nitrous acid
06 01 06*	Other acids
06 02	**Wastes from the MFSU of bases**
06 02 01*	Calcium hydroxide
06 02 03*	Ammonium hydroxide
06 02 04*	Sodium and potassium hydroxide
06 02 05	Other bases
06 13	**Wastes from inorganic chemical processes not otherwise specified**
06 13 02*	Spent activated carbon (except 06 07 02)
07 01	**Wastes from the manufacture, formulation, supply and use (MFSU) of basic organic acids**
07 01 01*	
07 01 03*	Organic halogenated solvents, washing liquids and mother liquors
07 01 04*	Other organic solvents, washing liquids and mother liquors
07 02	**Wastes from the MFSU of plastics, synthetic rubber and man-made fibres**
07 02 01*	Aqueous washing liquids and mother liquors
07 02 03*	Organic halogenated solvents, washing liquids and mother liquors
07 02 04*	Other organic solvents, washing liquids and mother liquors

Code	Waste Type
07 06	**Wastes from the MFSU of fats, grease, soaps, detergents, disinfectants and cosmetics**
07 06 01*	Aqueous washing liquids and mother liquors
08 01	**Waste from the MFSU and removal of paint and varnish**
08 01 11*	Waste paint and varnish containing organic solvents or other dangerous substances
08 01 12	Waste paint and varnish other than those mentioned in 08 01 11
08 01 17*	Waste paint and varnish removal containing organic solvents or other dangerous substances
08 01 18	Waste paint and varnish removal other than those mentioned in 08 01 17
08 01 19*	Aqueous substances containing paint or varnish containing organic solvents or other dangerous substances
08 01 20	Aqueous substances containing paint or varnish other than those mentioned in 08 01 19
08 01 21*	Waste paint or varnish remover
08 02	**Wastes from MFSU of other coatings (including ceramic materials)**
08 02 01	Waste coating powders
08 03	**Wastes from MFSU of printing inks**
08 03 12*	Waste ink containing dangerous substances
08 03 13	Waste ink other than those mentioned in 08 03 12
08 03 17*	Waste printing toner cartridges containing dangerous substances
08 03 18	Waste printing toner cartridges other than those mentioned in 08 03 17
08 04	**Wastes from MFSU of adhesives and sealants (including waterproofing products)**
08 04 09*	Waste adhesives and sealants containing organic solvents or other dangerous substances
08 04 10	Waste adhesives and sealants other than those mentioned in 08 04 09
09 01	**Wastes from the photographic industry**
09 01 07	Photographic film and paper containing silver or silver compounds
09 01 08	Photographic film and paper free of silver or silver compounds
09 01 10	Single-use cameras without batteries
09 01 11*	Single use cameras including batteries included in 16 06 01, 16 06 02 or 16 06 03

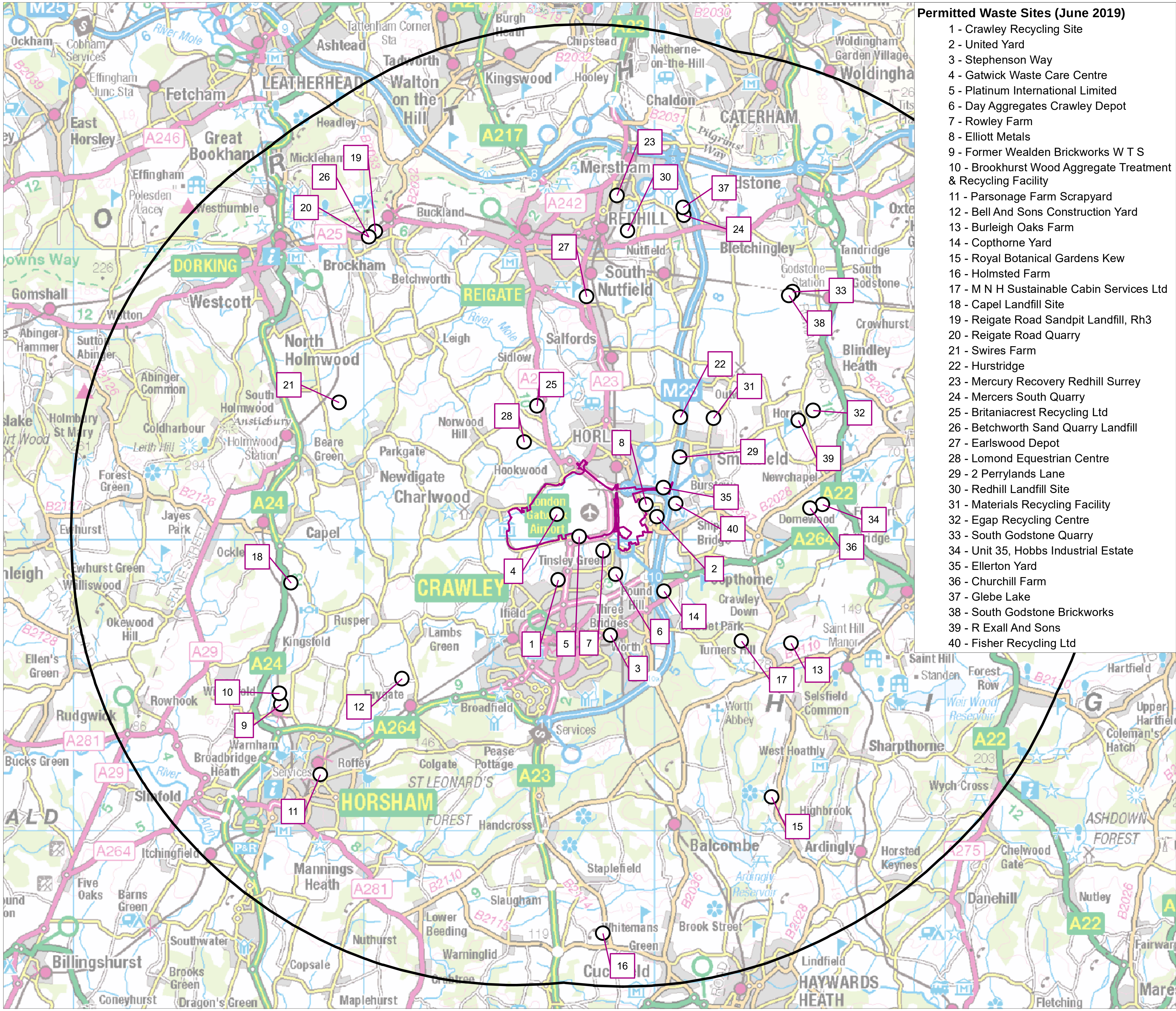
Code	Waste Type
09 01 12	Single use cameras including batteries other than those mentioned in 09 01 11
10 01	**Wastes from power stations and other combustion plants (except 19)**
10 01 02	Coal fly ash
12 01	**Wastes from shaping and physical and mechanical surface treatment of metals and plastics**
12 01 01	Ferrous metals filings and turnings
12 01 02	Ferrous metal dust and particles
12 01 03	Non-ferrous metal filings and turnings
12 01 04	Non-ferrous metal dust and particles
12 01 05	Plastics shavings and turnings
12 01 06*	Mineral-based machining oils containing halogens (except emulsions and solutions)
12 01 07*	Mineral-based machining oils free of halogens (except emulsions and solutions)
12 01 08*	Machining emulsions and solutions containing halogens
12 01 09*	Machining emulsions and solutions free of halogens
12 01 10*	Synthetic machining oils
12 01 12*	Spent waxes and fats
12 01 13	Welding wastes
12 01 14*	Machining sludges containing dangerous substances
12 01 15	Machining sludges other than those mentioned in 12 01 14
12 01 16*	Waste blasting material containing dangerous substances
12 01 17	Waste blasting material other than those mentioned in 12 01 16
12 01 20*	Spent grinding bodies and grinding materials containing dangerous substances
12 01 21	Spent grinding bodies and grinding materials other than those mentioned in 12 01 20
13 01	**Waste hydraulic oils**
13 01 01*	Hydraulic oils, containing PCBs
13 01 04*	Chlorinated emulsions
13 01 05*	Non-chlorinated emulsions
13 01 09*	Mineral-based chlorinated hydraulic oils
13 01 10*	Mineral-based non-chlorinated hydraulic oils
13 01 11*	Synthetic hydraulic oils
13 01 12*	Readily biodegradable hydraulic oils
13 01 13*	Other hydraulic oils
13 02	**Waste engine, gear and lubricating oils**

Code	Waste Type
13 02 04*	Mineral-based chlorinated engine, gear and lubricating oils
13 02 05*	Mineral-based non-chlorinated engine, gear and lubricating oils
13 02 06*	Synthetic engine, gear and lubricating oils
13 02 07*	Readily biodegradable engine, gear and lubricating oils
13 02 08*	Other engine, gear and lubricating oils
13 03	**Waste insulating and heat transmission oils**
13 03 01*	Insulating or heat transmission oils containing PCBs
13 03 06*	Mineral-based chlorinated insulating and heat transmission oils other than those mentioned in 13 03 01
13 03 07*	Mineral-based non-chlorinated insulating and heat transmission oils
13 03 08*	Synthetic insulating and heat transmission oils
13 03 09*	Readily biodegradable insulating and heat transmission oils
13 03 10*	Other insulating and heat transmission oils
13 05	**Oil/water separator contents**
13 05 01*	Solids from grit chambers and oil/water separators
13 05 02*	Sludges from oil/water separators
13 05 03*	Interceptor sludges
13 05 06*	Oil from oil/water separators
13 05 07*	Oily water from oil/water separators
13 05 08*	Mixtures of wastes from grit chambers and oil/water separators
13 07	**Wastes of liquids fuels**
13 07 01	Fuel oil and diesel
13 07 02	Petrol
13 07 03	Other fuels (including mixture)
13 08	**Oil wastes not otherwise specified**
13 08 01*	Desalter sludges or emulsions
13 -08 02*	Other emulsions
14 06	**Waste organic solvents, refrigerants and foam/aerosol propellants**
14 06 01*	Chlorofluorocarbons, HCFC, HFC
14 06 02*	Other halogenated solvents and solvent mixtures
14 06 03*	Other solvents and solvent mixtures
14 06 04*	Sludges or solid wastes containing halogenated solvents
14 06 05*	Sludges or solid wastes containing other solvents
15 01	**Packaging (including separately collected municipal packaging waste)**
15 01 01	Paper and cardboard packaging
15 01 02	Plastic packaging
15 01 03	Wooden packaging
15 01 04	Metallic packaging
15 01 05	Composite packaging
15 01 06	Mixed packaging
15 01 07	Glass packaging
15 01 09	Textile packaging
15 01 10*	Packaging containing residues of or contaminated by hazardous substances
15 02	**Absorbents, filter materials, wiping cloths and protective clothing**
15 02 02*	Absorbents, filter materials, wiping cloths, protective clothing contaminated by hazardous substances
15 02 03	Absorbents, filter materials, wiping cloths, protective clothing other than those mentioned in 15 02 02
16 01	End-of-life vehicles from different means of transport (including off-road machinery) and wastes from dismantling of end-of-life vehicles and vehicle maintenance (except 13, 14, 16 06 and 16 08)
16 01 03	End-of-life tyres
16 01 07*	Oil filters
16 01 08*	Components containing mercury
16 01 09*	Components containing PCBs
16 01 11*	Brake pads containing asbestos
16 01 12	Brake pads other than those mentioned in 16 01 11
16 01 13*	Brake fluids
16 01 14*	Antifreeze fluids containing dangerous substances
16 01 15	Antifreeze fluids other than those mentioned in 16 01 14
16 01 16	Tanks for liquified gas
16 01 17	Ferrous metals
16 01 18	Non-ferrous metal
16 01 19	Plastic
16 01 20	Glass
16 01 21*	Hazardous components other than those mentioned in 16 01 07 to 16 01 11 and 16 01 13 and 16 01 14
16 01 22	Components not otherwise specified
16 02	**Waste from electrical and electronic equipment**
16 02 09*	Transformers and capacitors containing PCBs
16 02 10*	Discarded equipment containing or contaminated by PCBs other than those mentioned in 16 02 09
16 02 11*	Discarded equipment containing chlorofluorocarbons, HCFC, HFC
16 02 12*	Discarded equipment containing free asbestos
16 02 13*	Discarded equipment containing hazardous components other than those mentioned in 16 02 09 to 16 02 12
16 02 14	Discarded equipment other than those mentioned in 16 02 09 to 16 02 13
16 02 15*	Hazardous components removed from discarded equipment
16 02 16	Components removed from the discarded equipment other than those mentioned in 16 02 15
16 03	**Off-specification batches and unused products**
16 03 03*	Inorganic wastes containing dangerous substances
16 03 04	Inorganic wastes other than those mentioned in 16 03 03
16 03 05*	Organic wastes containing dangerous substances
16 03 06	Organic wastes other than those mentioned in 16 03 05
16 05	**Gases in pressure containers and discarded chemicals**
16 05 04*	Gases in pressure containers (including halons) containing dangerous substances
16 05 05	Gases in pressure containers other than those mentioned in 16 05 04
16 05 06*	Laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals
16 05 07*	Discarded inorganic chemicals consisting or of containing dangerous substances
16 05 08*	Discarded organic chemicals consisting of or containing dangerous substances
16 05 09	Discarded chemicals other than those mentioned in 16 05 06, 16 05 07 or 16 05 08
16 06	**Batteries and accumulators**
16 06 01*	Lead batteries
16 06 02*	Ni-Cd batteries
16 06 03*	Mercury-containing batteries
16 06 04	Alkaline batteries (except 16 06 03)
16 06 05	Other batteries and accumulators
16 07	**Waste from transport tank, storage tank and barrel cleaning (except 05 and 13)**
16 07 08*	Wastes containing oil
16 07 09*	Wastes containing other dangerous substances
16 10	**Aqueous liquid wastes destined for off-site treatment**
16 10 01*	Aqueous liquid wastes containing dangerous substances

Code	Waste Type
17	**Construction and DEMOLITION Wastes (including excavated soil from contaminated sites)**
	See Table 5.4.1
18 01	**Wastes from natal care, diagnosis, treatment or prevention of disease in humans**
18 01 01	Sharps (except 18 01 03)
18 01 04	Wastes whose collection and disposal is not subject to special requirements in order to prevent infection (for example, dressings, plaster casts, linen, disposal clothing, diapers)
18 01 06*	Chemicals consisting of dangerous substances
18 01 07	Chemicals other than those mentioned in 18 01 06
18 01 08*	Cytotoxic and cytostatic medicines
18 01 09	Medicines other than those mentioned in 18 01 08
18 01 10*	Amalgam waste from dental care
18 02	**Wastes from research, diagnosis, treatment or prevention of disease involving animals**
18 02 01	Sharps (except 18 02 02)
18 02 03	Wastes whose collection and disposal is not subject to special requirements in order to prevent infection
18 02 05*	Chemicals consisting of or containing dangerous substances
18 02 06	Chemicals other than those mentioned in 18 02 05
18 02 07*	Cytotoxic and cytostatic medicines
18 02 08	Medicines other than those mentioned in 18 02 07
19 10	**Wastes from shredding of metal-contained waste**
19 10 01	Iron and steel waste
19 10 02	Non-ferrous waste
19 10 03*	Fluff-light fraction and dust containing dangerous substances
19 10 04	Fluff-light fraction and dust other than those mentioned in 19 10 03
19 10 05*	Other fractions containing dangerous substances
19 10 06	Other fractions other than those mentioned in 19 10 05
19 12	**Waste from the mechanical treatment of waste (for example, sorting, crushing, compacting, pelletising) not otherwise specified**
19 12 01	Paper and cardboard
19 12 02	Ferrous metal
19 12 03	Non-ferrous metal
19 12 04	Plastic and rubber
19 12 05	Glass
19 12 06*	Wood containing dangerous substances

Code	Waste Type
19 12 07	Wood other than mentioned in 19 12 06
19 12 08	Textiles
19 12 09	Minerals (for example, sand, stones)
19 12 10	Combustible waste (refuse derived fuel)
19 12 11*	Other wastes (including mixtures of materials) from mechanical treatment of waste containing dangerous substances
19 12 12	Other wastes (including mixtures of materials) from mechanical treatment of waste other than those mentioned in 19 12 11
19 13	**Wastes from soil and groundwater remediation**
19 13 01*	Solid wastes from soil remediation containing dangerous substances
19 13 02	Solid wastes from soil remediation other than those mentioned in 19 13 01
19 13 03*	Sludges from soil remediation containing dangerous substances
19 13 04	Sludges from soil remediation other than those mentioned in 19 13 03
19 13 05*	Sludges from groundwater remediation containing dangerous substances
19 13 06	Sludges from groundwater remediation other than those mentioned in 19 13 05
20 01	**Municipal wastes (household waste and similar commercial, industrial and institutional wastes) – separately collected fractions**
20 01 01	Paper and cardboard
20 01 02	Glass
20 01 08	Biodegradable kitchen and canteen waste
20 01 10	Clothes
20 01 11	Textiles
20 01 13*	Solvents
20 01 14*	Acids
20 01 15*	Alkalines
20 01 17*	Photochemicals
20 01 19*	Pesticides
20 01 21*	Fluorescent tubes and other mercury-containing waste
20 01 23*	Discarded equipment containing chlorofluorocarbons
20 01 25	Edible oil and fat
20 01 26*	Oil and fat other than those mentioned in 20 01 25
20 01 27*	Paints, inks adhesives and resins containing dangerous substances

Code	Waste Type
20 01 28	Paints, inks adhesives and resins other than those mentioned in 20 01 27
20 01 29*	Detergents containing dangerous substances
20 01 30	Detergents other than those mentioned in 20 01 28
20 01 31*	Cytotoxic and cytostatic medicines
20 01 32	Medicines other than those mentioned in 20 01 31
20 01 33*	Batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries
20 01 34	Batteries and accumulators other than those mentioned in 20 01 33
20 01 35*	Discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components
20 01 36	Discarded electrical and electronic equipment other than those mentioned in 20 01 21, 20 01 23 and 20 01 35
20 01 37*	Wood containing dangerous substances
20 0138	Wood other than those mentioned in 20 01 37
20 01 39	Plastics
20 01 40	Metals
20 01 41	Wastes from chimney sweeping
20 01 99	Other fractions not otherwise specified (cigarette lighters)
20 02	**Garden and park wastes**
20 02 01	Biodegradable waste
20 02 02	Soil and stones
20 02 03	Other non-biodegradable wastes
20 03	**Other municipal waste**
20 03 01	Mixed municipal waste
20 03 02	Waste from markets
20 03 03	Street cleaning residues
20 03 04	Septic tank sludge
20 03 06	Waste from sewage cleaning
20 03 07	Bulky waste



Permitted Waste Sites (June 2019)

1 - Crawley Recycling Site
2 - United Yard
3 - Stephenson Way
4 - Gatwick Waste Care Centre
5 - Platinum International Limited
6 - Day Aggregates Crawley Depot
7 - Rowley Farm
8 - Elliott Metals
9 - Former Wealden Brickworks W T S
10 - Brookhurst Wood Aggregate Treatment & Recycling Facility
11 - Parsonage Farm Scrapyard
12 - Bell And Sons Construction Yard
13 - Burleigh Oaks Farm
14 - Copthorne Yard
15 - Royal Botanical Gardens Kew
16 - Holmsted Farm
17 - M N H Sustainable Cabin Services Ltd
18 - Capel Landfill Site
19 - Reigate Road Sandpit Landfill, Rh3
20 - Reigate Road Quarry
21 - Swires Farm
22 - Hurstridge
23 - Mercury Recovery Redhill Surrey
24 - Mercers South Quarry
25 - Britaniacrest Recycling Ltd
26 - Betchworth Sand Quarry Landfill
27 - Earlswood Depot
28 - Lomond Equestrian Centre
29 - 2 Perrylands Lane
30 - Redhill Landfill Site
31 - Materials Recycling Facility
32 - Egap Recycling Centre
33 - South Godstone Quarry
34 - Unit 35, Hobbs Industrial Estate
35 - Ellerton Yard
36 - Churchill Farm
37 - Glebe Lake
38 - South Godstone Brickworks
39 - R Exall And Sons
40 - Fisher Recycling Ltd

YOUR LONDON AIRPORT
Gatwick

KEY

- Project Scoping Boundary
- 15km Search Buffer
- Permitted Waste Sites (June 2019)

DOCUMENT
Preliminary Environmental Information Report Appendix 5.3.2

DRAWING TITLE
Waste Sites Within 15km

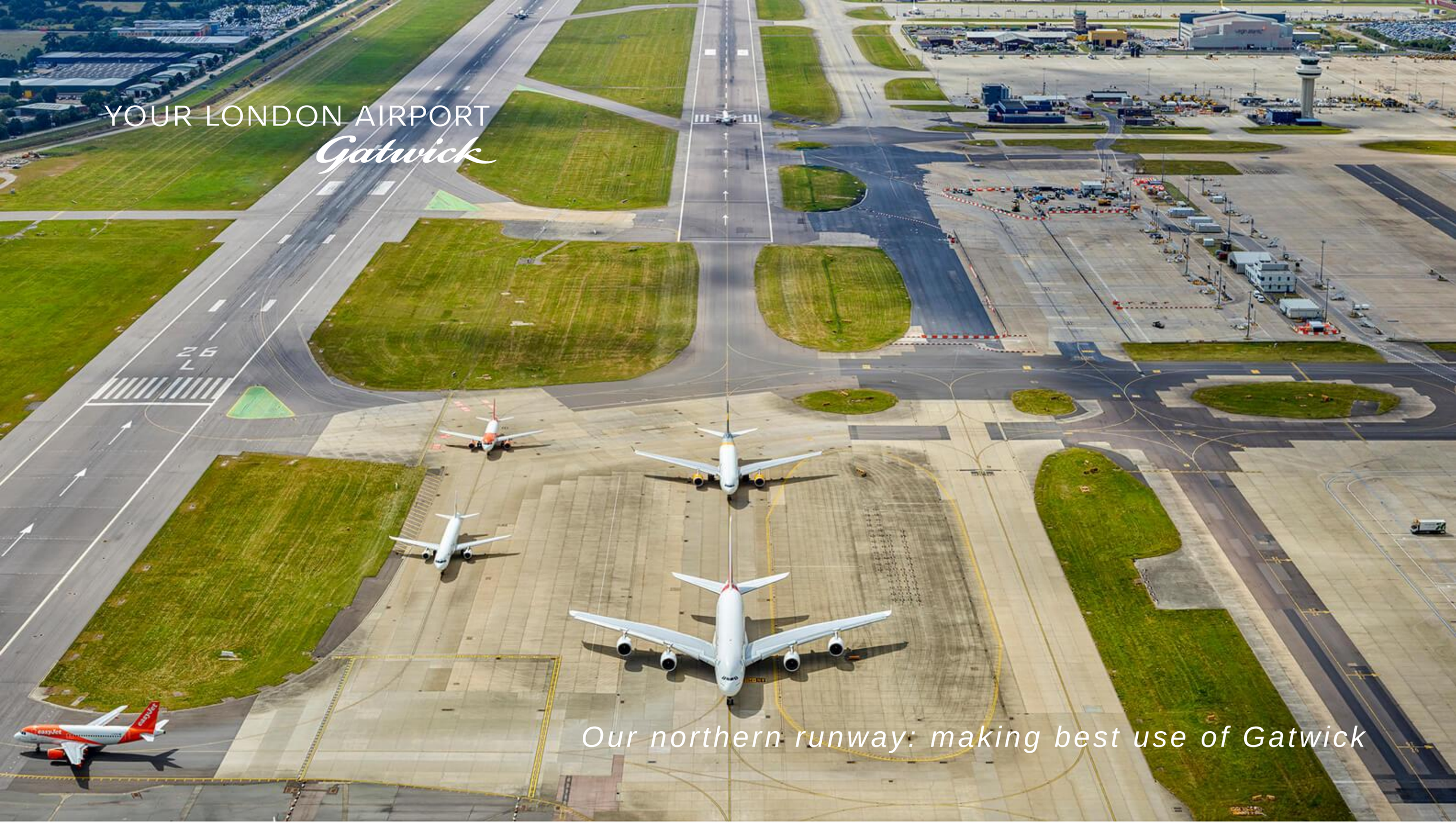
DATE
September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 4.1.1	For PEIR Issue
	DRAWN BY	PM / CHECKED BY
	BG	CR

SCALE @ A3 1:125,000

0 1,250 2,500 5,000 m

\\eur-mpfs-02\projects\11055 Gatwick - Genesis\Tech\Drawings\11055-0241-08.mxd



Preliminary Environmental Information Report
Appendix 5.3.3: Major Accidents and Disasters

September 2021

Table of Contents

1 Introduction

1.1 Overview

1.1.1 This document forms Appendix 5.3.3 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase.

1.1.2 This document provides the preliminary results of the assessment of the risks associated with the Project with respect to potential major accidents and disasters.

1.1.3 It is not the intention to repeat the information contained in Volume 1 of the PEIR and therefore, this appendix should be read in conjunction with Chapter 5: Project Description. Information has also been taken from sections of the relevant environmental topic chapters. Where this is the case, this has been signposted throughout this appendix.

1.2 Background

1.2.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, as amended (Regulation 5(4) and Schedule 4) require the following to be considered:

- '*the expected significant effects arising from the vulnerability of the proposed development to major accidents or disasters that are relevant to that development*' [Regulation 5 (4)]; and
- '*the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)'* [Schedule 4, Paragraph 5(d)].

1.2.2 Schedule 4 also requires the following:

- *'a description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned'* (Schedule 4, paragraph 8).

1.2.3 The consideration of major accidents and disasters has the objective of building resilience into a project, so that the Project itself, and any relevant environmental and human receptors, are not vulnerable to any significant adverse effects arising from major accidents and/or disasters.

1.2.4 Within the Control of Major Accident Hazard (COMAH) Regulations (2015), a 'major accident' is defined as:

'An occurrence such as a major emission, fire, or explosion resulting from uncontrolled development, leading to serious danger to human health or the environment (whether immediate or delayed) inside or outside the establishment, and involving one or more dangerous substances.'

1.2.5 The International Federation of Red Cross and Red Crescent Societies (2019) describes the term 'disaster' as:

'A sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. Though often caused by nature, disasters can have human origins.'

1.2.6 The United Nations Office of Disaster Risk Management (UNDRR) (UNDRR, 2019) defines vulnerability as:

'The conditions determined by physical, social, economic and environmental factors or processes which increase the susceptibility of an individual, a community, assets or systems to the impacts of hazards.'

1.3 Structure of this Document

1.3.1 This appendix has been divided into the following sections:

- Section 2: Methodology – describes the scope of the assessment including the study area, types of receptors and the general approach to the evaluation of safety and environmental risk issues. Further detail regarding the environmental risk assessment methodology is presented in Annex 1;
- Section 3: Project Design and Measures Adopted as Part of the Project – describes the Project and the key mitigation and risk control measures that have been incorporated into the Project design/commitments and which are taken into account in the assessment;
- Section 4: Site Setting and Baseline Conditions and Receptors – describes the existing environment and identifies human and environmental receptors and potential pathways for major accidents and disasters;
- Section 5: Risk Assessment – provides the assessment of the risk of major accidents and disasters, along with a re-evaluation of issues scoped into the study as a result of the Planning Inspectorate's Scoping Opinion (see Consultation and Engagement below);
- Section 6: Requirements for Additional Measures – identifies any additional mitigation and/or control measures that may be required (ie those that would be additional to measures identified in Section 3);
- Section 7: Requirement for Further Work – discusses the requirement for further work or additional studies throughout the EIA process; and
- Section 8: Conclusions.

1.3.2 In addition, the following annexes are provided:

- Annex 1 – Environmental Risk Assessment Methodology;
- Annex 2 – Legislation, Policy and Guidelines;
- Annex 3 – Scoping Outcomes for Potential Major Accidents and Disaster Events;
- Annex 4 – Chemical and Downstream Oil Industries Forum Guidelines: Major Accident to the Environment Tolerability and Risk Tables; and
- Annex 5 – Literature Review of Major Fires.

2 Methodology

2.1.1 This section describes the scope of and approach to the assessment for major accidents and disasters and outlines the various receptor groups that the assessment has considered.

2.1.2 The information within the PEIR is 'preliminary' at this stage. Further refinement of the scope may be required as the Project continues to evolve, and to account for ongoing assessment findings, engagement and consultation.

2.2 Relevant Policy, Legislation and Guidance

2.2.1 In addition to the EIA Regulations, there is a range of legislation and policy applicable to the assessment of major accidents and disasters. This is detailed in Annex 2.

2.2.2 Currently, there is no well-established guidance or standard for assessment of major accidents and disasters within EIA, and various approaches have been adopted in recent practice. The approach to this assessment has been developed based on principles set out in the following:

- The Control of Major Accidents Hazards Regulations 2015;
- Reducing Risk, Protecting People (Health and Safety Executive, 2001); and
- Environmental Risk Tolerability for COMAH Establishments (Chemical and Downstream Oil Industries Forum, 2016 (CDOIF, 2016)).

2.2.3 Emerging best practice for the evaluation of major accidents and disasters for other recent airport projects has been reviewed and integrated into the approach adopted within this assessment.

2.3 Scope of the Assessment

2.3.1 The major accident and disaster assessment considers events/scenarios in two main categories:

- vulnerability of the Project to external natural and man-made hazards; and
- major accident and disaster events and risks which could be generated or exacerbated by the Project.

2.3.2 Major accidents and disasters, by their nature, are 'unplanned' (ie with the potential for effects that are not part of the intended design, construction or operation) and would be infrequent. The assessment of possible major accident and disaster events/scenarios therefore focusses on the determination of the potential risk and the 'tolerability' of that risk.

Receptors

2.3.3 Receptors that may be affected by major accidents and disasters are both human and environmental. They have been identified through the review of each of the topic assessments within this PEIR.

2.3.4 For human receptors, the following receptor groups have been considered:

- local residents;
- operational staff (Gatwick Airport staff and any other persons legally employed within the Project site boundary);
- construction workers;
- travellers and other customers using airport facilities and onboard aircraft; and
- users of local transport (road and rail).

2.3.5 For environmental receptors, the established CDOIF guideline (CDOIF, 2016) identifies the broad groups of environmental receptors that are likely to be relevant to the assessment as:

- designated areas (land/water):
  - nationally important;
  - internationally important;
  - other designated land, and
  - scarce habitat.
- widespread habitat (land/water):
  - non-designated land; and
  - non-designated water.
- groundwater (water):
  - groundwater bodies – source of public or private drinking water, and
  - groundwater bodies – non-drinking water source.
- soil or sediment (land/water);
- built environment (land/man-made);
- species of flora and fauna (land/water/air);
- marine (water); and
- freshwater (water).

2.3.6 Table 2.3.1 illustrates the sources of baseline information used for each receptor group.

Table 2.3.1: Sources of Information for Receptors

Receptor Group	ES topic area
Designated land/water sites areas (nationally important)	Chapter 9: Ecology and Nature Conservation
Designated land/water sites (internationally important)	Chapter 9: Ecology and Nature Conservation
Other designated land	Chapter 8: Landscape, Townscape and Visual Resources Chapter 9: Ecology and Nature Conservation
Scarce habitat	Chapter 9: Ecology and Nature Conservation
Widespread habitat	Chapter 18: Agricultural Land Use and Recreation Chapter 11: Water Environment
Groundwater (drinking water and non-drinking water)	Chapter 11: Water Environment
Soil or sediment	Chapter 9: Ecology and Nature Conservation Chapter 10: Geology and Ground Conditions
Built environment (designated buildings/sites)	Chapter 7: Historic Environment
Particular species	Chapter 9: Ecology and Nature Conservation
Freshwater	Chapter 11: Water Environment
Population and human health	Chapter 13: Air Quality Chapter 12: Traffic and Transport Chapter 14: Noise and Vibration Chapter 16: Socio-economic Effects Chapter 17: Health and Wellbeing

2.3.7 See Annex 1 for a summary of the receptors considered for each receptor group.

Study Area

2.3.8 The distances and buffers used for the study area are based on the consideration of the nature of potential major accidents and disasters associated with the Project, as well as the range of receptors present. They have been informed by expert judgement aligned with practice employed in the assessment of major accidents and disasters at similar facilities, and industry guidance.

2.3.9 In relation to the potential for a 'major accident to the environment' (MATTE), the CDOIF guideline observes that "*when considering receptors with MATTE potential, note that the* [COMAH Competent Authority's] *Safety Report Assessment Manual (SRAM) indicates that it is reasonable to screen within 10 km of the establishment*". This is the approach that has been taken for the most sensitive receptors (sites designated at a National, European / International level) and for water bodies with hydraulic connectivity to the Project site.

2.3.10 For land-based sources of hazard with no surface/groundwater pathway, a 10 km buffer for land-based receptors is not considered appropriate as there are no accident scenarios that could give rise to a large toxic gas/vapour cloud or explosion that

would be expected to result in effects beyond 1 km. Similarly, a 1 km buffer is considered conservative for fire scenarios (eg those associated with fuel storage, or storage of hazardous substances).

2.3.11 The study areas for the identification of receptors (baseline environment) are therefore as follows:

- 10 km from the Project site boundary for land-based receptors and hazards including: human populations outside of the airport (workers and the public), inside the airport (workers, third parties, the public and occupants of aircrafts), designated land/water sites (internationally designated, ie Special Protection Areas (SPAs), Special Area of Conservation (SACs) and Ramsar Sites) and designated land/water sites (nationally designated, ie Sites of Special Scientific Interest (SSSIs)), and where water bodies could act as pathways to more distant receptors; and
- 1 km from the Project site boundary for all other environmental receptor groups[1] (eg other designated land, biodiversity and heritage assets).

2.3.12 The study areas for the assessment of effects are:

- 10 km from the Project site boundary for wider events; and
- 1 km from the Project site boundary for ground-based/on-site events.

2.3.13 These distances are considered to be sufficient to capture any effects related to potential serious damage or harm to receptors.

Temporal Scope

2.3.14 The assessment of major accidents and disasters addresses the construction (including demolition) and operational phases of the Project. The operational phase of the Project is considered in its entirety, rather than in stages based on when each element becomes operational. This is because the potential types and magnitude of risks for each element of the Project in relation to major accidents and disasters are not considered likely to vary significantly and because the entire Project represents the worst-case scenario from an operational perspective.

2.4 Approach to Risk Assessment

2.4.1 The methodology developed for assessing the risk of major accidents and disasters to human and environmental receptors includes the following steps:

- identification of major accident and disaster events/scenarios;
- evaluation of the severity/consequences of the events/scenarios;
- determination of the likelihood of occurrence; and
- assessment of the risk posed by each event/scenario and the tolerability of the risk(s).

Preliminary Identification of Scenarios

2.4.2 The first stage in the approach was to identify a comprehensive list of possible major accident and disaster events/scenarios. As set out above, the assessment considers those events that could arise externally and those that could occur as a result of the Project during both construction and operational phases.

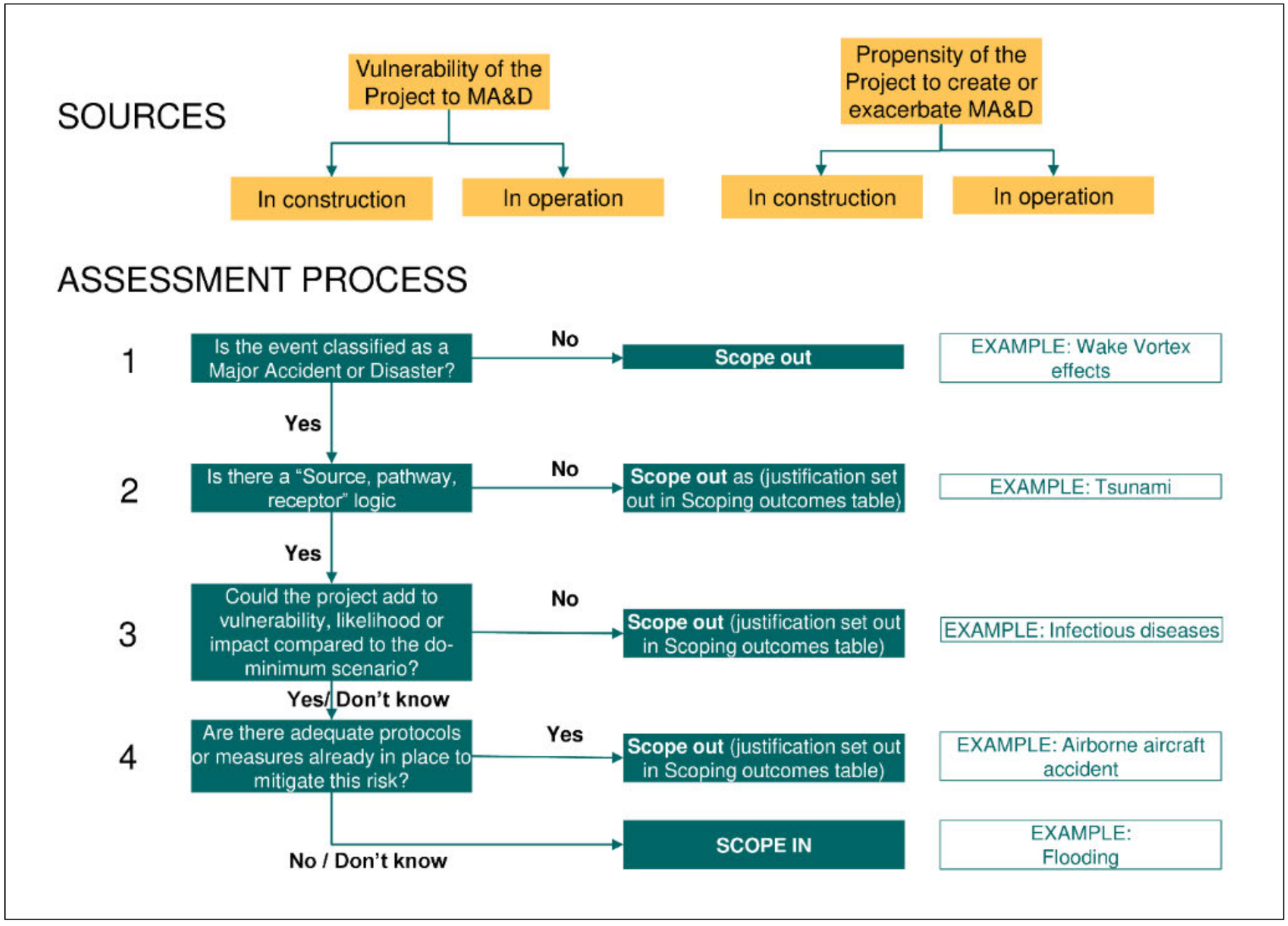
2.4.3 A comprehensive long-list of major accident and disaster events/scenarios with the potential to impact human and environmental receptors was generated. The list was initially developed from the events included in the National Risk Register of Civil Emergencies (Cabinet Office, 2017). This list was then expanded by considering events included in the Major Accident Reporting System (eMARS) and CAP 1036: Global Fatal Accident Review 2002 to 2011 (EC, 2018; CAA, 2013) guidance documents. In addition, information on potential major accident and disaster events/scenarios was also collated from key Gatwick Airport safety staff.

2.4.4 The list of potential major accident and disaster events/scenarios was subject to a preliminary exercise to determine whether there was potential for a risk to occur in the study area. Four ‘scoping tests’ were applied to determine whether a particular event should be scoped in or out of the EIA process. This process is set out in Diagram 2.4.1. Major accident and disaster events/scenarios were scoped in to the assessment only if they met all four scoping tests.

2.4.5 The result of this exercise was presented in the EIA Scoping Report and is reproduced in Annex 3. The annex explains the findings for each of the potential events/scenarios in the long list and provides justification for scoping each event/scenario into or out of the EIA process. Events not classified as ‘major’ (ie no risk of ‘serious’ danger or damage) and events/scenarios where there is no source, pathway, receptor route were scoped out of the assessment. Events where the Project would not potentially increase the risk compared to the do-minimum scenario, or where strong measures and protocols are already in place to manage the risk, were also scoped out. Any remaining events on the long-list were scoped into the EIA process. All aircraft within the air space and on the ground at Gatwick Airport were included in the scope of the assessment.

[1] The most sensitive receptors in the CDOIF guideline are nationally and internationally designated land/water sites the description of which is limited to SACs, SPAs, Ramsar sites, SSSIs and NNRs. It is recognised that there are other types of receptors that have a statutory designation (eg LNRs); however, in the CDOIF guideline these are considered as part of the ‘other designated land’ receptor group. Other designated land receptors have been identified within a 1 km radius.

Diagram 2.4.1: Decision Making Process for Identifying the Scope of Assessment for Major Accident and Disaster Events/Scenarios



2.4.6 The scenarios proposed to be taken forward for assessment are summarised in Table 2.4.1 These scenarios are evaluated in the Safety and Environmental Risk Assessment provided in Section 5 (Table 5.1.1).

Table 2.4.1: Scenarios Assessed Within this Assessment

Scenarios	Construction	Operation
Flooding (rainfall and riparian)	✓	✓
Earthquake	✓	✓
Subsidence	✓	✓
Landslide	✓	✓
Extreme heat/cold (runway degradation)	✓	✓
Snow (including ice and hail) (building snow loading)	✓	✓
Extreme storm (building damage)	✓	✓
Lightning	✗	✓
Wildfire	✓	✓
Climate change	✓	✓
Contamination (drinking water)	✓	✓
Transport accident – other vehicles (airside and landside)	✓	✓
Transport accident – rail	✓	✗
Accidental release of hazardous chemical	✓	✓
Fire	✓	✓
Explosion	✓	✓
Structural collapse	✓	✓
Collapse of excavation	✓	✗
Legacy issues (unexploded ordnance)	✓	✗
Occupational hazards	✓	✗
Loss of utilities	✓	✗

Consultation and Engagement

2.4.7 The EIA Scoping Report was issued in September 2019. It outlined the scope and methodology for the proposed technical EIA studies, and summarised those topics proposed to be scoped in and out of the EIA process (See Annex 3). A justification was provided for those topics scoped out of further assessment (generally explaining why no significant environmental effects were considered likely to occur).

2.4.8 Following consultation with the statutory bodies, the Planning Inspectorate, on behalf of the Secretary of State, provided a Scoping Opinion on 11 October 2019. Key points raised include:

- in several cases, the Planning Inspectorate did not think sufficient consideration had been given for excluding the event/scenario from further evaluation (response 4.14.5);
- in some areas, the Planning Inspectorate requested further information on the current systems in place at Gatwick Airport to address the potential impacts of an event/scenario (response 4.14.6); and
- the Planning Inspectorate also considered that for a number of events/scenarios it could not definitively be concluded that the corresponding risks associated with the Project were no worse than the existing situation (response 4.14.7).

2.4.9 A description of how these issues have been addressed within the PEIR is provided in Table 2.4.2. In addition to scoping, consultation with key stakeholders in relation to major accidents and disasters has been undertaken through a series of meetings in August and September 2019. Key stakeholders are those with some responsibility or interest in accident and emergency response in the local area including the local authorities, emergency services and local resilience forums. Details of the meetings held to date are listed in Table 2.4.3. Further consultation is also proposed during the ongoing EIA process.

Table 2.4.2: Summary of Scoping Opinion from the Planning Inspectorate with respect to Major Accidents and Disasters

ID & Ref	PINS Scoping Opinion	How/where addressed in PEIR
4.14.1 (7.11.44)	Public Safety Zones (PSZ) As discussed in section 4.12 of this Scoping Opinion, the Applicant seeks to scope out health and wellbeing implications on PSZ on the basis that such matters will be considered as part of the assessment of major accidents and disasters. The Inspectorate notes that section 7.14 of the Scoping Report and Appendix 7.14.1 do not expressly mention PSZ. Where significant effects are likely to occur, this should be specifically assessed in the ES with cross reference between aspect chapters of the ES where relevant.	The CAA is currently consulting on standardizing PSZs. Depending upon the outcome of that consultation a PSZ assessment may be include in the final Environmental Statement.
4.14.2 (Appendix 7.14.1)	Scoping Outcomes for Potential Major Accident and Disaster Events Appendix 7.14.1 presents a list of all major accidents and disasters considered by the Applicant during construction and operation of the Proposed Development and the sequential 4-staged approach that has been followed. Where the Applicant has sought to scope out certain matters, these are considered in the following rows.	See below.
4.14.3 (Appendix 7.14.1)	Events with no source-pathway-receptor linkages The Inspectorate is content that the effects associated with the following matters are unlikely to represent significant major accident and disaster events and can be scoped out of the assessment: ▪ Flooding (coastal and tidal); ▪ Tsunami; ▪ Storm surge; ▪ Volcanic eruption; ▪ Dam failure; and ▪ Displaced population.	Aspects scoped out, as agreed with Planning Inspectorate. No further action needed.
4.14.4 (Appendix 7.14.1)	Events not classified as major accidents or hazards Damage to important artefacts and aircraft wake vortex have been scoped out by the Applicant on the basis that they do not fall under the definition of 'major accidents and disasters' and the Inspectorate agrees with this conclusion and that these matters can be scoped out.	Aspects scoped out, as agreed with Planning Inspectorate. No further action needed.
4.14.5 (Appendix 7.14.1)	No increase to risks compared to existing situation (scoping test 3) The Applicant seeks to scope out the following on the basis that there is no increase to risks compared to existing situation: ▪ Lightning strikes (the Inspectorate agrees that it should be scoped in for operational effects, but that this conclusion should also be applied in respect of construction effects); ▪ Infectious diseases (human and animal epidemics and pandemics); ▪ Drought; ▪ Famine and food security; ▪ Severe space weather; ▪ Terrorism and malicious biological and chemical attacks (including sabotage and vandalism); ▪ Industrial action; ▪ Widespread public disorder; ▪ Cyber-attacks; ▪ Explosion / structural collapse / excavation failure at neighboring sites; ▪ Rail accidents (the Inspectorate agrees that it should be scoped in for construction effects, but that this conclusion should also be applied in respect of operational effects); and ▪ Occupational hazards. The Inspectorate does not consider that sufficient consideration or detail has been given to the impacts of the Proposed Development in order to definitively conclude that all of the above matters will be 'no worse' than the existing situation. The Inspectorate therefore does not agree to scope these matters out. The ES should include details of the current systems in place to address impacts for these matters and describe any changes required to account for the Proposed Development. Where significant effects are likely to occur, this should be assessed in the ES.	Following receipt of the Scoping Opinion, a qualitative re-assessment of these accident/disaster scenarios has been undertaken. Details are presented in Section 5 (Table 5.1.2).

ID & Ref	PINS Scoping Opinion	How/where addressed in PEIR
4.14.6 (Appendix 7.14.1)	<u>Adequate protocols or measures already in place to mitigate risks (scoping test 4)</u> The Applicant seeks to scope out the following on the basis that adequate protocols or measures already in place to mitigate risks: ▪ Extreme heat and cold (including snow, ice and hail) ▪ - Instrument failure - Cold embrittlement - Runway excursion - Impairment of major accident emergency services ▪ Damage to aircraft during extreme storms ▪ Ash clouds ▪ Aircraft accidents on the runway ▪ Aircraft accidents (airborne) The Inspectorate does not consider that sufficient information regarding the existing protocols being relied upon has been provided. It is also not explained at this stage what (if any) changes would be required to the protocols in light of the changes during construction and operation associated with the Proposed Development. The Inspectorate also notes comments in respect of the airspace change in this regard, and that consideration of major accidents would need to reflect such changes to any existing protocols that are being relied upon (particularly around aircraft accidents). The ES should include a definition of the current systems in place to address impacts for these matters (and explain any changes that may be required to those current systems). Where significant effects are likely to occur, this should be assessed in the ES.	Information on the current systems, plans, and procedures in place at Gatwick Airport to address these events/scenarios is presented in Section 5 (Table 5.1.3).
4.14.7 (Appendix 7.14.1)	<u>Scoping out of major accidents and disasters of the basis of scoping tests 3 and 4</u> The Applicant explains that the scoping tests are 'sequential', and yet the following are listed in Appendix 7.14.1 as not meeting scoping tests 3 or 4. The Inspectorate understood that where test 3 was not met there would be no need to consider test 4. ▪ Drones and lasers; ▪ External objects (bird strike, fireworks, sky lanterns and wind turbines); ▪ Deficient emergency planning; ▪ Loss of utilities (operation); ▪ Loss of essential air safety or airside systems; and ▪ Deficient security provisions. The Inspectorate does not agree that these matters can be scoped out at this stage…[The] reasons are that insufficient information regarding the existing protocols being relied upon has been provided (and what (if any) changes would be required to the protocols in light of the Proposed Development), and that it cannot be definitively concluded at this stage that all of the above matters will be 'no worse' than the existing situation.	Further information is provided in Section 5 (Table 5.1.4) to justify the conclusion that, during the Project and the subsequent operation of the expanded airport, risks from drones, lasers, etc would be no worse as a consequence of the Project, than the current level of risk.
4.14.8 (Appendix 7.14.1)	<u>Unexploded ordnance</u> The Inspectorate agrees that unexploded ordnance during operation can be scoped out of the assessment, given that such matters will be assessed and, where applicable, assessed and managed during the construction phase.	Aspect scoped out, as agreed with Planning Inspectorate. No further action needed.
4.14.8 (List the comments in order)	<u>Major accidents and disaster study areas</u> Whilst the Inspectorate notes there is currently, no well-established guidance or standard for assessment of major accidents and disasters within EIA, there is little justification for the study areas selected (10 km for "wider events" related to airspace and 1 km for ground- based/on-site events) beyond the use of expert judgement. The Applicant also states that the study areas may need to be amended should such a need be highlighted during the assessment process. The ES should clearly evidence and justify the final extent of the study area(s) used in the assessment of this aspect. Based on the description of some of the identified 'events', the Inspectorate does not consider arbitrary distances should be applied. The study area should be sufficient to encompass the extent of the anticipated impacts and the likely significant effects of the Proposed Development from the perspective of major accidents and disasters. The Applicant should make effort to agree the approach with relevant consultation bodies.	The approach is described in Section 2 (Study Area). The defined areas are sufficiently wide to encompass the extent of anticipated impacts and likely significant effects.

Table 2.4.3: Consultation Summary Table

Consultee	Date	Issues addressed	How/where addressed in PEIR
Sussex Local Resilience Forum Surrey Local Resilience Forum Representatives from: Crawley Borough Council Horsham District Council West Sussex County Council Surrey County Council Emergency Services (Sussex Police)	26/09/2019 27/01/2020 11/08/2021	Utilization of community risk registers to ensure that the EIA captures known environmental risks.	The following community registers have been reviewed: ▪ Sussex Local Resilience Forum Community Risk Register; ▪ Surrey Local Resilience Forum Surrey Community Risk Register; and ▪ Waverley Borough Council Community Risk Register. The risks contained within these registers have been captured and addressed in Table 5.1.1.
		The impacts of expansion on other developments	PEIR Chapter 19 presents an assessment of the cumulative environmental effects that could occur as a consequence of the Project and the simultaneous development and/or operation of other schemes, where the coincidence could result in effects greater than if the Project occurred on its own. The assessment includes consideration of particular locations where several effects, for example noise, air quality and visual change, may all occur at the same time or one after another.
		The importance of ensuring good surface access is maintained.	As part of the construction works, a traffic management strategy would be put in place to minimise environmental effects, including effects on highways disruption and safety. A maximum speed limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads/work areas is proposed on internal routes during construction. [Note – text to be checked against updated traffic chapter when received] Effects during construction would be controlled through the Code of Construction Practice (CoCP) and existing Airport Emergency procedures. Existing security arrangements would remain in place and would not be compromised by the Project.
		Ensuring that rendezvous points are not compromised during construction works.	
		Security checking/vetting of employees who work landside as well as in the critical part/airside.	All staff working both landside and airside would be subject to security checks. There would be no change from established airport security arrangements.
		There could be an increased risk of protests from action groups opposed to the proposals (including eg drone attacks).	Issues related to risk of protests (including drones) have been scoped back into the assessment and are assessed in the response to the Scoping Opinion. See Annex 3.
Technical Officers Group	03/09/2019	GAL confirmed that, in view of the minor events that have occurred in the Gatwick area, the potential impact of earthquakes is being considered. GAL should ensure that the risks from earthworks are considered in the design of development.	The issues of earthquakes and earth works are addressed in Section 5 (Table 5.1.1). Occupational hazards associated with earthworks, and airside construction activities generally, will be evaluated in further detail in the Environmental Statement (see Annex 3).

Approach to Risk Assessment

2.4.10 The major accident and disaster events/scenarios have been assessed for their potential risks to human and environmental receptors.

2.4.11 Assessment of risk tolerability for major accidents and disasters in the UK generally incorporates consideration of the 'as low as reasonably practicable' (ALARP) principle. In relation to COMAH, risk can be evaluated as either 'intolerable', 'tolerable if ALARP (TifALARP)' or 'broadly acceptable'. A requirement of the COMAH Regulations is to demonstrate that relevant legislation, good practice and 'all necessary measures' have been adopted. For the purposes of this assessment, effects have been identified as significant if the risk is identified as intolerable.

Safety Risk Assessment

2.4.12 The safety risk assessment approach for effects on human receptors is set out in Table 2.4.4. The evaluation leads to a conclusion regarding the tolerability of the risk. The likelihood and severity definitions are consistent with the Health and Safety Executive's (HSE) general guidance on the principle of risk being ALARP (see HSE Semi-permanent Circular (SPC) 37 and 39, 2012) and the acceptability of societal risk. The risk assessment matrix below therefore provides a suitable basis for ALARP judgement.

Table 2.4.4: Safety Risk Assessment Matrix

Severity	Likelihood of event/scenario to occur (Likelihood)				
	Extremely unlikely	Very unlikely	Unlikely	Reasonably likely	Likely
None					
Minor					
Significant					
Severe					
Major					
Catastrophic					

2.4.13 The terms used above for severity and likelihood are defined in Table 2.4.5 and Table 2.4.6. The assessment of likelihood has been based on an analysis of airport operations and expert judgement in relation to similar risks within major projects.

Table 2.4.5: Safety Risk Ranking Matrix Definition – Likelihood

Likelihood	Likelihood range
Extremely unlikely	$<10^{-5}$/year, less than once per 100,000 years
Very unlikely	10^{-5} to 10^{-3}/year, between once per 100,000 and once per 1,000 years
Unlikely	10^{-3} to 10^{-1}/year, between once per 1,000 and once per 10 years
Reasonably likely	10^{-1} to 1/year, between once per 10 years and once per year
Likely	>1 per year, greater than once per year

Table 2.4.6: Safety Risk Ranking Matrix Definition – Severity

Likelihood	Definition	Severity
None	Personnel	No injury or damage to health.
	Public	No injury or damage to health.
Minor	Personnel	Minor injury.
	Public	Nuisance offsite.
Significant	Personnel	Lost time accident.
	Public	Short term, minor effects.
Severe	Personnel	Single or few serious injuries.
	Public	Few people require hospital treatment. Emergency plan in operation.
Major	Personnel	Single or few fatalities (<5). Many serious injuries.
	Public	Serious injuries. Tens in hospital.
Catastrophic	Personnel	Many fatalities (5 or more). Numerous serious injuries.
	Public	One or more fatalities. Several serious injuries.

2.4.14 With regard to risk, it is noted that the colour coding in Table 2.4.4 relates to:

- red – intolerable risk;
- yellow – risk is TifALARP; and
- green – risk is 'broadly acceptable'.

Environmental Risk Assessment

2.4.15 A common methodology has been published by the CDOIF for the purpose of determining the tolerability of environmental risks for COMAH establishments. Once a set of accident scenarios has been identified, the methodology typically involves a similar approach to that for effects on human receptors:

- assess potential impacts of events/scenarios to determine the level of severity/harm and the duration/recovery;
- combine the level of severity/harm and the duration/recovery to determine the 'consequence level'; and
- use a risk matrix, combining the consequence level and likelihood of major accident and disaster events/scenarios to determine the overall risk and the tolerability of that risk (see Table 2.4.7).

2.4.16 The assessment of potential impacts is based on the Source-Pathway-Receptor (SPR) approach. This approach typically involves an estimate of the quantity and composition of material which could escape (the source), the routes by which it could travel to a receptor (pathways), and the environmental sensitivity of the receiving environment (receptors).

- Source – refers to the hazardous materials (pollutants) and physical effects (eg thermal radiation and blast overpressure) that may be released in the event of a major accident.
- Pathway – the means by which any pollutant can escape to the environment. Pathways may be internal (within the boundaries of the site) or external. In the latter case pathways can extend for several kilometres or more.
- Receptor – the features of the environment which could be affected (directly or indirectly) by the escape of pollutants to the receiving environment.

2.4.17 For there to be environmental harm with the potential to result in a MATTE, all three components of the SPR process must be present and linked together. Where it is established that a complete linkage exists, an environmental consequence assessment is undertaken. Typically, the assessment is a qualitative or semi-quantitative process. The potential environmental effects are then compared to the criteria provided in the CDOIF guideline (CDOIF, 2016) to determine the level of severity/harm and the duration/recovery rate relevant to the receptor type. The CDOIF severity/harm and duration/recovery criteria take into account the sensitivity of each type of receptor considered.

2.4.18 The definitions of 'severity/harm' (of an event/scenario) are given in Appendix 4, Table 4.1 of the CDOIF guideline, which is reproduced in Annex 4. Severity is defined as significant, severe,

major or catastrophic, noting that a 'significant' level of harm is the lowest level of harm that would not result in a MATTE (ie it would be 'sub-MATTE'). Therefore, for the purposes of this assessment 'significant' has a different meaning to that set out within the EIA Regulations and does not equate to a likely significant effect. 'Severe' is the lowest level of harm that may be considered to be a MATTE.

2.4.19 Duration/recovery criteria (taken from Appendix 4, Table 4.2 of the CDOIF guideline and also reproduced in Annex 4) are based on unmitigated consequences and are different for different types of receptors. Harm/recovery durations are judged to be 'short-term', 'medium-term', 'long-term' or 'very long-term', where 'short term' harm is not considered to be a MATTE (sub-MATTE).

2.4.20 If either the severity of an impact or the duration of an event is identified as being sub-MATTE, the event has not been considered further in the risk assessment in accordance with the CDOIF guideline. This indicates that such outcomes are low risk, and at the very least could be considered 'broadly acceptable'.

2.4.21 Where both the level of severity/harm or the duration/recovery category of an event are assessed to be of MATTE potential, the Consequence Level (classified A, B, C or D) is determined in accordance with Appendix 4, Table 4.3 of the CDOIF guideline, reproduced in Annex 4. This approach establishes the consequence level. The tolerability of a receptor to a MATTE is then determined through use of a Tolerability Assessment Matrix, which combines the consequence level with the likelihood of the major accident and disaster events/scenarios occurring. The matrix used in this assessment is given in Table 2.4.7.

Table 2.4.7: CDOIF Guideline Risk Assessment Matrix

Consequence Level	Likelihood						
	10^{-8} - 10^{-7}	10^{-7} - 10^{-6}	10^{-6} - 10^{-5}	10^{-5} - 10^{-4}	10^{-4} - 10^{-3}	10^{-3} - 10^{-2}	>10^{-2}
D - MATTE							
C - MATTE							
B - MATTE							
A - MATTE							
Sub MATTE	Tolerability not considered.						

This table has been derived from the matrix for deriving receptor tolerability for a major accident to the environment (MATTE) in Appendix 4, Table 4.3 of the CDOIF guideline.

2.4.22 Further detail on the environmental risk assessment process is presented in Annex 1. The annex identifies the potential sources of impact, pathways and receptors considered in the assessment. The outcome of the risk assessment is provided in Section 5 (Table 5.1.1). Major accident and disaster scenarios are considered as having the potential for significant effects to arise where the risk is assessed to be intolerable.

Assumptions and Limitations

2.4.23 The assessment has focussed on effects directly attributable to the Project's construction and operation, and effects on the Project from natural disasters. Instances of double jeopardy (ie domino effects) have not been considered.

2.4.24 The assessment of major accidents and disasters is reliant on the information contained in related aspects chapters. The assessment and conclusions are therefore based on the current understanding of the existing baseline conditions. However, it is considered unlikely that new baseline information would significantly change the current assessment findings. This will be reviewed during the ongoing EIA process.

2.4.25 The assessment of effects on environmental receptors has focussed primarily on the designation and nature of the sites. Sites are designated based on their cultural and natural importance, including the presence of protected habitats and species. This preliminary assessment does not consider the effects of major accidents and disasters on individual species.

2.4.26 The assessment of likelihood has been primarily based on expert judgement.

2.4.27 No assumptions and limitations have been identified in the preparation of this assessment that would prevent a preliminary assessment of the potential effects being made.

3 Project Design and Measures Adopted as Part of the Project

3.1.1 The risk assessment (for human and environmental receptors) considers the mitigation measures that form part of the Project, including:

- measures included as part of the Project design (ie embedded measures);
- measures proposed to avoid effects occurring or to minimise environmental effects; and
- measures required as a result of legislative requirements or standard good practice.

3.1.2 Mitigation and monitoring measures identified to control construction effects would be implemented through the CoCP. The CoCP will set out the key management measures that contractors would be required to adopt and implement. These measures would include strategies and control measures for managing the potential environmental effects of construction and limiting disturbance from construction activities as far as reasonably practicable. An Outline CoCP is provided at Appendix 5.3.1 of the PEIR.

3.1.3 Measures that form part of the Project design, including those relating to climate change (flooding and extreme weather), are described in Chapter 5: Project Description of the PEIR.

3.1.4 In relation to major accidents and disasters, established control measures and guidelines that would safeguard the construction and/or operational phases of the Project, include, but are not limited to:

- *Fire Fighting and Equipment Maintenance* Policy (GAL, undated);
- *Contingency Plan for Airside Operations Adverse Weather* (GAL, 2016);
- *Foul Sewage Infrastructure Failure* (GAL, 2017a);
- *Contingency Plan for Partial Loss of Electricity to the Airport* (GAL, 2018a);
- *Contingency Plans for Total Loss of Electricity to the Airport* (GAL, 2018b);
- *Natural Gas Infrastructure Failure* (GAL, 2018g);
- *Operational Resilience Report* (GAL, 2018h);
- *Potable Water Infrastructure Failure* (GAL, 2018i);
- *Spill prevention, response and reporting requirements* (GAL, 2018j);
- *Gatwick Aerodrome Manual* (GAL, 2019a);
- *Gatwick Emergency Orders* (GAL, 2019c);
- *Life Safety Systems (LSS) Maintenance Policy* (GAL, 2019d);
- *Safety Management System (SMS) Manual* (GAL, 2019e); and
- *Control of Major Accident Hazards Regulations 2015 External Emergency Plan V2.0,* Gatwick Airport Storage and Hydrant Company Limited (GASHCo).

4 Site Setting and Baseline Conditions and Receptors

4.1 Site Setting and Infrastructure

4.1.1 Gatwick Airport is located in West Sussex between the towns of Crawley and Horley, approximately 25 miles south of central London.

4.1.2 The airport is directly served by the M23 Spur off the M23 which runs approximately 1.7 km to the east of the airport. The A23 (London Road) also serves the airport, running in a north-south direction through the airport.

4.1.3 The airport sits on the London to Brighton mainline railway. Gatwick Airport's railway station is located at South Terminal, and there is a direct transit link to North Terminal. The station provides over 120 direct rail connections, including direct trains to central London. These include the Gatwick Express service to London Victoria as well as the Southern and Thameslink networks. The station serves over 20 million journeys per year.

4.1.4 The Project site includes the large-scale buildings, extensive hardstanding, transport infrastructure, natural and green infrastructure, and associated facilities of Gatwick Airport. Additional areas of land outside of the operational airport are also included within the Project site boundary. Much of the land within the Project site boundary is of little ecological value; however, there are some small areas of ecological interest, typically located towards the Project site boundary, away from the operational area of the airport.

4.1.5 Within the airport, surface water is managed through existing Ponds A to G, Pond M and Dog Kennel Pond. Rainfall runoff from the airport generally drains via attenuation ponds and pollution control structures to one of three watercourses: Crawter's Brook, Gatwick Stream and the River Mole, in accordance with existing discharge consents.

4.1.6 Foul water currently passes to the Crawley Sewage Treatment Works to the south east of the airport or Horley Sewage Treatment Works to the north east.

4.2 Baseline Conditions and Receptors

4.2.1 The baseline conditions relevant to the assessment of major accidents and disasters are primarily informed by the baseline data from the topic chapters of the PEIR. This information has been used to provide an understanding of the baseline conditions for the Project, how these conditions could influence the effects of major accidents and disasters, and the vulnerability of receptors to major accidents and disasters. It is not the intention of this appendix to duplicate information. However, for ease of reference, key baseline features and receptors have been identified. Summary information on human receptors is provided immediately below, while the more detailed information on environmental receptors is set out in Annex 1.

4.3 Human Receptors – Present Day

4.3.1 There are human receptors on-site and off-site. Depending on the phase of the Project, on-site receptors would include operational staff, construction workers and the public utilising the airport and its facilities.

4.3.2 In 2019 approximately 24,000 staff worked at the airport of which approximately 3,300 were employed directly by GAL. In 2020 with the prevailing pandemic conditions, the number of GAL staff fell to approximately 1,900 although this is expected to return to previous levels in line with recovering passenger numbers. In the absence of the Project the total number of employees on site is forecast to increase to over 27,000 by 2029 and then grow towards 28,800 by 2038. The Project is anticipated to result in an increase in approximately 3,200 airport jobs (to approximately 32,000). It is anticipated that construction would require a workforce of up to approximately 1,300 personnel during peak periods.

4.3.3 Off-site receptors include:

- the occupants of residential properties, for example at Horley, Lowfield Heath, Charlwood and Tinsley Green;
- users of public open spaces, for example the Riverside Garden Park;
- walkers, equestrians and cyclists using the public rights of way network within and around the Project site;
- occupiers of vehicles travelling on the local road network (for example A23 Airport Way and London Road, M23, Balcombe Road, Charlwood Road and Lowfield Heath Road);
- passengers using the rail network (for example on the London to Brighton mainline railway); and
- passengers, staff and visitors to Gatwick Airport using car parks, hotels, circulation space and transport corridors.

5 Risk Assessment

5.1 Summary of Risk Assessment

5.1.1 Safety and environmental risk assessments were carried out for those events/scenarios listed in Table 2.4.1, and the outcomes are presented in Table 5.1.1. The assessment methodology followed that described in Section 2. In some instances, more than one severity level and its associated likelihood has been considered for a single event. This approach ensures that the worst case for severity is considered as well as accounting for less severe but more likely outcomes.

5.1.2 In addition, further evaluation has been carried out for those scenarios referred to in 4.14.5 of the Scoping Opinion, where the Planning Inspectorate stated that insufficient consideration had been given for excluding the event/scenario during the initial scoping exercise. The re-evaluation is qualitative in nature and is aimed at determining whether, on the basis of the further detail provided, a scenario should be considered further within the EIA process and whether more detailed assessment is merited at the next phase of the assessment process. The re-evaluation is presented in Table 5.1.2.

5.1.3 Table 5.1.3 responds to the request for further information in 4.14.6 of the Scoping Opinion regarding the current systems in place at Gatwick Airport to address the potential impacts of a variety of events/scenarios.

5.1.4 Table 5.1.4 provides further detail to explain why, for a variety of scenarios, implementation of the Project would, of itself, not result in a worsening of the existing situation at Gatwick Airport. The table has been prepared in response to 4.14.7 of the Scoping Opinion.

Table 5.1.1: Safety and Evironmental Risk Assessment

Disaster/ Hazard Event	Description	Potential Consequence	Potential Receptors	Risk Assessment			Comment	Further Assessment in EIA
				Severity/ Consequence Level	Likelihood	Risk Rating		
Flooding (rainfall and riparian)	Flooding due to excessive rainfall and fluvial overflow, ie overflow of the River Mole and its tributaries.	Structural failure of excavation, temporary or permanent assets leading to fatalities, injuries to people and damage to property/aircraft within the study area.	People	Major (fatalities)	Very unlikely	Tolerable if ALARP	The Airside Operations Adverse Weather (flooding plan) (Gatwick Airport Limited, 2018) is currently adopted by the Gatwick operations team. This details the planning and operating procedures necessary to ensure the safe operation of the airport in the occasion of actual or potential flood event. At Flood State 2A, the Environment Agency will be able to provide information to Gatwick Airport on the current river levels and how rivers are likely to respond to the rainfall forecast. This will happen before river levels start to respond, up to three days before any operational impacts. The Environment Agency will issue a Flood Alert if needed at this stage if there is a developing risk of river flooding. At Flood State 2B, the Environment Agency will be looking at possible operational impacts and the Flood Warning threshold to be met. Forecast models would be run for Gatwick Upstream (Mole) and Gatwick Stream to understand how the river will respond and at what level the river is expected to peak. The Environment Agency will issue a Flood Warning if they are looking at this scenario. It can be issued 24 hours in advance of the onset of flooding, to provide engineering teams with enough time for their deployments. With respect to airport operations during extreme weather events, the runway state is closely monitored, assessed and reported. As part of the Gatwick Emergency Orders, when the weather has deteriorated to such an extent as to render a landing difficult, the Air Traffic Control (ATC) Watch Manager will initiate a Weather Standby. In the event of runway closure the tower would either put the incoming aircraft in holding patterns until the issue is resolved or aircraft would be diverted.	No further assessment proposed.
				Severe (injuries)	Unlikely	Tolerable if ALARP		
		Release of hazardous material (environmentally damaging substance) leading to contamination of local water courses, soil and groundwater. Ecological impact and contamination of water resources.	Environment	Sub-MATTE	n/a(1)	Broadly Acceptable		
Earthquake	Seismic activity strong enough to cause damage to property or endanger life (>6.0 on the Richter scale).	Failure of buildings and structures across the Gatwick site leading to fatalities, injuries to people and damage to property.	People	Catastrophic (fatalities)	Very unlikely	Tolerable if ALARP	As noted by the British Geological Survey (BGS), the UK is not generally associated with earthquakes. There are between 20 to 30 felt by people each year, and a few hundred smaller ones which are recorded by seismic instrumentation. Most of these earthquakes are very small and cause no damage. The largest known British earthquake occurred near the Dogger Bank in 1931, with a magnitude of 6.1. It occurred 60 miles offshore but caused minor damage to buildings on the east coast of England.	No further assessment proposed.
				Severe (injuries)	Unlikely	Tolerable if ALARP		

Disaster/ Hazard Event	Description	Potential Consequence	Potential Receptors	Risk Assessment			Comment	Further Assessment in EIA
				Severity/ Consequence Level	Likelihood	Risk Rating		
		Structural failure of fuel storage and handling systems leading to contamination of soil and groundwater, environmental impact and contamination of water resources.	Environment	Sub-MATTE	n/a(1)	Broadly Acceptable	The local area around Gatwick has been subject to some recent minor earthquakes (in 2018 an earthquake of magnitude 3.1 was recorded at Newdigate at a depth of three miles, and reportedly felt by passengers at Gatwick Airport). However, a larger earthquake which could result in a major accident and disaster is considered unlikely. Airport structures are designed for earthquake resistance as per Eurocodes and the National Annex inclusive of PD 6698 (Recommendations for the design of structures for earthquake resistance to BS EN 1998). Gatwick falls in peak ground acceleration for a 2,500 return period of 0.00 – 0.02 g. No direct policy exists for dealing with structural collapse. However, all structures are designed in line with Eurocodes and disproportionate collapse rules. The Project does not introduce any new features to Gatwick Airport which might increase the vulnerability of the airport to the effects of an earthquake should one occur.	
		Damage to runways leading to crash of inbound and outbound aircraft and injuries and fatalities to passengers.	People	Catastrophic (fatalities)	Extremely unlikely	Tolerable if ALARP	This event scenario relates to the coincidence of aircraft moving on the runway with an earthquake of a magnitude sufficient to cause significant damage to the runway surface. It is a highly unlikely scenario and one which is not, in any case, introduced by the Project. Response to such an event would be through existing emergency arrangements.	No further assessment proposed.
				Severe (injuries)	Unlikely	Tolerable if ALARP		
Subsidence	Downward settling of the ground surface due to underlying geology or flood events.	Vehicular transport accident and fire leading to fatalities, injuries to people and damage to property/aircraft within the study area.	People	Major (fatalities)	Extremely unlikely	Broadly Acceptable	GAL has prepared an Operational Resilience Report for Gatwick Airport in accordance with the Civil Aviation Authority's guidance. The 2018 report identifies the top 10 significant risks and a further 18 'addressable risks', as signed off by the Audit Committee. Damage to the runway or other airport facilities through geological settlement was not identified as a risk.	No further assessment proposed.
				Severe (injuries)	Very unlikely	Broadly Acceptable		
		Damage to runways leading to crash of inbound and outbound aircraft and injuries and fatalities to passengers.	People	Catastrophic (fatalities)	Extremely unlikely	Tolerable if ALARP	The airport runways are regularly inspected (two full checks per day) and maintained. In addition, it is standard procedure for pilots to report any observations pertaining to the condition of the runway. The likelihood of subsidence occurring at such a rate and to such an extent that it might prove hazardous to incoming or departing aircraft is therefore considered highly unlikely.	No further assessment proposed.
				Severe (injuries)	Very unlikely	Broadly Acceptable		
Landslide		Vehicular transport accident and fire	People	Major (fatalities)	Extremely unlikely	Broadly Acceptable	This event is similar in nature to subsidence although more rapid in terms of its action. However, a landslide of the airport's existing graded surfaces	

Disaster/ Hazard Event	Description	Potential Consequence	Potential Receptors	Risk Assessment			Comment	Further Assessment in EIA
				Severity/ Consequence Level	Likelihood	Risk Rating		
		leading to fatalities, injuries to people and damage to property/aircraft within the study area.		Significant (injuries)	Very unlikely	Broadly Acceptable	(runways, taxiways, apron, etc) is highly unlikely given their continuous usage by aviation traffic for well over half a century. Damage to the runway or other airport facilities through land slippage was also not identified as a risk in the Operational Resilience Report.	No further assessment proposed.
	Significant land movement triggered by natural phenomena.	Damage to runways leading to crash of inbound and outbound aircraft and injuries and fatalities to passengers.	People	Catastrophic (fatalities)	Extremely unlikely	Tolerable if ALARP	The rapid development of a landslide on a runway (assumed in this instance to be a sinkhole) coincident with the arrival or departure of an aircraft is not considered to be a realistic scenario in any case, and particularly given the geology at Gatwick.	No further assessment proposed.
				Severe (injuries)	Very unlikely	Broadly Acceptable		
Extreme weather (including snow, storm lightning and wildfire)	Extremes of heat/cold, snow, storms, lightning strikes, wildfire and drought exacerbated by climate change.	Vehicular transport accident and fire leading to fatalities, injuries to people and damage to property/aircraft within the study area.	People	Major (fatalities)	Unlikely	Tolerable if ALARP	The Project is not likely to have any effect on weather extremes (further detail on climate change is presented in Chapter 15: Climate Change and Carbon). Expanded operations would conform with current response practices. New facilities would be constructed to the appropriate codes and standards. GAL operates its Contingency Plan for Airside Operations Adverse Weather. This plan covers all airside operations areas of responsibility including runways, taxiways, aprons, roads, passenger walkways, grass areas and stands. It is designed to enable stable operations to be maintained, as far as is realistically possible, in the event of disruptive adverse weather which is taken to include snow, ice, volcanic ash, flood, wind, heat, and cumulonimbus (CB) activity. The plan addresses airside operations incident and crisis management; monitoring of weather conditions and weather forecasting; response actions and resources; and communications.	
				Severe (injuries)	Reasonably likely	Tolerable if ALARP		No further assessment proposed.
		Electrocution.	People	Major (fatalities)	Very unlikely	Tolerable if ALARP	The Contingency Plan for Airside Operations Adverse Weather includes a response to CB activity, clouds which are capable of producing lightning and other dangerous severe weather. CB activity may have an impact on the safe operation of aircraft within a 5 nautical mile radius of Gatwick. The plan is aimed at ensuring safe operating conditions exist on all operational airfield areas and that all staff on the airfield are safe from CB activity.	No further assessment proposed.
				Severe (injuries)	Unlikely	Tolerable if ALARP		
		Damage to runway leading to crash of inbound and outbound aircraft and fatalities.	People	Catastrophic (fatalities)	Extremely unlikely	Tolerable if ALARP	The condition of the runway would be checked following a severe weather event. The likelihood that significant damage would go undetected is considered to be ‘highly unlikely’.	No further assessment proposed.
				Severe (injuries)	Unlikely	Tolerable if ALARP		

Disaster/ Hazard Event	Description	Potential Consequence	Potential Receptors	Risk Assessment			Comment	Further Assessment in EIA
				Severity/ Consequence Level	Likelihood	Risk Rating		
		Overloading and damage to excavation, temporary or permanent assets leading to fatalities, injuries to people and damage to property.	People	Major (fatalities)	Very unlikely	Tolerable if ALARP	Under the Safety Management System (see Occupational Hazards below), worksite conditions would be inspected following extreme weather in order to identify whether the event could have introduced hazards (such as damage to an excavation) which may have implications for the on-going safety of the construction workforce. Appropriate mitigation would be identified and implemented.	No further assessment proposed.
				Severe (injuries)	Unlikely	Tolerable if ALARP		
		Wildfire leading to fatalities or injuries to people.	People	Major (fatalities)	Extremely unlikely	Broadly Acceptable	Grassed areas at the airport are maintained by cropping to a low level, and the whole aerodrome is regularly inspected by airfield operations. The airport is supported 24 hours a day by a dedicated Gatwick Airport Fire and Rescue Service. It would be unlikely for a fire to start due to the lack of a direct ignition source. However, if one did, it would be spotted very early and dealt with by the fire service. The development of a wildfire on Gatwick Airport is thus not considered a realistic hazard scenario. With respect to wildfires off the airfield, it is noted that the local authority fire service (West Sussex Fire and Rescue Service) have a dedicated wildfire subject matter advisor who can be consulted at any time. The fire service has procedures in place for dealing with all types and sizes of wildfire scenarios.	No further assessment proposed.
				Significant (injuries)	Extremely unlikely	Broadly Acceptable		
Contamination (drinking water)	Failure of on-site monitoring, handling, control and management, including security, leading to contamination of water sources.	Illness or, potentially, fatality in airport staff, air crew, passengers, and construction workforce.	People	Major (fatalities)	Extremely unlikely	Broadly Acceptable	Contamination of the potable water supply has occurred in the UK in the past and cannot therefore be discounted as a potential hazard. However, it is not one introduced by the Project nor, in reality, is it one that can be managed by GAL, only responded to in the remote event of an occurrence. The Project would increase the number of people potentially exposed to contaminated water (if it occurred as an external event due to increased passenger throughput), but not to any significant extent.	No further assessment proposed.
				Significant (injuries)	Extremely unlikely	Broadly Acceptable		
Transport accident	Landside or airside collision between ground	Vehicular transport accident leading to	People	Major (fatalities)	Unlikely	Tolerable if ALARP	Airside	

Disaster/ Hazard Event	Description	Potential Consequence	Potential Receptors	Risk Assessment			Comment	Further Assessment in EIA
				Severity/ Consequence Level	Likelihood	Risk Rating		
	vehicle (car/HGV/passenger vehicle) and other vehicle or airport structure.	fatalities, injuries to people.		Significant (injuries)	Reasonably likely	Tolerable if ALARP	Transport movements around Gatwick are subject to a range of controls including one-way systems, speed limits, access restrictions, permits, etc. The arrangements, which would apply to the Project, are designed to reduce the risk of a traffic accident. To drive a GAL vehicle the appropriate full category of driving licence must be held. All drivers carry out a daily vehicle inspection before using a vehicle for the first time on that day. Vehicles must be safe to operate. It is not permitted to operate vehicles with any safety critical defects present. Records are kept for 15 months. The use of taxiway crossings by airside drivers is subject to a Gatwick Airport Directive (GAD/F:1/18) which imposes restrictions (speed limits, overtaking, give way priorities, etc), clearance and other requirements. Airside driving offences are recorded as minor, major and life-threatening. Life-threatening or possible life-threatening incidents result in immediate removal of all passes. If after 30 days an investigation is not received or completed the ID pass is cancelled. All offences remain on the airside driving licence provider for 12 months. Three minor offences committed within 12 months of a major offence result in the suspension of the Airside Identity card as will a second major offence within a 12 month period. GAL requires all drivers operating vehicles airside to have access to a copy of the latest Airfield Driving Map issued in their airside vehicles. Those vehicles/drivers who are authorised to operate on the manoeuvring area must have access to the two additional Gatwick Airfield Driving Maps relating to the runway in use. <u>Landside</u> With respect to the risk of landside accidents, ie accidents on the roads open to the public accessing the airport, it is noted that the Project incorporates highway improvements including local widening on the junction entry/exit lanes for both the North Terminal and South Terminal roundabouts, together with improvements at Longbridge Roundabout. These improvements would be expected to reduce the overall risk of road accidents in the vicinity of Gatwick despite the anticipated increase in traffic.	No further assessment proposed.
Transport accident – rail		Vehicular transport accident leading to	People	Major (fatalities)	Very unlikely	Tolerable if ALARP	Any works near to the existing railway would be undertaken in accordance with railway working procedures to ensure safe working practices. It is likely	

Disaster/ Hazard Event	Description	Potential Consequence	Potential Receptors	Risk Assessment			Comment	Further Assessment in EIA
				Severity/ Consequence Level	Likelihood	Risk Rating		
	Collision with trains, trams or inter terminal rail during construction works.	fatalities, injuries to people.		Significant (injuries)	Unlikely	Broadly Acceptable	that risks can be appropriately managed through planning, management and the imposition of a range of controls. However, the issue would be taken forward for assessment in the final ES. The assessment would consider the transportation by rail of construction materials and aggregates.	Review and assess the risks in the EIA.
Accidental release of hazardous chemical	Significant release of hazardous material during demolition, construction, and operation resulting from its storage, transfer and handling.	Illness or, potentially, fatality to exposed parties.	People	Major (fatalities)	Very unlikely	Tolerable if ALARP	During construction, the management of hazardous materials would be covered by the Safety Management System (see Occupational Hazards below). Appropriate controls would be identified and implemented. It is not foreseen that the Project would introduce any new or toxic materials to the site, and risks are therefore likely to be the same as those for typical construction works. The potential presence of hydrocarbon contamination is considered in Chapter 10: Geology and Ground Conditions of the PEIR. During airport operations, hazardous materials handling would be covered by applicable regulations and corresponding handling procedures.	No further assessment proposed.
				Significant (injuries)	Unlikely	Broadly Acceptable		
		Environmental impact and contamination of water resources.	Environment	Sub-MATTE	n/a[1]	Broadly Acceptable		
Fire	Failure in the storage and handling of flammable substance (jet fuel) resulting in its release and subsequent ignition.	Injury or fatality to parties immediately exposed to the fire.	People	Major (fatalities)	Very unlikely	Tolerable if ALARP	The fuel farm at Gatwick is designated as an Upper Tier COMAH (Control of Major Accident Hazards) site and as such is highly regulated with established safe systems of work. The fuel farm complies with the recommendations of Buncefield Standard Task Group and HSG176. Both internal and external Emergency Plans are in place to ensure that an effective response can be made in the event of a major accident at the site. A detailed risk assessment of the fuel farm has been carried out. An evaluation has been made of a range of hazard scenarios including bunded pool fires affecting on-site populations, escalated tank fires, and catastrophic tank failure affecting on-site and off-site populations. Risks from the major accident scenarios were assessed as being at worst "Tolerable if ALARP". The Project would result in an increase in fuel throughput due to the increase in the number of aircraft refuelling at Gatwick. However, the tank farm itself would remain unaltered. Risk levels would thus remain unaltered from the present day.	No further assessment proposed.
				Significant (injuries)	Unlikely	Broadly Acceptable		
		Ecological impact and contamination of water resources.	Environment	Sub-MATTE	n/a[1]	Broadly Acceptable		
		Atmospheric pollution with public health impacts.		Sub-MATTE	n/a[1]	Broadly Acceptable		
Explosion	Rupture of a gas main leading to explosion.	Injury or fatality to nearby personnel. Blast overpressure damage to environmental receptors (eg built heritage, trees, fauna).	People	Major (fatalities)	Very unlikely	Tolerable if ALARP	Key precautions would be followed during construction works, including: obtaining plans of gas pipes, locating the line of the pipes using suitable locating devices, contacting the pipeline/network operator prior to commencement of work activities, ensuring site workers are briefed on the location of the pipes and the precautions required, and adopt safe digging practices (eg mechanical excavators should not be used within 500 mm of a gas pipe).	No further assessment proposed.
				Significant (injuries)	Unlikely	Broadly Acceptable		
			Environment	Sub-MATTE	n/a[1]	Broadly Acceptable		

Disaster/ Hazard Event	Description	Potential Consequence	Potential Receptors	Risk Assessment			Comment	Further Assessment in EIA
				Severity/ Consequence Level	Likelihood	Risk Rating		
Structural collapse	Failure of buildings, structures, bridges, tunnels, storage, roads, construction equipment, mobile equipment, waste and spoils.	Injury or fatality to people in the immediate vicinity of the collapse.	People	Major (fatalities)	Very unlikely	Tolerable if ALARP	The new facilities at Gatwick would be constructed to the appropriate current engineering codes and standards. The detailed requirements of Building Regulations in England (and Wales) would be followed, covering aspects such as adequate materials, structure, waterproofing and weatherisation, etc. On this basis, the new facilities would be resistant to the extremes of weather and would not be susceptible to weather-induced structural overload.	No further assessment proposed.
				Significant (injuries)	Very unlikely	Broadly Acceptable		
Collapse of excavation	Collapse of any earthwork, trench, well, shaft, tunnel or underground working.	Injury or fatality to construction personnel.	People	Major (fatalities)	Very unlikely	Tolerable if ALARP	See Occupational Hazards.	No further assessment proposed.
				Significant (injuries)	Unlikely	Broadly Acceptable		
Legacy issues	Detonation of unexploded ordinance.	Injury or fatality to construction personnel.	People	Major (fatalities)	Very unlikely	Tolerable if ALARP	An unexploded ordnance (UXO) risk assessment was undertaken prior to the construction of the Boeing hangar at Gatwick. The assessment identified that items of ordnance have been previously encountered during works at the airport in an around the historic boundary of RAF Gatwick (central and southern areas of the current airport). For the Project, it is anticipated that a similar UXO risk assessment would be undertaken in advance of any construction works starting on the Project site. The report would include an evaluation of the risk posed by any existing or potential explosive ordnance and risk mitigation measures would be recommended if deemed necessary.	No further assessment proposed.
				Significant (injuries)	Very unlikely	Broadly Acceptable		
Occupational hazards	Occupational hazards, including fall from heights.	Injury or fatality to construction personnel.	People	Major (fatalities)	Unlikely	Tolerable if ALARP	Health and safety hazards during the Project's construction phase would be controlled through a Safety Management System (SMS) certified to OHSAS (Occupational Health and Safety Assessment Series) 18001 or ISO 45001, and established health and safety procedures. Jointly, these would address the identification, control and elimination of the typical range of construction hazards and risks: falls, mobile plant, falling material and collapses, electrical accidents manual handling, exposure to hazardous materials, etc. Effective implementation of the SMS would control the risk of a major accident during construction.	No further assessment proposed.
			People	Significant (injuries)	Likely	Tolerable if ALARP		

Disaster/ Hazard Event	Description	Potential Consequence	Potential Receptors	Risk Assessment			Comment	Further Assessment in EIA
				Severity/ Consequence Level	Likelihood	Risk Rating		
Loss of utilities	Disruption to airport operations resulting from severance of utilities (electricity, gas, fuel, water, etc) during construction operations.	Risk to the safe management of the airport.	People	Severe	Unlikely	Tolerable if ALARP	GAL has contingency plans in place for the total and partial loss of electricity, and failure of natural gas, foul sewage, and potable water infrastructure. In each case the plans set out communications requirements, and the priority actions (checking fuel and running condition of all standby generators, isolating equipment, deploying waste tankers, release of trapped persons from lifts, etc) necessary to limit the impact of an event on people and the environment. Life Safety Systems are incorporated into the current airport buildings to protect and preserve human life during an emergency or failure of a critical building system. These include architectural systems that provide emergency egress and protected areas within buildings, and automated mechanical systems that include fire suppression, smoke removal, stairwell pressurisation, water storage, etc. The current contingency planning and safety systems would be extended to cover the construction and operational phases of the Project. Specific arrangements would be examined for the final ES once more design definition is available.	Review and assess the risks in the EIA.

Table Notes

(1) Where the consequences level is determined to be sub-MATTE there is no requirement to assign a frequency or likelihood as sub-MATTE outcomes are not considered further as part of the risk tolerability assessment in the CDOIF guideline (CDOIF 2016); which implies that such outcomes are of low risk, and at the very least could be considered ‘broadly acceptable’.

Table 5.1.2: Evaluation of Issues Identified by Planning Inspectorate as Requiring Further Information

Issue	Comment	Outcome
Lightning strikes during construction	As a matter of standard HSE construction site practice, work would only be carried out when weather conditions would not jeopardise the health and safety of the workers. An electrical storm is clearly jeopardous, and construction activity would thus be suspended prior to the outbreak of such a storm in the vicinity of the airport. Knowledge of a storm's imminence would be established through weather forecasts and visual observation. The issue of lightning strikes in respect of construction effects is therefore not considered to be significant. Nevertheless, the details of the proposed Project construction activities are necessarily broad at this stage. Construction HSE management will therefore be evaluated in detail in the ES. This commitment is echoed under "*Occupational hazards*" below.	To be considered in more detail in the ES.
Infectious diseases (human and animal epidemics and pandemics)	The control of risks from sick passengers and live animals arriving at Gatwick is managed by the Port Health Authority. The control of disease spread by passengers is managed in accordance with the World Health Organisation's International Health Regulations, which are transposed into UK law as the Public Health (Aircraft) Regulations, as amended. These give legal powers to the Medical Officer and customs officers to carry out any necessary actions. The framework and facilities are subject to inspection by the CAA. Gatwick is one of the UK's live animal border inspection posts (BIP) and requires incoming animals to be appropriately certified or inspected. The response to pandemics, such as COVID-19, are coordinated and managed strategically by government. It is the government that is responsible for establishing local, national and international travel restrictions; identifying red list travel ban countries; enforcing the closure of non-essential shops, restaurants and bars; and determining health and testing pre-requisites, social distancing rules, legal permissions, etc. These requirements are then enforced by the airport, airlines and other travel operators. For example, at the time of writing, any passenger arriving into Gatwick (and England generally) from outside the UK, Ireland the Isle of Man and the Channel Islands is required to complete a Passenger Locator Form, show proof of a negative COVID-19 test taken up to 72 hours prior to departure, quarantine for 10 days (or complete a mandatory hotel quarantine), take a COVID-19 test on day 2 and day 8 of quarantine, and follow the national lockdown rules. The airport also implements pandemic-specific measures aimed at reducing the risk of travel and transit through the airport facilities. With respect to COVID-19, Gatwick has temporarily ceased operations in its southern terminal, installed protective screens at check-ins and boarding gates, increased the cleaning of common use surfaces, touchscreens, handrails etc, installed UV light treatment to the tray system in security areas (to guarantee a 99.9% microbe disinfection rate), and changed seating arrangements to ensure social distancing measures can be observed, etc. The Northern Runway Project would not change Gatwick's approach to biosecurity as outlined above. While the Project is aimed at facilitating the increase in the throughput of passengers it would not therefore measurably increase the likelihood of an outbreak of a communicable disease in the UK compared to the present day or change the response arrangements implemented via government or by GAL.	No further work considered necessary.
Drought	Droughts are relatively common in the UK, with one around every five to ten years on average. They are, however, not particularly severe when compared with more drought-prone regions of the world. In England, the response to an event is managed by the Environment Agency in four stages as the drought worsens: i) an initial media campaign aimed at promoting water conservation by the public, ii) a ban on the use of domestic hose pipes, iii) conserving non-essential supplies of water, eg widening the hosepipe bans to include sprinklers, banning the cleaning of buildings, vehicles, etc, and iv) drastic measures such as water rationing to all businesses and homes. All of these measures were implemented in 1976, the date of the most significant UK drought in recent times. It is not thought likely that the drought response measures would have a severe impact upon the Project (other than in the most extreme case, a possible delay) or the on-going functioning of the airport (which remained operational in 1976). This issue will therefore not be considered further.	No further work considered necessary.
Famine and food security	Famine, by which is meant widespread food shortage leading to acute malnutrition and a significant rise in regional death rates, is not an issue within the UK and has not been since the beginning of the 20th century, including during times of war. Famine could not be caused by the Project nor is there any remotely significant likelihood that it would affect the implementation of the Project or the running of the airport.	No further work considered necessary.
Severe space weather	Space weather is essentially abnormal levels of radiation and high energy charged particles which are released into space as a result of eruptions on the sun's surface. The weather can influence the performance and reliability of space-borne, ground-based or airborne systems and can endanger human life or health. When a space weather event occurs, a wide range of effects can result. The main impacts on aviation are: ▪ Degradation of radio/satellite communications; ▪ Onboard system failure due to radiation; ▪ Radiation doses. During radiation storms, unusually high levels of ionizing radiation may lead to an excessive radiation dose for air travellers and crew; ▪ Disruption to Global Navigation Satellite System (GNSS) operation; ▪ Effects on magnetic based equipment due to a change in the earth's magnetic field; and ▪ Possible effects on aircraft electrical systems due to solar electrical coupling mechanisms.	No further work considered necessary.

Issue	Comment	Outcome
	Other potential effects which may impact aviation are: ▪ Power grid and ground public communication failure; and ▪ Satellite failure. The Project would increase the number of passengers flying per year and, all other things being equal, would increase the number of people exposed to radiation. However, this is not considered to be a significant issue, and largely one outside the control of the airport. It is noted that when a space weather event causes radiation exposure to exceed the safe level set by aviation authorities, the typical response is to divert an aircraft's flight path. It is not considered that usual aviation practice would be altered by the Project.	
Terrorism and malicious biological and chemical attacks (including sabotage and vandalism)	The issue of terrorism will be addressed through compliance with Airports National Policy. The Airports National Policy Statement states: "*4.63 National security considerations apply across all national infrastructure sectors. The Department for Transport acts as the sector sponsor department for the aviation sector, and in this capacity has lead responsibility for security matters and for directing the security approach to be taken, working with the Civil Aviation Authority. The Department for Transport works closely with Government agencies, including the Centre for the Protection of National Infrastructure, to reduce the vulnerability of the aviation sector to terrorism and other national security threats.* *4.64 Government policy is to ensure that, where possible, proportionate protective security measures are designed into new infrastructure projects at an early stage in the project development. The nature of the aviation sector as a target for terrorism means that security considerations will likely apply in the case of the infrastructure project for which development consent may be sought under the Airports NPS.* *4.65 Where national security implications have been identified, the applicant should consult with relevant security experts from the Centre for the Protection of National Infrastructure and the Department for Transport to ensure that physical, procedural and personnel security measures have been adequately considered in the design process, and that adequate consideration has been given to the management of security risks. If the Department for Transport, taking advice from the Civil Aviation Authority, Centre for the Protection of National Infrastructure and others it considers appropriate, forms the opinion that it is satisfied that current and potential future security needs are adequately addressed in the project and that relevant guidance on these matters has been appropriately taken into account in the application, it will provide confirmation of this to the Secretary of State, and the Examining Authority should not need to give any further consideration to the details of the security measures during the examination.* *4.69 There remains a considerable threat to aviation security from terrorism. The UK meets this threat with a multi-layered aviation security regime built on intelligence, effective risk management and robust, proportionate measures, brought together under the National Aviation Security Programme. The regulations governing aviation security in the UK have their basis in UK and European law, and are enforced by the Civil Aviation Authority on behalf of the Secretary of State*." It is not thought likely that the Project's implementation or the operation of the airport post-implementation would directly affect incidents of terrorism and malicious biological and chemical attacks (as distinct from public disorder – see below). In any case, the threat would be controlled through existing security arrangements at Gatwick, as coordinated through the above bodies.	No further work considered necessary.
Industrial action	Industrial action at Gatwick, depending upon its nature, could have an impact on the functioning of the airport, resulting in disruption to flight schedules and passenger movements. In the extreme it could result in the suspension of all flights. However, it would not of itself realistically introduce major hazards into the operation of the airport, and certainly none that could not be countered through the range of contingency measures currently available to GAL. The implementation of the Project and the subsequent operation of the airport with the increase in Air Transport Movements (ATMs) would not change this situation.	No further work considered necessary.
Widespread public disorder	The Project could well be subject to protests, though what form these would take and their size is a matter of speculation. It is possible they could result in disruption but would not realistically introduce major hazards to the operation of the airport. Gatwick Airport is subject to the Airport Security Planning Framework, as set out in the Aviation Security Act 1982 (as amended by the Policing and Crime Act 2009). Under this framework it is required to prepare and maintain an up-to-date Risk Report, assessing each threat to the security of the airport, and an Airport Security Plan (ASP), detailing what security measures will be put in place and which organisation is responsible for the delivery of each measure. Aspects of public disorder and the response thereto are addressed through these arrangements.	No further work considered necessary.
Cyber-attacks	The Project does not introduce anything to Gatwick airport that might make cyber-attacks substantially more or less likely. The technical aspects of cyber security is a topic well outside the scope of this EIA.	No further work considered necessary.
Explosion/structural collapse/excavation	This issue is addressed above (see Table 5.1.1).	Addressed in PEIR. No further work considered necessary.

Issue	Comment	Outcome
failure at neighbouring sites		
Rail accidents (the Inspectorate agrees that it should be scoped in for construction effects, but that this conclusion should also be applied in respect of operational effects)	Network Rail has commenced work on the modernisation of Gatwick Station with the aim of accommodating forecast rail growth up to 2036. Proposals include: almost doubling the size of the concourse; providing eight new escalators, five new lifts and four new stairways to improve accessibility and passenger flow; widening platforms 5 and 6 to reduce overcrowding; providing better connections to the South Terminal with improved passenger information; and installing an 'attractive' new roof structure. These improvements are proposed to be complete by 2022. The number of Gatwick passengers travelling to or from the airport by train has grown from 25% in 2005 to 38% in 2019. Statistically, the increase in the throughput of rail passengers would increase the risk of passenger fatality but from a very low base. As an example, in the period 2017/18 there were a total of 298 passenger and workforce fatalities on the entire UK National Network, but 285 of these were either suicides or trespassers. Net fatalities due to travel to and from the airport would in fact be expected to decline as the statistical increase on passenger fatalities due to increased rail usage would be more than offset by the decline in fatalities resulting from travel by road. Outside of the increase in the throughput of passengers enabled by the railway station improvements, there is no obvious linkage between these improvements and the operation of the expanded airport. The issue of rail accidents during operation of the Project will not therefore be considered further in the EIA process.	No further work considered necessary.
Occupational hazards	Runway construction projects involve modification of airport operating conditions with the simultaneous presence of non-aviation staff and equipment in close vicinity to operational runways. They are thus highly significant in terms of the safety of construction personnel. Internationally, records show that accidents and incidents have occurred on runway construction projects. Most of the occupational hazards associated with the construction activities can be significantly mitigated through safe working practices, risk assessment and the implementation of preventative or protective measures, etc. Details of those measures that are currently in place at Gatwick, or which will be put in place for the Project will be described and assessed in detail in the ES.	To be considered in more detail in the ES.

Table 5.1.3: Definition of the Current Systems in Place to Address a Variety of Major Accident and Disaster Scenarios

Issue	Comment
Extreme heat and cold (including snow, ice and hail) - Instrument failure - Cold embrittlement - Runway excursion - Impairment of major accident emergency services	Airside Operations are required to plan for adverse weather conditions. The GAL Contingency Plan for Airside Operations Adverse Weather covers all airside operations areas of responsibility including runways, taxiways, aprons, roads passenger walkways, grass areas and stands. The Airside Operations Adverse Weather contingency plan is designed to enable stable operations to be maintained, as far as is realistic, in the event of disruptive adverse weather. The plan assumes that each year one or more adverse weather events will cause disruption to Airside Operations, and the adverse weather will include one or more of: snow, ice, volcanic ash, flood, wind, heat, CB activity. The plan includes: i) a Snow Plan and Ice Plan, and ii) a Heat Plan, both of which specify roles and responsibilities – of the Airside Operations Manager (AOM), Airside Control Lead (ACL), Airside Flow Lead (AFL), etc – and response actions necessary to sustain Airside Operations as far as is reasonably practicable (eg ensuring availability of de-icing fleet, snow clearance, etc). <u>Snow Plan and Ice Plan</u> The Airside Operations Snow Plan is the start point for the Aerodrome Snow Coordinator (SNOCO)/Airside Operations Manager (AOM) and is adapted to match the situation in consultation with the Airport Bronze Command and Airside Disruption Cell (ADC). The detailed output of the consultation is determined through consideration of factors such as the severity of the snow conditions, the forecast weather conditions, the time of day/night, anticipated traffic movements, and the expected availability of staff and equipment. The plan covers a range of operational weather states: ▪ Snow State 1: Met Office forecast snow in the next 7 days but not expected to accumulate. No disruption to the operation of the Airfield predicted. ▪ Snow State 2: Met Office forecast snow in the next 7 days and expected to accumulate which may cause disruption to the operation of the Airfield. ▪ Snow State 3: Met Office forecast snow in the next 24 hours and expected to accumulate which may cause disruption to the operation of the Airfield. ▪ Snow State 4: Met Office forecast snow in the next 2 hours and expected to accumulate which may cause disruption to the operation of the Airfield. ▪ Snow State 5: Snow is falling and accumulating but is not likely to lead to airfield disruption and can be safely and efficiently managed by the Airfield Operations team. ▪ Snow State 6: Snow is falling and accumulating in sufficient amounts to cause disruption to the operation of the Airfield. ▪ Snow State 7: Snow has stopped falling and accumulating with no further accumulations forecast, but snow clearing duties continue on the Airfield and/or the operation of the Airport is being disrupted.

Issue	Comment
	▪ Ice State 1: The MET Office forecasts airframe temperatures to drop below zero within the next 24 hours. ▪ Ice State 2: The MET Office forecasts airframe and ground temperatures to drop below zero within the next 24 hours. ▪ Ice State 3A: The MET Office forecasts airframe and ground temperatures to drop below zero within the next 12 hours. The Met Office forecasts a ground frost and there is no forecast precipitation before ground temperatures rise above zero. ▪ Ice State 3B: The MET Office forecasts airframe and ground temperatures to drop below zero within the next 12 hours. The MET Office forecasts a ground frost and there is forecast precipitation before ground temperatures rise above zero. ▪ Ice State 4A: Airframe and ground temperatures are below zero and there is no forecast precipitation before ground temperatures rise above zero. ▪ Ice State 4B: Airframe and ground temperatures are below zero and there is forecast precipitation before ground temperatures rise above zero. ▪ Ice State 5: Airframe and ground temperatures are above zero and not forecast to fall below zero within the next 12 hours.
	The plans do not expressly address the issue of cold embrittlement. However, this is considered to be a design issue rather than one of operational planning. In any case, the implementation of the Project would not realistically make cold embrittlement more of an issue at the airport. <u>Heat Plan</u> The Heat Plan is in place to ensure on-going operation of the airport during an event at the other end of the temperature scale: ▪ Heat State 1: Met Office forecast high temperatures (>32,18,32 / 48hr) in the next 3 days, but not expected to impact Airfield Operations. ▪ Heat State 2A: Met Office forecast high temperatures (>32,18,32 / 48hr) in next 24 hours, heat wave not expected to exceed 48 hrs expected impact to Airfield Operations. ▪ Heat State 2B: Met Office forecast high temperatures (>32,18,32 / 48hr) in next 24 hours, heat wave expected to exceed 48 hrs expected impact to Airfield Operations. ▪ Heat State 3: Heat Event in Progress. ▪ Heat State 4: Met office forecasts no significant temperatures and stable ops returning. Emergencies associated with runway excursions will be addressed via the Gatwick Emergency Orders. See "*Aircraft accidents on the runway*" below.
Damage to aircraft during extreme storms	Emergency response to a damaged aircraft arriving at the airport will be addressed through the arrangements set out in the Gatwick Emergency Orders. See "*Aircraft accidents on the runway*" below. The orders will remain applicable to the altered northern runway following implementation of the Project.
Ash clouds	The GAL Contingency Plan for Airside Operations Adverse Weather referred to above includes a Volcanic Ash Plan which specifies roles and responsibilities and response actions to: ▪ Volcanic Ash State 1: Volcano erupting, potential airspace disruption. ▪ Volcanic Ash State 2A: Volcano erupting, disruption at aerodrome due to capacity. ▪ Volcanic Ash State 2B: Volcano erupting, ash expected at aerodrome within 24 hours. ▪ Volcanic Ash State 3: Volcano erupting, disruption at aerodrome due to ash falling. ▪ Volcanic Ash State 4: Volcano eruption ceased, aerodrome recovery. Guidance on response to the presence of volcanic ash is given in CAA document "CAP 1236: Guidance regarding flight operations in the vicinity of volcanic ash", and the European Union Aviation Safety Agency document "EASA NPA 2012-07: Guidance material on volcanic ash safety risk assessment (VA SRA)". The change in risk levels associated with ash clouds is not expected to change significantly as a result of the Project.
Aircraft accidents on the runway	GAL has in place Gatwick Emergency Orders. These indicate the responsibilities of GAL and Air Traffic Service personnel at Gatwick Airport in the event of an emergency situation, and initial and follow-up actions to be taken. The situations include: ▪ Imminent Aircraft Accident – If an aircraft accident is considered to be inevitable on or in the vicinity of the Airport. ▪ Aircraft Accident – If an aircraft receives substantial damage or causes serious injury or serious damage to property within the perimeter fence. ▪ Aircraft Accident off the Aerodrome – Aircraft accident that has occurred beyond the Aerodrome perimeter fence. ▪ Aircraft Ground Incident (AGI) – Where an aircraft on the ground is known to have an emergency other than an accident requiring the attendance of the emergency services. AGIs will be inclusive of all incidents which have either endangered an aircraft or have the potential to endanger an aircraft, such as undercarriage collapse, external or internal fire, vehicles or equipment struck aircraft, fuel spillages from aircraft or fuel hydrant system, dangerous goods and vehicle or equipment fires near to aircraft. ▪ Full Emergency – If an aircraft in flight is known or suspected to be in such difficulty that there is danger of an accident. ▪ Local Standby – When an aircraft is known or suspected to have developed some defect, but one which would not normally involve any difficulty in effecting a safe landing, or the Commander of an aircraft is sufficiently concerned to require assistance with assessment and/or removal of an unidentified/unattended article on board. ▪ Weather Standby – When the weather has deteriorated to such an extent as to render a landing difficult (eg when there is a strong cross wind, poor visibility, ice or snow on the runway etc).

Issue	Comment
	▪ Hi-jack – Unlawful Act – Any person on an aircraft who, by the use of force or threat of any kind, seizes the aircraft or exercises control of it, or when a person makes a threat towards, or endangers, the safe operation of an aircraft. ▪ Bomb Warnings in Aircraft – Relating to the situation where a message is received alleging that a bomb is in an aircraft on the ground at Gatwick, or arriving at Gatwick. ▪ Act of Aggression Ground – The term used to denote an actual or suspected bomb explosion, armed attack, the taking of hostages, and other acts of terrorism within the Divisional boundary. The Emergency Orders have been developed with input from the following stakeholders: Air Traffic Control, West Sussex Fire and Rescue Services, South East Coast Ambulance Service NHS Foundation Trust, Gatwick Sussex Police, and Handling Agents.

Table 5.1.4: Demonstration that the Following Matters would be 'No Worse' than the Existing Situation Following Implementation of the Project

Issue	Comment
Drones and lasers	<u>Drones</u> Given the potential safety implications of a drone strike on an airliner, the presence of a single drone in the vicinity of an international airport can be massively disruptive. The drone sightings at Gatwick in the run-up to Christmas 2018 disrupted around 1,000 flights and affected approximately 140,000 passengers. It was in response to this incident that the UK government extend the area around airports and runways in which the flying of drones is banned. It is now illegal to fly a drone within 5 km of an airport, an increase from the previous figure of 1 km. The new restriction zone includes rectangular extensions from the end of runways measuring 5 km long by 1 km wide to better protect take-off and landing paths. In reality, the threat to civil aviation traffic posed by drones is driven by the huge proliferation of such devices, coupled with the current challenges of deploying counter measures, rather than the increase in aviation traffic. It can therefore reasonably be concluded the Project itself will not make the situation at Gatwick any worse. Improvements to the situation, both in the UK and internationally, will be dependent upon the implementation of a range of technological monitoring and response measures, tighter regulation of drones, and extra police powers in this area. <u>Lasers</u> The CAA has published "CAP 736: Operation of Directed Light, Fireworks, Toy Balloons and Sky Lanterns within UK Airspace" to provide policy and supporting guidance in this area for both commercial organisations and individuals. The document requires advance notice of events involving these light sources, and is intended to enable the aviation community to properly assess the impact of any such proposed activity and take appropriate measures to mitigate any dangers to flight safety. Safety regulations for laser displays are already taken into consideration by Local Government Authorities (Crawley Borough Council) when carrying out risk assessments for associated planning applications or entertainment licences. A Notification Zone is considered to exist around Gatwick Airport within which laser emissions must be controlled. Under the Air Navigation Order 2009 a person must not in the United Kingdom direct or shine any light at any aircraft in flight so as to dazzle or distract the pilot of the aircraft. The deliberate and malicious laser targeting of airborne aircraft has the potential to impact upon aircraft safety and could lead to civil prosecution. The CAA works in concert with the appropriate authorities in an effort to reduce the number of incidents.
External objects (bird strike, fireworks, sky lanterns and wind turbines)	The following arrangements are in place and would not be expected to change as a result of the Project. <u>Bird-strike</u> Wildlife at Gatwick is managed, as far as is reasonably practicable, to maintain a bird and animal-free airfield. The Airside Operations Lead (AOL) is responsible for ensuring bird strike management is carried out by the Airside Duty Team 24 hours a day. GAL uses the measures below to control birds on and around the aerodrome in accordance with EASA ADR.OPS.B.020 using CAP 772 (Wildlife hazard management at aerodromes) for guidance: ▪ Wildlife Habitat Control Management Plan (WHCMP) – The WHCMP defines and implements the appropriate bird control measures to reduce and mitigate the risk and is the responsibility of the AOL. ▪ Bird-strike Hazard Map – A bird hazard safeguarding map is maintained. This is based on an Ordnance Survey map and highlights the assessed local hazards and also shows on a wider scale such sites as landfills, gravel extraction, and water bodies. ▪ Local Bird Hazard Management Working Group – The group includes airside operations, landscape managers and grass management contractors, and any other individuals concerned with bird hazard management. The group meets quarterly to discuss bird strikes, habitat management issues, risk assessments, and training issues. It also tracks recommendations/action points from audits. ▪ UK CAA Bird-strike Committee – Gatwick Airport has representation on this Committee. ▪ All Airside Operations personnel who carry out bird hazard management duties are trained and hold a firearms certificate which must be revalidated every five years. The authorisation (The Firearms Act 1968 – Section 5) is held by the Head of Airside Compliance.

Issue	Comment
	▪ All staff attend an approved bird hazard management training course and to ensure competency, periodic refresher training is undertaken in the use of firearms, bird hazard management operations and local ornithology. Comprehensive records are kept of all bird control activities and firearms training and assessments. ▪ All vehicles involved in bird hazard management activities are suitably equipped and maintained. ▪ Wildlife Patrols are carried out to ensure that the presence of birds and animals on the airfield and in the surrounding area is minimised, an environment is created which is not conducive to the presence of birds, birds on the airfield are detected and dispersed, warning can be passed to aircraft and ATC about the presence of flocks of birds on the airfield, and the formation of night roosts is prevented. ▪ Bird hazard assessment is carried out via the tactical bird patrols and strategic analysis by the Bird Co-ordinator and Operations Management. ▪ Air crew are warned whenever the presence of birds in large numbers is thought to constitute an immediate hazard. This is done by informing Airside Operations or ATC by radio, this warning then being passed on to aircraft directly or via ATIS. ▪ In the event of a prolonged infestation of birds on or immediately adjacent to the airport NOTAM action may be taken to warn air crew of the hazard. This would only cover periods of short to medium duration and would be cancelled when the hazard ceases to exist. ▪ All wildlife strikes or suspected strikes are investigated and reported immediately by Airside Operations or ATC. An electronic Wildlife Strike Occurrence Form (CAA Form 1282) is completed online via the CAA website by Airside Operations on all occasions where there is a confirmed or unconfirmed strike. Notwithstanding the above, the Project would involve additional landscaping, water bodies and flat roof buildings that may present an increased risk of attracting birds and therefore of bird strike. This risk would be addressed through the Project design, in consultation with GAL aerodrome safeguarding, eg evaluating the choice of tree and plant species, netting of open water, bird management plans, etc. It will therefore be considered in more detail in the ES. <u>Wind Turbines</u> Wind turbines have the ability to impact on primary radar by causing 'clutter' and false aircraft tracks on the radar operator's screen. Secondary radar can also be disrupted as wind turbines can cause misplaced aircraft returns. This issue is addressed through Gatwick Airport's active policy of aerodrome safeguarding. This is the legal process used to ensure the safety of aircraft while taking off and landing, or flying in the vicinity of aerodromes. Aerodrome Safeguarding is required under both ICAO (International Civil Aviation Organisation) Regulations and EASA (European Aviation Safety Agency) Regulations. The process is managed by the airport's aerodrome safeguarding team who are responsible for making sure that no developments within a 30 km radius (for wind turbines) safeguarding zone have an adverse effect on the airport's operation. GAL is a statutory consultee through the Town and Country Planning process and is consulted by the local and county planning authorities about certain developments within the safeguarding consultation zone. GAL will see all applications involving wind turbines and, as required, may request amendments to schemes to ensure that there will be no impact on aerodrome safety. <u>Fireworks & Sky Lanterns</u> Firework displays within a ten nautical mile radius of an active aerodrome or with an Aerodrome Traffic Zone (ATZ) may require notification and co-ordination action and must be notified by the event organiser to the CAA for consideration. An ATZ is airspace established in the vicinity of an aerodrome with the purpose of providing protection to aircraft landing, taking off and flying in the visual circuit. An ATZ extends to a height of 2,000 ft above aerodrome elevation within a circle centred on the notified mid-point of the longest runway and a radius of two nautical miles. Aerial firework displays should be limited to a height of 1,500 ft above ground level (any firework conforming to BS7114/BS EN 14035-36 will not exceed this height). The situation with respect to sky lanterns is similar. The CAA require advanced notice of an event involving the mass release of lanterns. It will then look to deconflict or co-ordinate the activity, promulgate warnings to the aviation community, and establish any control measures considered necessary.
Deficient emergency planning	In line with the requirements of the Gatwick Aerodrome Manual, all facilities pertaining to the deployment of emergency service vehicles and manpower are tested on a daily basis. All equipment used in emergencies is tested and inspected to company or manufacturers standards and recorded on an electronic database system. This database is programmed and monitored by administrators. Key personnel are trained in its use to retrieve and sign off equipment tests. Bi-annual exercises involving all the Airport Fire Service and all external emergency services are carried out to test the emergency plan. The Project would make no difference to these established arrangements, and would not therefore degrade current emergency planning arrangements.
Loss of utilities (operation)	This issue is addressed in Table 5.1.1 (see above).
Loss of essential air safety or airside systems	The potential for construction works to result in the loss of essential air safety or airside systems will be evaluated in the ES.
Deficient security provisions	See also "*Terrorism and malicious biological and chemical attacks*". To meet Department for Transport legislation, GAL Security are required to undertake regular security patrols of the airside security fence boundary during daylight hours, to ensure the security fence is in good condition and no security breaches have been made. Entrance gates onto the aerodrome are manned by GAL Security staff or are secured closed at all times.

Issue	Comment
	Operating procedures for the control of access to the aerodrome are detailed in a number of GADs issued by both GAL Airside Operations and Security Departments. The Security GAD deals with personnel access "ID Pass Holder Responsibilities" and the Airside Operations GAD "Airfield Driving and Vehicle Operation" deals with the system of Airside Driving Permit (ADP) and Airside Vehicle Permit (AVP) issue. Third parties operating on the airfield must apply for an Airside Operator's Licence before commencing operational activities. There is no reason to believe that the implementation of the Project would result in a decline in the effectiveness of security arrangements around the airport. Security arrangements in relation to the embarkation and disembarkation of passengers, animals, and goods would remain unchanged.

6 Requirements for Additional Measures

6.1 Safety

6.1.1 At this stage of the Project, none of the major accident and disaster scenarios with the potential to result in harm to people have been determined to be in an 'intolerable' risk. Consequently, no significant effects are predicted and no additional measures are proposed.

6.2 Environment

6.2.1 At this stage of the Project, all the major accident and disaster scenarios with the potential to result in environmental damage have been determined to result in sub-MATTE consequences implying that such outcomes are of low risk, and at the very least could be considered 'broadly acceptable'. Consequently, no significant effects are predicted and additional measures are not proposed.

7 Requirement for Further Work

7.1.1 Any requirements for further assessment work have been documented in Table 5.1.1 to Table 5.1.4. In summary, the following major accidents and disasters issues will be further evaluated in the ES:

- Occupational hazards associated with earthworks, and airside construction activities generally, ie construction HSE management, including a detailed evaluation of lightning strikes during construction.
- Rail transportation accidents including collision with trains, trams or inter terminal rail during construction works. The assessment will consider the transportation by rail of construction materials and aggregates if this Project is taken forward.
- Disruption to airport operations resulting from severance of utilities, including air safety and airside systems, during construction operations.
- Potential for bird strike due to an increased risk of attracting birds from additional landscaping, water bodies and flat roof buildings.

8 Conclusions

8.1.1 A risk tolerability assessment has been undertaken for major accident and disaster scenarios identified as having the potential for a 'significant effect'. A potential effect does not mean that the major accident or disaster is likely to occur, only that it has been shown to be present as a potential hazard. Major accident and disaster scenarios have been identified as having the potential for a likely significant effect if the risk is assessed to be intolerable.

8.1.2 All of the identified major accident and disaster scenarios with the potential to result in harm to people are considered 'broadly acceptable' or 'TifALARP'. No scenarios have been identified which are considered 'intolerable'. The Project would not introduce hazards at the construction phase which cannot be effectively managed through the CoCP and existing plans and procedures currently in place at the airport. Operation of the Project would not result in significant increases in risk levels.

8.1.3 All the major accident and disaster scenarios with the potential to result in environmental damage have been determined to result in sub-MATTE consequences. Sub-MATTE consequences are not considered in further detail as part of the risk tolerability assessment in accordance with the CDOIF guideline (CDOIF 2016); implying that such outcomes are of low risk, and at the very least could be considered 'broadly acceptable'.

8.1.4 It is recognised that the major accident and disaster scenarios could result in levels of damage and harm that would be normally considered to be 'significant pollution/damage' in the context of an EIA. However, in the context of a risk assessment of major accidents, these would not be considered a MATTE.

8.1.5 Overall, based on the work undertaken to date, no intolerable risks or significant effects have been identified.

9 References

9.1 Legislation

The Control of Major Accident Hazards Regulations 2015

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

The Town and Country Planning and Infrastructure Planning (Environmental Impact Assessment) (Amendment) Regulations 2018

9.2 Published Documents

Cabinet Office (2017) National Risk Register of Civil Emergencies.

Chemical and Downstream Oil Industries Forum (CDOIF) (2016) Guideline – *Environmental Risk Tolerability for COMAH Establishments, Version 2.0*.

Civil Aviation Authority (CAA) (2001) Operation of Directed Light, Fireworks, Toy Balloons and Sky Lanterns within UK Airspace: CAP 736.

Civil Aviation Authority (CAA) (2013) Global Fatal Accident Review 2002-2011: CAP 1036.

Civil Aviation Authority (CAA) (2017) Guidance Regarding Flight Operations in the Vicinity of Volcanic Ash: CAP 1236.

GAL (undated) *Fire Fighting and Equipment Maintenance Policy*.

GAL (2014) *Aerodrome Manual*.

GAL (2016) *Contingency Plan for Airside Operations Adverse Weather*.

GAL (2017a) *Foul Sewage Infrastructure Failure*.

GAL (2017b) *Gatwick Airport Directive: Airfield Driving Maps (GAD/F:46/17)*.

GAL (2017c) *Gatwick Airport Standard Operating Procedure: Dangerous Goods in Transit (Air)*.

GAL (2018a) *Contingency Plan for Partial Loss of Electricity to the Airport*.

GAL (018b) *Contingency Plans for Total Loss of Electricity to the Airport*.

GAL (2018c) *Gatwick Airport Directive: Airside Discipline (GAD/F:16/18)*.

GAL (2018d) *Gatwick Airport Directive: Use of Taxiway Crossings by Airside Drivers (GAD/F:1/18)*.

GAL (2018e) *Gatwick Airport Standard Operating Procedure: Hazardous Substances (COSHH)*.

GAL (2018f) *Loss of Runway 08R/26L Contingency Plan*.

GAL (2018g) *Natural Gas Infrastructure Failure*.

GAL (2018h) *Operational Resilience Report*.

GAL (2018i) *Potable Water Infrastructure Failure*.

GAL (2018j) *Spill prevention, response and reporting requirements, Gatwick Airport Directive, GAD F20 18*.

GAL (2019a) Gatwick Aerodrome Manual.

GAL (2019b) *Gatwick Airport Standard Operating Procedure: Risk Assessment in the Workplace*.

GAL (2019c) *Gatwick Emergency Orders*.

GAL (2019d) *Life Safety Systems (LSS) Maintenance Policy*.

GAL, 2019e) *Safety Management System (SMS) Manual*.

Gatwick Airport Storage and Hydrant Company Limited (GASHCo), 2015, *Control of Major Accident Hazards Regulations 2015 External Emergency Plan V2.0*.

HSE (2001) Reducing Risk, Protecting People.

HSE (2015) *Storage of flammable liquids in tanks (HSG176)* [https://www.hse.gov.uk/pubns/priced/hsg176.pdf]

HSE (undated a) Semi-Permanent Circular 37: *Guidance on ALARP Decision in COMAH v 3, SPC/Permissioning/37* [http://www.hse.gov.uk/foi/internalops/hid_circs/permissioning/spc_perm_37/]

HSE (undated b) Semi-Permanent Circular 39: *HID's approach to ALARP decisions v 2, SPC/Permissioning/39* [http://www.hse.gov.uk/foi/internalops/hid_circs/permissioning/spc_perm_39.htm]

International Federation of Red Cross and Red Crescent Societies (IFRC) (2019) [https://www.ifrc.org/en/what-we-do/disaster-management/about-disasters/what-is-a-disaster/]

United Nations Office of Disaster Risk Management (UNDRR) (2019) [https://www.unisdr.org/we/inform/terminology]

10 Glossary

10.1 Abbreviations

Table.10.1.1 Abbreviations

Term	Description
ACL	Airside Control Lead
ADC	Airside Disruption Cell
ADP	Airside Driving Permit
AFL	Airside Flow Lead
AGI	Aircraft Ground Incident
AOL	Airside Operations Lead
AOM	Airside Operations Manager
ATMs	Air Transport Movements
ATZ	Aircraft Traffic Zone
AVP	Airside Vehicle Permit
ALARP	As Low As Reasonably Practicable
AONB	Area of Outstanding Natural Beauty
ATC	Air Traffic Control
BAP	Biodiversity Action Plan
BGS	British Geological Survey
BIP	Border Inspection Posts
CB	Cumulonimbus
CDOIF	Chemical and Downstream Oil Industries Forum
CoCP	Code of Construction Practice
COMAH	Control of Major Accident Hazard
CP	Country Park
EASA	European Aviation Safety Agency
EIA	Environmental Impact Assessment
ES	Environmental Statement
GAD	Gatwick Airport Directive
GAL	Gatwick Airport Limited
GASHCo	Gatwick Airport Storage and Hydrant Company Limited
GNSS	Global Navigation Satellite Systems
HPA	Health Protection Agency
HSE	Health and Safety Executive
ICAO	International Civil Aviation Organisation
ISO	International Organization for Standardization
LGS	Local Geological Site
LNR	Local Nature Reserve
LWS	Local Wildlife Site
eMARS	Major Accident Reporting System
MATTE	Major Accident To The Environment
NNR	National Nature Reserve
OHSAS	Occupational Health and Safety Assessment Series
PEIR	Preliminary Environmental Information Report
PSZ	Public Safety Zones
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SMS	Safety Management System
SNCI	Site of Nature Conservation Importance
SNOCO	Aerodrome Snow Coordinator
SPA	Special Protection Area
SPC	Semi-permanent Circular
SPR	Source-Pathway-Receptor
SPZ	Source Protection Zone
SRAM	Safety Report Assessment Manual
SSSI	Site of Special Scientific Interest
STW	Sewage Treatment Works
TifALARP	Tolerable if As Low As Reasonably Practicable
UNDRR	United Nations Office of Disaster Risk Management
UXO	Unexploded ordnance
VA SRA	Volcanic Ash Safety Risk Assessment
WFD	Water Framework Directive
WHCMP	Wildlife Habitat Control Management Plan

10.2 Units

Table 10.2.1 Units

Term	Description
g	Gravitational acceleration on earth (9.8 m/s^2)
ha	Hectare
km	Kilometer
kW/m^2	Kilowatts per square meter
m	Meter
m^3	Cubic metres
mg/l	Milligrammes per litre
mm	Millimetre
tdu	Thermal dose unit

Annex 1

Environmental Risk Assessment

1 Environmental Risk Assessment

Overview

A1.1.1 This annex presents an evaluation of environmental risks associated with the occurrence of major accident and disasters at Gatwick Airport. The evaluation is based upon the Source-Pathway-Receptor (SPR) approach described in Section 2, and essentially provides the underpinning detail upon which the summary of findings – Table 5.1.1 – is based.

A1.1.2 The annex provides:

- information on the baseline environment and the environmental receptors in the vicinity of Gatwick Airport;
- a summary of the types of potential harm to the environment resulting from major accidents and disasters;
- an analysis of potential environmental pathways, ie the routes by which a source – pollution or other adverse environmental effect – could travel to a receptor; and
- an assessment of SPR linkages.

A1.1.3 Where a viable SPR linkage exists, the severity/consequence has been assessed in line with the methodology set out in Section 2, and the resultant risk has been assigned and copied to Table 5.1.1. Major accident and disaster scenarios are considered as having the potential for significant effects to arise where the risk is assessed to be intolerable.

Environmental Receptors – Present Day

A1.1.4 Environmental receptors and receptor groups have been presented to reflect the order and definitions in the CDOIF guidelines (CDOIF, 2016). It is noted that this is not always consistent with the standard approach taken in the other PEIR chapters (in particular that for Chapter 9: Ecology and Nature Conservation). However, this is the accepted and established approached for environmental risk assessments undertaken in accordance with the CDOIF guidelines (CDOIF, 2016).

A1.1.5 Designated sites (national and international) and water bodies with hydraulic connectivity to the Project site have been identified within 10 km from the Project site boundary. For other receptor groups, receptors have been identified with 1 km from the Project site boundary.

Designated Sites (Nationally Important)

A1.1.6 Nationally designated areas include land and/or water that is designated as a Site of Special Scientific Interest (SSSI) for geological or biological purposes or as a National Nature Reserve (NNR).

A1.1.7 No geological SSSIs are located within 1 km of the Project site and no sites are considered likely to be susceptible to the effects of the major accident scenarios for the Project. Therefore, these receptors are not considered further in this assessment.

A1.1.8 There are a number of nationally designated sites within 10 km of the Project site boundary. The following sites are located within 5 km of the Project site boundary:

- Glover's Wood SSSI: located 1.62 km to the west of the site;
- House Copse SSSI: located 4.34 km to the south west of the site;
- Hedgecourt SSSI: located 4.46 km to the east of the site; and
- Buchan Hill Ponds SSSI: located 4.93 km to the south of the site.

A1.1.9 The nearest SSSI is Glover's Wood, which is approximately 1.62 km from the western edge of the Project site boundary. None of the nationally designated sites within 10 km of the Project site boundary are hydrologically linked to the Project site.

A1.1.10 There are no NNRs within 10 km of the Project site boundary.

A1.1.11 Chapter 9: Ecology and Nature Conservation provides further details on the ecological baseline conditions on and around the site.

Internationally Important Designated Sites (Statutory Designations)

A1.1.12 Internationally important designated areas include land and/or water that is designated as a Ramsar Site, Special Area of Conservation (SAC) or Special Protection Area (SPA).

A1.1.13 There is one SAC within 10 km of the Project site boundary, Mole Gap to Reigate Escarpment to the north west, which at its closest point, is located 9.22 km from the Project site boundary. The SAC is not hydrologically linked to the Project site. There are no SPAs or Ramsar sites within 10 km of the Project site boundary.

A1.1.14 See Chapter 9: Ecology and Nature Conservation for further details.

Other Designated Land

A1.1.15 Other designated sites include ancient woodlands, Local Nature Reserves (LNRs), Local Wildlife Sites (LWSs)/Sites of Nature Conservation Importance (SNCIs), Woodland Trust Sites, national forests, community forests, Areas of Outstanding National Beauty (AONBs), National Parks and Registered Parks and Gardens, Royal Society for the Protection of Birds (RSPB) Reserves, and Biosphere Reserves.

A1.1.16 There are no Woodland Trust Sites, community forests, national forests, AONBs, RSPB Reserves, National Parks and Registered Parks and Gardens, or Biosphere Reserves within 1 km of the Project site boundary.

A1.1.17 There are two LNRs within 1 km of the Project site boundary:

- Willoughby Fields LNR: located approximately 800 metre to the south of the site; and
- Broadfield Park LNR: located approximately 800 metres to the south of the site.

A1.1.18 There are several areas of ancient woodland both within the Project site boundary (for example Brockley Wood) as well as within 1 km of the Project site boundary.

A1.1.19 There are several LWSs/SNCIs present in the vicinity of the Project. One of these, Horleyland Wood LWS, is located within the Project site boundary, directly north of Crawley Sewage Treatment Works.

A1.1.20 There are two areas of London Area green belt land, one adjacent to the north eastern Project site boundary and one to the east of the M23.

A1.1.21 See PEIR Chapter 7: Landscape, Townscape and Visual Resources and Chapter 9: Ecology and Nature Conservation for further details.

Scarce Habitat

A1.1.22 Receptors include Biodiversity Action Plan (BAP) Priority Inventory Habitats. Scarce habitats are awarded protection principally on the basis of declines in distribution and extent of such habitats within the recent past.

A1.1.23 There are two types of Priority Habitat Inventory/BAP habitats within 1 km of the Project site, both are types of woodland habitats and include:

- areas of deciduous woodland along the Project site boundary as well as within 1 km of the Project site boundary; and
- one small area of traditional orchard near Hookwood.

Widespread Habitat

A1.1.24 Agricultural fields occur within the Project site boundary (but outside of the existing airport) and in the surrounding area, which are bounded by hedgerows of varying quality.

A1.1.25 Surface water habitats have been considered as part of the 'freshwater' receptor group.

A1.1.26 Chapter 18: Agricultural Land Use and Recreation and Chapter 11: Water Environment provide further details.

Groundwater

Geology

A1.1.27 The predominant geological stratigraphy is understood to comprise Made Ground, over superficial deposits of Alluvium (clay, silt, sand and gravel) or River Terrace Deposits (sand and gravel). Where present, these superficial deposits are likely to be up to several metres in thickness and overlay Weald Clay Formation bedrock (mudstone) and Upper Tunbridge Wells Sand Formation (sandstone and mudstone), which are likely to be of considerable thickness beneath the site.

Hydrogeology

A1.1.28 The superficial deposits beneath the site are classified as Secondary A aquifers. These are generally aquifers formerly classified as minor aquifers, presenting a range of permeability and storage capacity. The Weald Clay Formation bedrock is designated as unproductive stratum – these are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow. The Upper Tunbridge Wells Sand Formation is classified as a Secondary A aquifer. The groundwater vulnerability in the Secondary A aquifers is classified as 'Minor Aquifer, High'.

A1.1.29 Shallow groundwater beneath the site is likely to be primarily in the River Terrace Deposits.

A1.1.30 The Project site is not located within or close to a Source Protection Zone (SPZ). The nearest public water supply with an SPZ is over 8 km to the north, near Reigate, which extracts water from different strata. Consequently, the groundwater in the vicinity of the Project site has not been considered as a source of drinking water.

A1.1.31 There is one groundwater abstraction for 'general use' 1 km to the south of the southern boundary of the Project site area. However, this is understood to be abstracted from the Tunbridge Wells Sand Formation which, for the majority of the site, is below the Weald Clay bedrock and so for the most part is not hydraulically connected with the superficial deposits beneath the airport.

A1.1.32 There are no statutory designated sites of nature conservation interest that may rely on groundwater supply within and around the Project site. Consequently, groundwater has not been considered as a pathway to these types of receptors.

A1.1.33 The Tunbridge Wells Sand is a Water Environment (water Framework Directive) Regulations 2017(WER) groundwater body, which had a good overall status for water quality in 2016.

A1.1.34 See PEIR Chapter 11: Geology and Ground Conditions and Chapter 10: Water Environment for further details.

Soil or Sediment

Soil

A1.1.35 The surface material within the Project site boundary and its surrounds is a mixture of made ground (concrete or tarmac surfacing) and unmade ground (ie pervious, non-surfaced), some of which is vegetated. The agricultural land within the Project site boundary has been classified under the Agricultural Land Classification as sub-grade 3b which is not considered to be best and most versatile land. Further information on the classifications and land quality is presented in Chapter 18: Agricultural Land Use and Recreation.

Sediments

A1.1.36 Base sediments will be present in the water features and these are identified as part of the freshwater receptor group.

Built Environment

A1.1.37 In the context of the CDIOF guideline, 'built environment' receptors include Grade 1 listed buildings, scheduled ancient monuments and conservation areas. World Heritage Sites have also been considered.

A1.1.38 There are no World Heritage Sites within 1 km of the Project site boundary.

A1.1.39 There are no Grade 1 listed buildings or scheduled monuments within the Project site boundary. There are three Grade 1 listed buildings and two scheduled monuments within 1 km of the Project site boundary, as follows.

A1.1.40 Grade 1 listed buildings within 1 km of the Project site boundary:

- Church of St Bartholomew (Horley), adjacent to the most northly point of the Project site boundary;
- Church of St Bartholomew (Burstow), 800 metres to the east of the Project site boundary at Burstow; and
- Church of St Nicholas, 900 metres to the west east of the Project site boundary at near Charlwood.

A1.1.41 Scheduled monuments within 1 km of the Project site boundary:

- one located to the south east, just outside of the Project site boundary (Medieval settlement remains at Tinsley Green); and
- one located approximately 800 metres to the north east of the Project site boundary (Thunderfield Castle medieval moat site, near Horley).

A1.1.42 There is one Conservation Area partially within the land required for the Project (at Church Road, Horley) and three other Conservation Areas within 1 km of the Project site.

A1.1.43 Chapter 7: Historic Environment provides further details.

Particular Species

A1.1.44 The use of MATTE criteria for damage to particular species generally requires reliable estimates of population numbers. In general, this receptor group has been considered as part of the other receptor groups (eg designated sites, priority habitat). However, it is noted that ecological surveys undertaken to date have identified populations of the following fauna of conservation interest:

- great crested newt breeding in ponds in woodland adjacent to Horleyland Wood and to the north of the River Mole near to the Bear & Bunny Nursery;
- bat assemblage including Bechstein's bat roosting in Brockley Woods;

- terrestrial invertebrate assemblage;
- dormice in the ancient woodland;
- range of breeding birds of varying status;
- small badger setts to the north and south of the runways; and
- grass snake in grasslands along the River Mole corridor.

A1.1.45 Chapter 9: Ecology and Nature Conservation provides further details.

Marine

A1.1.46 Marine receptors include: non-estuarine waters; littoral/sub-littoral zones; benthic communities adjacent to the coast; and fish spawning grounds.

A1.1.47 Gatwick airport is approximately 40 km from the sea, therefore marine receptors are not considered further.

Freshwater Receptors

A1.1.48 Freshwater receptors include estuaries, rivers, streams, canals, lakes or ponds.

A1.1.49 The airport is located in the Upper Mole Catchment area and the River Mole runs through the site from the south. It is culverted under both the main runway and existing northern runway, upon exiting the culvert, it forms the western and northern boundary of the airport before heading north away from the airport at Hookwood. The River Mole is approximately 60 km in length, it originates at Rusper and flows past Gatwick, Horley, Dorking, Leatherhead, Cobham and Esher before its confluence with the Rivers Thames at East Molesey.

A1.1.50 In addition, tributaries of the River Mole, including Crawter's Brook, the Gatwick Stream, Man's Brook and Westfield Stream which all run through or close to the Project site. The Gatwick Stream runs along the eastern airport boundary between the eastern end of the airside operational area and the London to Brighton mainline railway. It is culverted under the South Terminal before running north through and joining the River Mole in Hookwood. Crawter's Brook enters the airport from the south and is canalised along the southern edge of the airside operational area. It joins the River Mole shortly before the culvert under both existing runways. Man's Brook enters the airport from the west and joins the River Mole along the north western boundary of the Project site area.

A1.1.51 Burstow Stream runs to the east of the Project site area, and the Burstow Stream Tributary runs within the Project site area, beneath the M23 access road to the airport.

A1.1.52 There are three WER water bodies which could be directly impacted by the Project, and these are:

- River Mole (upstream of Horley) – consisting of the River Mole, Crawter's Brook and Man's Brook, which in 2016 had an overall status of good;
- River Mole (Horley to Hersham) – consisting of the River Mole and Withy Brook, which in 2016 had an overall status of moderate; and
- Tilgate Brook and Gatwick Stream at Crawley – consisting of Gatwick Stream and Tilgate Brook), which in 2016 hand an overall status of moderate.

A1.1.53 In addition, Burstow Steam (a WER water body consisting of Burstow Steam and Burstow Steam Tributary) has the potential to be impacted via the Burstow Steam Tributary. Burstow Stream had an overall status of bad in 2016.

A1.1.54 There are also a number of water features, both highly-engineered surface water management basins and some more natural ponds, within the Project site boundary.

A1.1.55 One historic surface water abstraction consent relating to a transfer from Gatwick Stream has been identified 1.7 km to the south of the Project site boundary. On the basis of the historic status of the licence, and its upstream location, this has not been considered further. See PEIR Chapter 10: Water Environment for further details.

A1.1.56 Sources

A1.1.57 For some of the major accident and disaster scenarios listed in Section 2.4, the potential for environmental damage is self-evident (for example, spillage of hazardous materials). For others, the cause of damage is less obvious as it arises as an indirect consequence of the event. For example, severe flooding causing structural damage to a storage tank which results in a release of hazardous material. Irrespective of whether the cause of potential damage is a direct or indirect consequence of the initiating event, the types of potential harm and the resultant 'sources' can be broadly grouped as:

- fires and explosions, resulting in:
  - heat/flame (thermal radiation);
  - fire plume;
  - ash and char;
  - firewater;
  - overpressure; or
  - gas cloud (eg, for natural gas releases where there is no source of ignition).
- spills of hazardous materials; and
- contaminated floodwater.

Potential Pathways

Atmospheric Release Pathways

A1.1.58 For airborne releases (fire plume gases, heat, overpressure and gas clouds), atmospheric dispersion and, potentially, deposition processes would provide a viable pathway for these sources to reach human and environmental receptors. This pathway is therefore considered in the assessment.

Liquid Release Pathways

Overview

A1.1.59 Accidental liquid releases include spillages of hazardous materials, firewater and contaminated floodwater. Upon release, an uncontained liquid spill would typically spread out until either it reached a barrier (eg a bund wall/earth banking/curbing/process equipment), or until it could spread no further.

A1.1.60 At Gatwick Airport, release of hazardous materials from the major accident scenarios would be expected to be captured by the site's surface water drainage systems. It is also possible, though less likely, that spills could also encounter pervious areas of unmade ground. Spills that reach vegetated/earth surfaces would have the potential to seep into the soils with potential migration into the groundwater beneath the site. Any liquids that were not captured by the drainage system and did not seep into soils could reach on-site/off-site receptors via overland flow.

A1.1.61 On the basis of the above, the potential (theoretical) pathways through which an accidental liquid release could reach environmental receptors resulting from a major accident or disaster at Gatwick airport are considered to be:

- transport of liquids via site surface water drainage system;
- passage of liquids over unmade ground into soils, with possible migration into the groundwater and subsequent migration via groundwater; and

- overland flow of liquids from the point of release, leading to the potential exposure of receptors (excluding soil or groundwater) inside or outside the site boundary.

A1.1.62 The relevance of each of these is discussed in turn below.

Transport of Liquids via the Site Drainage System

A1.1.63 There are eight surface water drainage catchments within the Project site that directly receive airport runoff. Generally, four of these serve the main airfield, discharging to Pond A, Pond M, the Dog Kennel Pond and Pond D. The four ponds provide a degree of treatment through aeration and settlement. Drainage from areas of hard standing with a low risk of pollution (eg car parks) pass through at least one stage of treatment (oil interceptors) prior to discharge.

A1.1.64 Pond D is the key drainage pond receiving the majority of runoff from Gatwick. Runoff enters Pond D (upper) via a series of separator channels and discharges to the River Mole. In general, when runoff meets the required water quality standard of below a biochemical oxygen demand of 10 mg/l, the pond discharges to the River Mole. Water is automatically tested for its biochemical oxygen demand.

A1.1.65 Discharge to the River Mole is at a consented rate, controlled by a series of hydrobrakes and pumps. The actual rate of discharge is determined by the flow rate of the River Mole. Higher river flow rates permit a higher rate of discharge from the surface water drainage system.

A1.1.66 If water quality falls below the required standard, the ponds discharge to the 'dirty' water pumped main which conveys runoff via a 3.5 km pipeline for long term storage at two pollution lagoons (with storage capacities 220,000 m^3 and 100,000 m^3). After aeration in the lagoons, the water is treated at Crawley Sewage Treatment Works. There are restrictions placed on the peak flow that can be transferred to the Sewage Treatment Works under a trade effluent consent agreed with Thames Water. In the event of very heavy rainfall, contaminated water diluted by rainfall may be pumped directly to the River Mole from Pond D if the incoming runoff is greater than the capacity of Pond D and there is insufficient capacity in the pumping system that transfers it to the pollution storage lagoons.

A1.1.67 In summary, the surface water drainage system allows for the collection of rain water, spills, firewater and potentially flood water. If sufficiently clean, the collected water is pumped and discharged to the River Mole. If the water is not clean, it is pumped to two storage lagoons and then to Crawley Sewage Treatment Works. If water is not clean and there is no capacity in the storage lagoons (as a result of very heavy rainfall) and the peak flow to the sewage treatment work is exceeded, the contaminated water (diluted with rain water) may be pumped directly into the River Mole.

A1.1.68 Only in the event that secondary/tertiary containment measures fail, combined with the failure of all of the site's emergency control measures, and extreme weather events, would this pathway be considered to be theoretically viable. Although unlikely, this pathway has been considered as part of this assessment.

Passage of Liquids to and via Soil and Groundwater

A1.1.69 As noted above, the majority of the areas where accidental liquid releases could occur comprise hardstanding which is connected to the surface water drainage system. However, in the event that an accidental liquid release encountered vegetated areas/unmade ground, any components of the spill that are mobile through soils could migrate vertically downwards.

A1.1.70 Areas of the site are underlain by Alluvium or River Terrace Deposits overlying Weald Clay Formation bedrock. The shallow groundwater in the superficial deposits is classified as a Secondary A Aquifer. The majority of the underlying bedrock is unproductive. Thus, the pathway for the migration of liquids through soil to groundwater in the upper aquifer is considered viable.

A1.1.71 The Project site is not located within or close to a SPZ. There are no known licenced groundwater abstractions within 2 km of the site for use as drinking water. Consequently, for the purpose of this assessment it is considered that the secondary aquifer falls under the description 'groundwater – non-drinking water source' in the CDOIF guidelines.

A1.1.72 There are no designated sites of nature conservation interest that rely on the groundwater supply within the Project site boundary. If there is connectivity between groundwater and the surface water features that run though the site, it is feasible that contaminants could migrate through the groundwater into these surface water bodies with the potential for exposure of other receptors. However, taking into account the potential quantities and nature of possible contaminants, along with dilution/dispersion processes and natural fate processes, it is not considered likely that migration though groundwater would result in exposure of any environmental receptors of the scale that would be considered to be a MATTE.

A1.1.73 Thus, soil beneath the site is considered as a receptor and a pathway to groundwater while groundwater is considered as a receptor only.

Overland Flow to Receptors

A1.1.74 On-site receptor types (other than soil and groundwater) include fresh water (the surface water bodies that run through and around the airport), other designated land (ancient woodland), scarce habitat (deciduous woodland), widespread habitat (agricultural fields within the Project site boundary) and the species that use these habitats. The habitats of ecological interest and agricultural fields are generally located towards the Project site boundary, away from the operational area of the airport.

A1.1.75 Due to the likely size, type and location of liquid release scenarios, the topography of the site and the extent of the surface water drainage system none of the accident/disaster scenarios are considered likely to have to potential to reach either on-site or off-site receptors directly through the pathway of overland flow. Consequently, this pathway is not considered further in this assessment.

Releases of Solids to Land

A1.1.76 Ash can release contaminants to the environment if the ash disposal process and clean-up is not properly managed. If the ash dries, ash dust can be released to the atmosphere through the action of wind and by physical disturbance during the process of collecting and disposing of the ash. The main routes of exposure are through inhalation of the airborne dust and improper disposal. The main receptors would be humans and the habitat in the immediate vicinity of the site. This element of a major accident can be controlled and managed. In the event of a fire, ash would be disposed of to an appropriate site, in a responsible fashion, using licenced waste contractors. Thus, ash generation, collection and disposal activities are considered unlikely to result in significant environmental damage and no further assessment is proposed.

A1.1.77 Potential Sources and Pathway Linkages

A1.1.78 In summary, the potential pathways by which sources could reach receptors are:

- atmospheric dispersion of thermal radiation, overpressure, and unignited gas;
- atmospheric dispersion and deposition of fire plume gases;
- transport of liquids through the site drainage systems and discharge to the River Mole (during extreme weather conditions only); and
- passage of liquids over unmade ground into the soil and migration into groundwater.

Assessment of SPR linkages

A1.1.79 This section provides the basis behind the high-level risk assessment for the major accidents and disasters that have been identified for the Project. A summary of the outcome of the assessment is provided in Table 5.1.1.

A1.1.80 For each of the identified potential source-pathway linkages an assessment has been undertaken to determine whether the receptors identified could be exposed and whether any resultant damage would be considered to be a MATTE.

A1.1.81 In addition to the information provided below, the risk assessment also takes account of the findings of the detailed risk assessment of potential major accidents associated with the Gatwick Airport fuel farm that was carried out for GASHCo as part of its COMAH Safety Report (submitted January 2015). The risk assessment looked at risks to people and the environment resulting from ignited and unignited large-scale releases of jet fuel and from loss of containment of natural gas from supply pipework. For the safety risk assessment (risks to people), risks were assessed as being at worst equivalent to 'TifALARP' on the HSEs risk tolerability framework. Environmental risks were assessed as being 'broadly acceptable'.

Summary of Sources, Pathways and Receptors

A1.1.82 For ease of reference, this section provides a summary of the potential sources, pathways and receptors considered in the assessment.

10.3 The sources are:

- fires and explosions, resulting in:
  - heat/flame (thermal radiation);
  - fire plume;
  - ash and char;
  - firewater;
  - overpressure; or
  - unignited gas cloud (eg, for natural gas releases where there is no source of ignition).
- spills of hazardous materials; and
- contaminated floodwater.

A1.1.83 The potential for these sources to result in harm that would be considered sufficient to result in death/injury/damage to environmental receptors is considered in the next section.

A1.1.84 The potential pathways by which sources could reach receptors are:

- atmospheric dispersion of thermal radiation, overpressure, and unignited gas;
- atmospheric dispersion and deposition of fire plume gases;
- transport of liquids through the site drainage systems and discharge to the River Mole – during extreme weather conditions only; and
- passage of liquids over unmade ground into the soil and migration into groundwater.

A1.1.85 Annex 1 – Table 1 provides a summary of the nearest potential receptors for each CDOIF environmental receptor category, together with the lowest associated MATTE thresholds for severity and duration.

Annex 1 – Table 1: Summary of Nearest Environmental Receptors and Corresponding MATTE Thresholds

Receptor[1]	CDOIF Guideline MATTE Threshold (the lowest level of harm that might be considered a MATTE)[2]
Designated sites (nationally important)	
There are four SSSIs within 5 km of the Project site, the nearest is: ▪ Glover's Wood SSSI – a 74.5 hectare site of semi-natural broadleaved woodland, 1.62 km to the west.	Severity: ▪ >0.5 hectares of the site area adversely affected, or ▪ 10-50% of site area or population. Duration: ▪ land-based receptors: recovery takes longer than 3 years; or ▪ water-based receptors: recovery takes longer than 1 year.
Designated sites (internationally important)	
The only site within 10 km is: ▪ Mole Gap to Reigate Escarpment SAC – a 892 ha site of heath, scrub, woodland and dry grassland, 9.2 km to the north west.	Severity: ▪ >0.5 hectares of the site area adversely affected, or ▪ 5-25% of site area or population. Duration: ▪ land-based receptors: recovery takes longer than 3 years.
Other designated land	
The closest of each type of 'other designated land' are: ▪ Willoughby Fields Local Nature Reserve (LNR): located approximately 800 metres to the south of the site; ▪ Broadfield Park LNR: located approximately 800 metres to the south of the site.areas of ancient woodland within the Project site boundary; ▪ Horleyland Wood, located directly north of Crawley Sewage Treatment Works (within the Project site boundary); and ▪ London Area green belt adjacent to the Project site boundary.	Severity: ▪ 10-100 hectares, or ▪ 10-50% of land. Duration: ▪ land-based receptors: recovery takes longer than 3 years.
Scarce habitat	
The closest receptors are Priority Habitat Inventory habitats: ▪ areas of deciduous woodland within the Project site boundary; and ▪ a small area traditional orchard near Hookwood, approximately 450 metres to the north.	Severity: ▪ 2-20 hectares, or ▪ 10-50% of habitat. Duration: ▪ land-based receptors: recovery takes longer than 3 years.
Widespread habitat	
The nearest receptors are: ▪ agricultural fields within the Project site boundary.	Severity: ▪ contamination of 10-100 hectares of land, preventing growing of crops, grazing of domestic animals or renders the area inaccessible to the public because of possible skin contact with dangerous substances. Alternatively, contamination of 10 ha or more of vacant land. Duration: ▪ land-based receptors: recovery takes longer than 3 years.
Groundwater (potential source of drinking water).	
None	n/a (no receptors): groundwater in the Project area is not a source of drinking water.
Groundwater – non-drinking water source	

Receptor[1]	CDOIF Guideline MATTE Threshold (the lowest level of harm that might be considered a MATTE)[2]
The upper (Secondary) Aquifer beneath the site	Severity: ▪ 1-100 hectares of aquifer where water quality standards are breached (or hazardous substance is discernible). Duration: ▪ recovery from WER hazardous substances takes > 3 months and recovery from WER non-hazardous substances takes > 1 year.
Soil and sediment	
Soil beneath the site	Severity: ▪ contamination of 10-100 hectares of land preventing growing of crops, grazing of domestic animals or renders the area inaccessible to the public because of possible skin contact with dangerous substances. ▪ contamination sufficient to be deemed environmental damage (Environmental Liability Directive). Duration: ▪ land-based receptors: recovery takes longer than 3 years.
Built environment	
▪ Church of St Bartholomew Grade 1 listed building, adjacent to the Project site boundary; and ▪ Medieval settlement remains (a scheduled monument) just outside the Project site boundary at Tinsley Green.	Severity: ▪ damage sufficient for designation of importance to be withdrawn. Duration: ▪ land-based receptors: recovery takes longer than 3 years.
Particular species	
Various (typically considered as part of the other receptor groups (eg the adjacent areas classed as Priority Habitat Inventory)).	Severity: ▪ Loss of 1-10% of an animal population, or ▪ 5-50% of plant ground cover. [Note – these criteria apply nationally – ie England, Wales, Scotland.] Duration: ▪ land-based receptors: recovery takes longer than 3 years; or ▪ water-based receptors: recovery takes longer than 1 year.
Marine	
No receptors	n/a – no relevant receptors
Freshwater	▪
▪ River Mole (upstream of Horley) – consisting of the River Mole, Crawter's Brook and Man's Brook; ▪ River Mole (Horley to Hersham) – consisting of the River Mole and Withy Brook; ▪ Tilgate Brook and Gatwick Stream at Crawley – consisting of Gatwick Stream and Tilgate Brook); and ▪ Burstow Steam (consisting of Burstow Steam and Burstow Steam Tributary).	Severity: ▪ WER chemical or ecological status lowered by one class for 2-10 km of watercourse. Duration ▪ Recovery takes longer than 1 year.

Table Notes

1 For receptors outwith Project site boundary, the distance to a receptor is the shortest distance from the Project site boundary to the receptor location/boundary.

2 The CDOIF guideline uses criteria for both the severity and duration of environmental damage to determine the consequence level of a major accident scenario to a particular receptor. The thresholds for both factors must be exceeded for the scenario to be considered to be a potential MATTE.

Assessment of SPR Linkages

Atmospheric Transmission of Thermal Radiation

A1.1.86 It is assumed that any people, fauna or flora within an area that could be directly consumed by a flame zone would be killed or severely injured/damaged. Where possible, people and faunal species are expected to move away from the affected area or find shelter. Radiation levels exceeding 6.3 kW/m^2 are sufficient to result in the death of humans within minutes if shelter is not found. In the absence of animal study data, it is assumed that thermal radiation levels exceeding 6.3 kW/m^2 (or even at lower levels) could also kill fauna[2]. With regard to damage to flora, at levels of thermal radiation of 6.3 kW/m^2 it can be assumed that burning would occur, grasses and leaves being most at risk.

A1.1.87 Surface waters are not expected to be damaged by thermal radiation. Similarly, land itself is not expected to be damaged by thermal radiation; however, attributes of the land (eg landscape and visual amenity) could be affected as a result of impacts to vegetation.

A1.1.88 The effects of flame/elevated levels of thermal radiation for the major accident and disaster scenarios identified for the Project are expected to be limited to on-site receptors in the vicinity of the fire. On-site receptor types that could be damaged include humans, other designated land (ancient woodland), scarce habitat (deciduous woodland), widespread habitat (agricultural fields within the Project site boundary) and the species that use these habitats.

A1.1.89 Vegetation within exposed areas would be expected to experience adverse effects, however, vegetation is only likely to suffer damage to stems and leaves above ground. Root systems and buried seeds may be expected to remain relatively undamaged; hence regeneration is considered likely to occur and effects would not be long-term. Faunal species are expected to move away from the effects of the fire (the exception to this potentially being during nesting/breeding times). The habitats of ecological interest and agricultural fields are generally located towards the Project site boundary, away from the operational area of the airport and away from the likely locations of fire scenarios.

A1.1.90 In addition, it is expected that fires would be relatively short in duration. On a relative scale, when compared to major accidents at other COMAH sites, the quantities of flammable substances that could be involved in a fire are relatively small.

A1.1.91 The most stringent harm criterion for a MATTE for the on-site receptors is for scarce habitat, which is damage to 2-20 hectares, or 10-50% of habitat. The duration criterion is that natural recovery would take longer than 3 years.

A1.1.92 On the basis of all of the above, it is not considered likely that thermal radiation from a fire would meet the severity or duration MATTE criteria and the risk is considered 'sub-MATTE'. As set out in the methodology section, consequences that are sub-MATTE do not require further assessment.

Atmospheric Transmission of Overpressure

A1.1.93 Overpressure from an explosion can result in death or injury to people and fauna in the immediate vicinity of the blast. It can also result in the toppling of trees and damage to buildings and structures.

A1.1.94 For the major accident and disaster scenarios for the Project, the potential sources of explosions are jet fuel and mains gas. Jet fuel will not give rise to a large vapour cloud and explosion (such as occurred at Buncefield oil depot (see Annex 5)). Damage to the mains gas supply may have the potential to result in an explosion under certain circumstances and if a source of ignition is encountered. This type of accident event is not likely to give rise to an explosion with far reaching effects and, even if effects were experienced at environmental receptors, it is not considered likely to that these would be sufficient to trigger any of the MATTE criteria for environmental receptors and the consequence level would be sub-MATTE. As noted previously, consequences that are sub-MATTE do not require further assessment.

Atmospheric Transmission of Unignited Gas Clouds

A1.1.95 A web-based review of available data indicated that no adverse effect is anticipated to occur to plant life from hydrocarbon gas clouds. Natural gas acts primarily as an asphyxiant and potential adverse effects on fauna are reported to be related to oxygen deficient environments; resulting in symptoms such as nausea, retching, stupefaction and anaesthesia. Information relating to animal exposure through inhalation and animal toxicity data indicates that very high concentrations of gas would be required to result in death or serious injury (for example, rabbits can inhale a mixture of one volume of oxygen and four volumes of methane for any length of time without showing any ill effects). The scale and nature of an unignited accidental gas release for the scenarios identified, along with natural atmospheric dispersion processes, would mean that it is highly unlikely that the concentration of gas at receptors would be sufficiently high to kill or seriously injure faunal receptors. It is not considered likely that an unignited gas cloud would result in effects that these would be sufficient to trigger the MATTE criteria and the consequence level would be sub-MATTE. As noted previously, consequences that are sub-MATTE do not require further assessment.

Atmospheric Transmission of Fire Plume Gases

A1.1.96 The severity and extent of impacts of a fire plume are complicated to determine and depend on a number of factors, the key ones being the:

- composition of the fire plume;
- scale of the fire, in terms of the quantity of material involved in the fire;
- duration of the fire; and
- rate and extent of dispersion of the fire plume.

A1.1.97 Impacts associated with elevated airborne pollutant concentrations, deposition and reduced visibility will be limited by the composition of the fire plume and the small scale and relatively short duration of the potential fires. Effects are expected to occur only in the short-term, for the duration of the fire, with natural dispersion rapidly reducing concentrations to near background levels once the fire has ceased. In addition, animals and birds generally have sufficient mobility to move away from the fire plume.

A1.1.98 Although the effects of deposition of fire plume particles may be experienced for longer than the duration of the fire, the characteristics of the fire (in terms of scale, duration and the materials involved) mean that deposition effects are also considered unlikely to result in significant environmental damage.

A1.1.99 The above discussions are supported by a literature review (see Annex 5) of several major accidents involving fires, which do not refer to any environmental damage from smoke plumes. These include the largest crude tank fire in UK history, namely the Tank 13 fire at the Amoco Refinery in Milford Haven on 30 August 1983. Even where the source of the smoke was a major fire

[2] This approach is consistent with the assessment of major accidents and disasters for similar facilities.

consuming toxic chemicals (at Allied Colloids, Low Moor, Bradford), a subsequent survey of contamination of vegetation indicated no significant impacts. In addition, a study published by the Health Protection Agency (HPA) on the impact of the Buncefield oil depot fire (which was a larger fire than that which could occur at Gatwick Airport, see Annex 5), concluded that, even for this major event, the Buncefield oil depot fire did not result in substantial pollution of soil and grasses.

A1.1.100 On the basis of the above and given the characteristics and quantities of the materials that could be involved in an accidental fire with the Project site boundary, it is considered highly unlikely that the resulting fire plume could cause environmental damage that would be sufficient to meet any of the MATTE criteria for any of the environmental receptors on, or in the vicinity of, the Project site boundary. Therefore, the level of harm is sub-MATTE. The duration of effects is also expected to be sub-MATTE for all receptors. The severity of harm and the duration of effects are considered to be sub-MATTE and therefore are not considered further in the risk assessment.

Transport of Liquids through the Site Drainage Systems (in Extreme Weather Conditions)

A1.1.101 Typically, accidental spills, contaminated firewater and contaminated floodwater would be retained on site via the site's surface water drainage system and would ultimately be treated at Crawley Sewage Treatment Works.

A1.1.102 In the event of extreme weather conditions, contaminated water could be released directly to the River Mole. The worst-case contaminant is considered to be petroleum hydrocarbons (such as jet fuel). There are no designated receptors of nature conservation interest on the River Mole for at least 10 km downstream. As previously noted, the river is not a drinking water receptor. Thus, the receptor considered for this pathway is:

- freshwater bodies: River Mole (and the species within).

A1.1.103 For fresh surface water, the lowest level of harm that would constitute a MATTE is defined as Severe ('2'):

- WER chemical or ecological status lowered by one class for 2-10 km of watercourse or 2-20 hectares or 10-50% area of estuaries or ponds.

A1.1.104 The shortest duration of harm that would be considered to be a MATTE is defined as:

- medium term – over 1 year (but less than ten years) for surface water.

A1.1.105 Once in the river, the majority of hydrocarbons would float on the surface and spread horizontally over the water, and onto the river banks, presenting a large surface area from which the more volatile components would rapidly partition to the atmosphere. The 'slick' would continue to disperse and break up as it travelled downstream with the flow of the river (the major influencing factors being the rate and direction of the flow of the waterbody and meteorological conditions). However, the majority of the hydrocarbon components would volatilise from the water surface (the estimated volatilisation half-life for hydrocarbons from a model river is 4 to 24 hours) or be subject to biodegradation. Both processes would greatly reduce the quantity of hydrocarbons present. The heavier components may adsorb to sediment or organic matter.

A1.1.106 Adult fish tend to swim away from hydrocarbon spills. Eggs and fish larvae, if present at the time of the spill, may suffer mortalities, but in most of the historical spill cases observed to date, this does not appear to impact on the fish stocks. Even so, fish stocks would be expected to recolonise any affected areas relatively quickly.

A1.1.107 The vulnerability of water bird species (should these be present) to oil pollution is dependent on a number of factors and varies considerably throughout the year. Birds that swim or dive in the water are particularly at risk of becoming oiled. Examination of seabirds oiled during the Sea Empress spill indicated that birds died directly from oil contamination rather than through toxic or food chain effects. Even if invertebrates and fish stocks were depleted, on the basis of the relatively small area that would be affected, it is considered that neighbouring habitat could support the existing bird populations and that natural recolonisation could occur rapidly from upstream areas.

A1.1.108 The criteria for a MATTE to the river as a freshwater receptor are that the WER chemical status or ecological status is lowered by one class for a 2-10 km of watercourse. In 2016 the stretch of the River Mole downstream of the airport (Mole Horley to Hersham) had a 'moderate' overall status; a 'moderate' ecological classification and a 'good' classification for chemical status. The Mole (Horley to Hersham) runs for over 60 km to the River Thames. The WER chemical or ecological status for a water body is based on a number of monitoring results from various locations within the overall catchment area taken over the period of a year. The behaviour of jet fuel in the environment and its associated environmental fate, coupled with the nature and duration of the effects means that it is not considered likely that a one-off short-term accidental release of diluted hydrocarbons would result in the lowering of the chemical or ecological classifications by one class. The level of harm would therefore be considered to be sub-MATTE.

A1.1.109 Due the behaviour of jet fuel and environmental fate processes, dilution processes and the opportunities for recolonisation, adverse effects to the River Mole, as well as the associated aquatic habitats and ecology, would not be expected to occur for more than one year (water-based receptors) and so the duration would also be short-term (sub-MATTE).

A1.1.110 Since the severity of harm and the duration of effects are considered to be sub-MATTE the overall consequence level is sub-MATTE and these effects do not need to be considered further in the risk assessment.

Passage of Liquids over Unmade Ground into the Soil and Migration into Groundwater

A1.1.111 As noted above, the majority of site surfacing in the areas where accidental liquid releases (eg fuel spills, contaminated firewater and floodwater) could occur is hardstanding and linked to the surface water drainage system. However, in the event that an accidental liquid release encountered vegetated areas/unmade ground, any components of the spill that are mobile through soils could migrate vertically downwards. The worst-case spill/contaminant is considered to be hydrocarbons (eg jet fuel).

A1.1.112 As described in Section 4, the soil beneath the site is considered a receptor and a pathway to groundwater, while groundwater is considered as a receptor only.

Soil

A1.1.113 For soil, the lowest level of harm that would constitute a MATTE is defined as:

- contamination of 10-100 hectares of land which prevents growing of crops or the grazing of domestic animals or renders the area inaccessible to the public because of possible skin contact with dangerous substances; or
- contamination sufficient to be deemed environmental damage as per the Environmental Liability Directive.

A1.1.114 The shortest duration of harm that would be considered to be a MATTE is defined as:

- medium term – over 3 years, or over 2 years for agricultural land.

A1.1.115 None of the major accident and disaster scenarios are considered likely to have the potential to result in the lowest level of harm required for a MATTE to soil. Furthermore, soil areas on the site in the vicinity of possible accident locations would not generally be accessed by the general public and would not be used for agricultural purposes. The event would not be deemed 'environmental damage' as per the Environmental Liability Directive. Thus, a MATTE to soils is not considered likely to occur and the level of harm is assessed as 'sub-MATTE'.

A1.1.116 For land-based receptors, recovery within three years or less is 'short-term'. The nature and size of the spills, along with natural fate and clean-up processes would mean that recovery would be well within this timeframe. Short-term harm is considered to be 'sub-MATTE'.

A1.1.117 Since the severity of harm and the duration of effects would be sub-MATTE the overall consequence level is sub-MATTE, therefore these effects do not need to be considered further.

Groundwater – Non-Drinking Water Source

A1.1.118 For groundwater that is not a source of drinking water, the lowest level of harm that would constitute a MATTE is defined as:

- 1-100 hectares of aquifer where water quality standards are breached (or hazardous substance is discernible).

A1.1.119 The shortest duration of harm that would be considered to be a MATTE is defined as:

- medium term – WER non-hazardous substances for more than 1 year/WER hazardous substances for more than 3 months.

A1.1.120 In accordance with the CDOIF Guidelines, an accidental release affecting the secondary aquifer would be a MATTE if 1-100 hectares of the groundwater body was polluted such that water quality standards are breached. Very little of the hydrocarbon would be expected to actually reach the groundwater. Since jet fuel has low mobility in soils, the majority of the hydrocarbons would pool on soil surfaces and/or adsorb to soil particles and organic matter. The hydrocarbons would then undergo volatilisation and start to biodegrade. The very small proportion of lower molecular weight components that are more mobile would migrate downwards through the unsaturated zone towards groundwater, adsorbing to soil particles and organic matter. Some of these hydrocarbons will be retained in soil pore spaces. Biodegradation of mobile components would continue to take place in the unsaturated zone, though this is expected to be at a slower rate than for components at the site surface.

A1.1.121 Taking account of all the factors discussed above, and in particular the low mobility and solubility of jet fuel coupled with the expected rates of volatilisation and biodegradation, it is not expected that the worst-case unmitigated releases would affect over 1 hectares of groundwater such that water quality standards are breached, or that a hazardous substance is discernible.

A1.1.122 Thus, the severity of harm to receptors resulting from exposure of unmade ground, and percolation through soils to groundwater in the upper aquifer is considered to be 'sub-MATTE'.

A1.1.123 The recovery period is conservatively assessed to be 'medium term'. However, irrespective of the duration of effects, since the severity of harm is considered to be sub-MATTE, the consequence level is also sub-MATTE and therefore this SPR linkage is not considered further.

Conclusions

A1.1.124 All the major accident and disaster scenarios with the potential to result in environmental damage have been determined to result in sub-MATTE consequences. Sub-MATTE consequences are not considered in further detail as part of the risk tolerability assessment in accordance with the CDOIF guideline (CDOIF 2016); implying that such outcomes are of low risk, and at the very least could be considered 'broadly acceptable'.

A1.1.125 It is recognised that the major accident and disaster scenarios could result in levels of damage and harm that would be normally considered to be 'significant pollution/damage' in the context of an EIA. However, in the context of a risk assessment of major accidents, these would not be considered a MATTE.

Annex 2

Policy, Legislation and Guidance

A2.1 Policy, Legislation and Guidance

Legislation and Policy

A2.1.1 This section identifies the legislation, planning policy and other documentation that has informed the assessment of effects presented in the major accidents and disasters chapter.

Legislation

A2.1.2 In addition to main EIA legislation, the legislation relevant to the assessment of major accidents and disasters includes:

- Directive on the Assessment of the Effects of Certain Public and Private Projects on the environment (2014/52/EU);
- The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017;
- The Planning (Hazardous Substances) Regulations 2015;
- Network and Information Systems Regulations 2018;
- Regulation (EU) No 402/2013 on the Common Safety Method for Risk Evaluation and Assessment (as amended by Regulation EU 2015/1136);
- Health and Safety at Work Act 1974;
- The Management of Health and Safety at Work Regulations 1999;
- The Civil Contingencies Act 2004;
- Directive 2012/18/EU 2012 on the control of major-accident hazards involving dangerous substances;
- Control of Major Accident Hazards Regulations 2015 (COMAH);
- Pipeline Safety Regulations 1996;
- Planning (Hazards Substances) Regulations 2015;
- The Workplace (health, safety and welfare) Regulations 1992;
- The Regulatory Reform (Fire Safety) Order 2005;
- Construction (Design and Management) (CDM) 2015 Regulations;
- The Control of Asbestos Regulations 2012;
- The Control of Substances Hazardous to Health Regulations 2002;
- The Building Regulations 2010;
- CAP 1223: Framework for an Aviation Security 2018;
- The Air Navigation Order 2009 SI 2009 No 3015
- CAP 393: The Air Navigation Order 2016 and Regulations; and
- Regulation on Common rules in the field of civil aviation security (EU 300/2008).

Planning Policy

A2.1.3 Planning policies relevant to the assessment of major accidents and disasters include:

- Airports NPS (Department for Transport, 2018a);
- NPS for National Networks (Department for Transport, 2014);
- National Planning Policy Framework (NPPF) (HM Government, 2021);
- Crawley 2030: Crawley Borough Local Plan 2030 (Crawley Borough Council, 2015);
- Crawley 2035: Draft Crawley Borough Local Plan 2020-2035 (emerging policy);
- Reigate and Banstead Local Plan: Core Strategy 2014;
- Reigate and Banstead Local Plan Development Management Plan 2018-2027;
- Mole Valley Local Plan 2000 (Mole Valley District Council, 2000);
- Mole Valley Core Strategy 2009 (Mole Valley District Council, 2009);
- Horsham District Planning Framework (excluding South Downs National Park) 2015 (Horsham District Council, 2015);
- Tandridge District Core Strategy 2008 (Tandridge District Council, 2008);
- Tandridge Local Plan (Part 2) Detailed Policies 2014-2029 (Tandridge District Council, 2014);
- Mid Sussex District Plan 2014-2031 (Mid Sussex District Council, 2018); and
- Our Local Plan 2033 (Regulation 22 Submission) 2019 (Tandridge District Council, 2019) – Policy TLP17 (emerging policy).

Guidance Documents

A2.1.4 There is currently no specific established guidance for the assessment of major accidents and disasters within the EIA process. The principles set out in the documents listed below include some guidance relevant to developing the proposed approach to assessment, as well as emerging best practice from recent airport projects:

- Environmental Impact Assessment of Projects, Guidance on the Preparation of the EIA Report (EC, 2017a);
- Guidance on the Interpretation of Major Accidents to the environment for the purposes of COMAH regulations (DETR, 1999);
- Guide to predicting environmental recovery durations for Major Accidents (Energy Institute, 2017);
- Guidelines in Environmental Management for Facilities Storing Bulk Quantities of Petroleum Products and Other Fuels, 3rd edition (Energy Institute, 2015);
- Safety and Environmental Standards for Fuel Storage Sites Process Safety Leadership Group (Health and Safety Executive (HSE), 2009);
- Guidance: Hazardous Substances (Ministry of Housing, Communities & Local Government, 2019d);
- CIRIA C736 Containment Systems for the Prevention of Pollution: Secondary, Tertiary and Other Means for Industrial and Commercial Premises (CIRIA, 2014);
- Reducing Risks Protecting People (R2P2) (HSE, 2001);
- Air Navigation Guidance (Department for Transport, 2017d);
- CAP760: Guidance on the Conduct of Hazard Identification, Risk Assessment and the Production of Safety Cases (CAA, 2010);
- CAP 670: ATS Safety Requirements (CAA, 2014b);
- CAP1616: Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements (CAA, 2017a);
- Guidance on Regulations (L153): Managing health and safety in construction: Construction (design and management) Regulations (HSE, 2015);
- Hazardous Installation Directive (HID) Regulatory Model: Safety Management in Major Hazard Industries (HSE, 2013);
- Control of Development in Airport Public Safety Zones, Department for Transport Circular 01/2010 (Department for Transport, 2010);
- CAP 795: Safety Management Systems - Guidance to Organizations (CAA, 2015b);
- CAP 168: Licensing of Aerodromes (CAA, 2019b);
- CAP 1273: Implementing a Security Management System (CAA, 2018c);
- CAP 738: Aerodrome Safeguarding (CAA, 2006);
- European Action Plan for the Prevention of Runway Incursions EAPPRI edition (EUROCONTROL, 2017);
- CAP 791: Procedures for changes to aerodrome infrastructure (CAA, 2016);
- CAP 493: Manual of Air Traffic Services MATS Part 1 (CAA, 2017c);
- European Union Aviation Safety Agency (EASA) Commission Regulation (EU) No 139/2014 – specifically ADR.OR.D.005 and associated AMC/GM (EASA, 2014);
- Doc 9859 Safety Management Manual (ICAO, 2013);

- Annex 14 – Aerodrome Design and Operations (ICAO, 2014); and
- Chemical and Downstream Oil Industries Forum (CDOIF) Guideline – Environmental Risk Tolerability for COMAH Establishments, Version 2.0, March 2016 (CDOIF 2016).

Annex 3

Scoping Outcomes for Potential Major Accidents and Disaster Events

A3.1 Scoping Outcomes for Potential Major Accidents and Disaster Events (reproduced from EIA Scoping Report)

Scoping Test Reference	Scoping Test (sequential)
1	Is the event classified as a major accident or disaster?
2	Is there a source, pathway and receptor route for the event?
3	Could the Project add to vulnerability, likelihood or impact compared to the do-minimum scenario?
4	Are there adequate protocols or measures already in place to mitigate this risk?

Scoped In	
Scoped Out	

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
Flooding (coastal and tidal)	Flooding of permanent or temporary assets including construction sites (for example terminal building, road access tunnel, cargo and maintenance facilities) leading to damage to people or the environment			**Scoped out as does not meet Scoping Test 2** (no Source-Pathway-Receptor route) Negligible risk of coastal and tidal flooding due to distance from the sea and tidal rivers; flooding from these sources will therefore be scoped out of further assessment.
	Flooding of assets (for example storage tank, packaged goods, vehicles) leading to a hazardous release or casualties			
	Flooding with contamination leading to detriment to environmental receptor			
	Flooding leading to runway excursion			
Flooding (rainfall)	Surface water flooding can happen many miles from a river, often in places that people wouldn't expect			**Scoped in as meets all scoping tests** Flood risk from extreme rainfall events has been scoped into the assessment to test the vulnerability of the Project to this type of event. The Airside Operations Adverse Weather (flooding plan) (Gatwick Airport Limited, 2018) is currently adopted by Gatwick operations. This details the planning and operating procedures necessary to ensure the safe operation of the Aerodrome in the occasion of actual or potential flood event. However, this would need to be reviewed in relation to its application to the Project.

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
Flooding (riparian)	Increased risk of surface water flooding leading to damage to people and the environment			**Scoped in as meets all scoping tests** There is flood risk associated with rivers in the vicinity which have the potential to flood, including Gatwick Stream and River Mole. This risk is therefore scoped in to test the vulnerability of the Project to riparian flooding. The Airside Operations Adverse Weather (flooding plan) (Gatwick Airport Limited, 2018) is currently adopted by Gatwick operations. This details the planning and operating procedures necessary to ensure the safe operation of the Airport in the occasion of actual or potential flood event. However, this would need to be reviewed in relation to its application to the Project.
Earthquake	Seismic event leading to building instability/collapse			**Scoped in as meets all scoping tests** The local area around Gatwick has been subject to some recent minor earthquakes. Although a larger earthquake which could result in a major accident and disaster is considered unlikely, this risk is scoped in for further assessment to test the vulnerability of the Project design to earthquake and establish whether mitigation and management protocols would be required.
Subsidence	Subsidence leading to building instability/collapse			**Scoped in as meets all scoping tests** There is a potential risk of subsidence due to underlying geology or flood events which could lead to building damage. This risk is therefore scoped in to test the vulnerability of the Project design to this type of event and establish whether mitigation would be required.
Landslide (land slip, land movement)	Significant land movement due to natural phenomena			**Scoped in as meets all scoping tests** The local area of Gatwick has been subject to some recent minor earthquakes. This could possibly trigger land movement or slip. This risk is therefore scoped in to test the vulnerability of the Project design to this type of event and establish whether mitigation would be required.
Extreme heat/cold	Degradation of runway surface from extreme heat			**Scoped in as meets all scoping tests** There is a potential risk due to extreme heat events. This risk is therefore scoped in to test the vulnerability of the Project design to this type of event and establish whether additional mitigation would be required.
	Instrument/navigation failure resulting from extreme cold			**Scoped out as does not meet Scoping Test 4** (adequate protocols already in place) The airport could be subject to extreme snow, cold and heat events in future. These are types of events that the airport already deals with on a 'business as usual' basis. Delivery of the Project would not increase the vulnerability of the airport to this type of event. There are also strong and established protocols in place to manage temperature related risks which meet international best practice. These types of event are therefore scoped out on the basis that there is no increased risk compared to the do-minimum scenario and best practice international standards are already in place. The following safety mitigations are in place currently as part of Gatwick Airport operations: ▪ EASA Licensing/CAP 168: Licensing of Aerodromes (Civil Aviation Authority, 2019).
	Cold Embrittlement			
Snow (including ice and hail)	Runway excursion			
	Leading to impairment of major accident / initiator control (including fire service and policing, insufficient ground crew)			

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
				The purpose of this document is to give guidance to applicants and licence holders on the procedure for the issue and continuation of, or variation to, an aerodrome licence issued under Article 211 of the Air Navigation Order 2009, and to indicate the licensing requirements that are used for assessing a variation or an application. The document also describes the CAA's aerodrome licensing requirements relating to operational management and the planning of aerodrome development. This document represents the minimum standards necessary to meet the licensing requirement. ▪ Airside Operations Adverse Weather (Snow and Ice plan) (Gatwick Airport Limited, 2018). The aim of the Snow and Ice plan is to provide information relating to procedures to sustain Airside Operations as far as is reasonably practicable. The Airside Operations Snow and Ice plan is to be the start point for the Airside Operations Lead/Airside Operations Manager (AOM) and adapted to match the situation in consultation with the Airport Bronze Command and Airside Disruption Cell (ADC). ▪ Airside Operations Adverse Weather (Heat plan) (Gatwick Airport Limited, 2018). Details the planning and operating procedures necessary to ensure the safe operation of the Aerodrome in the occasion of an actual or potential heat event. ▪ Flight procedures and restrictions in line with EASA and CAA guidelines for adverse weather.
	Snow loading of building or other properties			**Scoped in as meets all scoping tests** There is a potential risk due to snow loading events. This risk is scoped in to test the vulnerability of the Project design to this type of event and establish whether additional mitigation or design measures would be required.
Tsunami	A series of waves in a water body caused by the displacement of a large volume of water, generally in an ocean or a large lake. It can lead to damage to people or environment			**Scoped out as does not meet Scoping Test 2** (no Source-Pathway-Receptor route) Negligible risk of tsunami due to distance from the sea and tidal rivers.
Storm surge	Strong winds blowing over the surface of the sea, large and long waves that can travel long distances until they reach the shore and high-water levels known as storm surge			**Scoped out as does not meet Scoping Test 2** (no Source-Pathway-Receptor route) Negligible risk of storm surge due to distance from the sea and tidal rivers.
Extreme storm	Damage to buildings			**Scoped in as meets all scoping tests** There is a potential risk due to extreme storm events. This risk is scoped in to test the vulnerability of the Project design to this type of event and establish whether additional mitigation or design measures would be required.
	Damage to aircraft on ground or in flight under control of Gatwick			**Scoped out as does not meet Scoping Test 4** (adequate protocols already in place) The airport could be subject to extreme storms in future. However, these are types of events that the airport already deals with on a 'business as usual' basis during airspace operations. Delivery of the Project would not increase the vulnerability of the airport to this type of event. There are also strong and established protocols in place to manage extreme storm related risks which meet international best practice. These types of event are therefore scoped out on the basis that there is no increased risk compared to the do-minimum scenario and best practice international standards are already in place. The following safety mitigations will be in place as standard:

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
				▪ EASA Licensing/CAP 168: Licensing of Aerodromes (Civil Aviation Authority, 2019). The purpose of this document is to give guidance to applicants and licence holders on the procedure for the issue and continuation of or variation to an aerodrome licence issued under Article 211 of the Air Navigation Order2009, and to indicate the licensing requirements that are used for assessing a variation or an application. The document also describes the CAA's aerodrome licensing requirements relating to operational management and the planning of aerodrome development. This document represents the minimum standards necessary to meet the licensing requirement. ▪ Airside Operations Adverse Weather (Wind plan) (Gatwick Airport Limited, 2018). Details the planning and operating procedures necessary to ensure the safe operation of the Aerodrome in the occasion of an actual or potential wind event.
Lightning	Lightning strike leading to electrocution, fire, building damage/debris resulting in damage to people or environment			**Scoped out during construction as does not meet Scoping Test 3** (no increased risk compared to the do-minimum) As flights not affected during construction period. **Scoped in for operational effects as meets all scoping tests** There is a potential risk due to lightning events. This risk is therefore scoped in to test the vulnerability of the Project design to this type of event and establish whether additional mitigation or design measures would be required.
	Lightning strike to aircraft in flight			**Scoped in for operational effects as meets all scoping tests** There is a potential risk due to lightning events which would be increased due an increase in the number of flights with the Project in operation. This risk is scoped in to identify whether any additional mitigation measures within the airport's control can be implemented to manage this risk.
Wildfire	Fire threat to permanent or temporary assets, including construction sites (for example terminal building, road access tunnel, cargo and maintenance facilities) leading to damage to people or the environment			**Scoped in as meets all scoping tests** There is a potential risk due to wildfire events. This risk is therefore scoped in to test the vulnerability of the Project design to this type of event and establish whether additional mitigation or design measures would be required. Fire prevention and emergency measures currently employed as part of Gatwick Airport operations would be in place and extended to the Project. During construction, specific fire prevention and emergency measures would be developed and set out in the CoCP.
Volcanic eruption	Threat of volcanic eruption individuals and assets			**Scoped out as does not meet Scoping Test 2** (no Source-Pathway-Receptor route) Negligible risk of volcanic activity in the UK.
Ash cloud	Ash released from a volcano after eruption may affect navigation systems, visibility of pilots and flight engines			**Scoped out as does not meet Scoping Test 4** (adequate protocols already in place)

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
				There is potential for a similar event to the 2010 Iceland volcanic eruption to occur, disrupting airport operations. However, contingency and safety measures currently as part of Gatwick Airport operations would take effect, and it is considered there would be a negligible risk in relation to major accidents and disasters. ▪ Airside Operations Adverse Weather (Volcanic ash plan) (Gatwick Airport Limited, 2018). The planning and operating procedures necessary to ensure the safe operation of the Aerodrome in the event of a volcanic ash event. ▪ CAP 1236: Guidance regarding flight operations in the vicinity of volcanic ash (Civil Aviation Authority, 2017a). The guidance contains information and advice that may be issued by other States in the form of an Aeronautical Information Circular entitled "The approach to management of volcanic ash events". ▪ NPA 2012-07 (European Union Aviation Safety Agency, 2012). Following the last major eruptions of volcanos and considering the consequences of such eruptions on flight operations, discussion at an ICAO level reached the common position that an operator should not be prevented from operating through, under or over airspace forecast to be contaminated with volcanic ash or aerodromes/operating sites contaminated with volcanic ash, provided it has demonstrated in its management system, the capability to do so through a safety risk assessment.
Infectious diseases (epidemics and pandemics)	Health risks with possible fatalities to workers and visitors, with potential for further infection outside of airport			**Scoped out as does not meet Scoping Test 3** (would not increase risk compared to do-minimum) The potential risk from international communicable disease transmission is currently managed through a process that extends well beyond an individual airport and the influence of the UK planning regime. It is driven by the International Health Regulations which place a legally-binding requirement for 196 countries, including all Member States of the WHO, to prevent and respond to acute public health risks that have the potential to cross transnational boundaries and threaten people worldwide. This risk is not considered to be any greater with the proposals compared to the do-minimum scenario. Refer to Section 7.11: Health and Wellbeing.
	Impairment of major accident/initiator control (including fire service and policing, insufficient ground crew)			
Infectious animal diseases (epidemics, pandemics, animal plagues and pests)	Animal disease in locality affecting quarantined or imported valuable species			**Scoped out as does not meet Scoping Test 3** (would not increase risk compared to do-minimum) As indicated in the Airports NPS, airport development, as with all infrastructure projects can alter habitats and food chains that might attract opportunistic species that are typically regarded as pests. For airport developments, pests can constitute an unacceptable operational hazard, and must be addressed through design and daily management to deter habitat creation or food chains. Without management, airports could provide good year-round habitat for insects, rodents, rabbits, deer, fox and avian species that could theoretically present an aircraft maintenance and collision hazard. However, the potential hazard is well known, understood and already addressed at Gatwick Airport through existing design and management measures (including habitat, waste management and staff awareness procedures) that prevent, deter and control pests, and the associated operational hazard. Refer to Section 7.11: Health and Wellbeing for more detailed information.

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
Climate change	Vulnerability of the Project to future effects of climate change			**Scoped in as meets all scoping tests** This risk is therefore scoped in to test the vulnerability of the Project design to future climate change and establish whether additional mitigation or design measures would be required. Climate change effects would also be incorporated into the flood risk assessment and considered in detail in the climate change and carbon chapter. Refer to Section 7.5: Water Environment and Section 7.9: Climate Change and Carbon.
Drought	Loss of water supply – leading to welfare issues for passengers and staff			**Scoped out as does not meet Scoping Test 3** (would not increase risk compared to do-minimum) Contingency measures in case of disruption to water supply are currently in place as part of Gatwick Airport operations and are well-established. Although there is a risk of drought at Gatwick Airport, this is not considered to be greater than the do-minimum scenario.
	Loss of water supply leading to failure of safety critical service, for example firewater			
	Foundation cracks/settlement leading to failure of buildings/assets and damage to people/the environment			
Famine and food security	A widespread scarcity of food caused by several factors including war, inflation, crop failure, population imbalance, or government policies			**Scoped out as does not meet Scoping Test 3** (would not increase risk compared to do-minimum) Operations at the airport in relation to food security would be unchanged as a result of the Project and the risk is considered to be negligible.
Severe space weather	Severe space weather leads to loss of systems, for example primary navigation systems or loss of communications			**Scoped out as does not meet Scoping Test 3** (would not increase risk compared to do-minimum) The UK Government has a space weather preparedness strategy in place. Severe space weather events are very rare and the risk in relation to major accidents and disasters is therefore considered negligible. ▪ Space weather preparedness strategy (Department for Business, Innovation & Skills, 2015) The UK approach to space weather preparedness is set out in this document and is underpinned by three elements: designing mitigation into infrastructure where possible; developing the ability to provide alerts and warnings of space weather and its potential impacts; and having in place plans to respond to severe events. Preparation is needed on the national level, with the support of local capabilities to deal with the consequences as well as international co-ordination.
Dam failure	Sudden release from dam/reservoir/canal			**Scoped out as does not meet Scoping Test 2** (no Source-Pathway-Receptor route) There are no dams, reservoirs or canals located in the immediate vicinity of Gatwick which could result in a significant flood event. Refer also to Section 7.5: Water Environment. A Flood Risk Assessment will be carried out in accordance with planning guidance on flood risk.
External manmade accidents				
Contamination (drinking water)	Failure of on-site monitoring, handling, control and management, including security leading to contamination of water sources			**Scoped in as meets all scoping tests**

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
				There is potential for contamination of water sources as a result of construction and operational activities. This risk is therefore scoped in to test the vulnerability of the Project design to this type of risk and establish whether additional mitigation or design measures would be required.
Large and small attacks (biological and chemical)	Involves screening (deliberately unidentified or undeclared substance), monitoring, handling, control and management			**Scoped out as does not meet Scoping Test 3** (would not increase risk compared to do-minimum) Although there is always a risk of a malicious attack, terrorism, sabotage, vandalism and theft, the risk is not considered to be higher with the Project compared to the existing airport operations. In addition, there are extensive mitigation and contingency measures in place to manage these risks. All security measures will be confidential and cannot be detailed in the EIA. These issues are therefore proposed to be scoped out of further assessment. The following mitigation and management measures currently apply: ▪ CAP 1223: Framework for an Aviation Security (Civil Aviation Authority, 2018a). Security Management Systems (SeMS) provide a formalized, risk-driven framework for integrating security into the daily operations and culture of an entity. The SeMS enables an entity to identify and address security risks, threats, gaps and weaknesses in a consistent and proactive way. SeMS is not a mandated process but if an entity has SeMS which contain all the elements which are identified in CAP 1223, it will help the entity to meet the internal quality control provisions of articles 12, 13 and 14 of EC 300/20081. ▪ Guidance on policing at airports (National Policing Improvement Agency, 2011). The Project would be designed and operated in line with the Guidance on policing at airports (National Policing Improvement Agency, 2011) as is the case with the existing airport.
Malicious attack	Major attack on persons at airport, transport system and associated infrastructure or on the environment			
Terrorism	Unlawful use of violence and intimidation, especially against civilians within the airport			
Sabotage, vandalism, trespass and theft	External – leading to major accident/initiator located within the Project area			
Drones and lasers	External – leading to major accident/initiator located within the Project area			**Scoped out as does not meet Scoping Tests 3 and 4** (no increase in risk due to the Project and adequate protocols already in place) Although there is always a risk of a drone or laser attack, the risk is not considered to be higher with the proposed development compared to the existing airport operations, and there are extensive mitigation and contingency measures in place to manage these risks. All security measures will be confidential and cannot be detailed in the EIA. These issues are therefore proposed to be scoped out of further assessment. The following mitigation and management measures currently apply: ▪ Detailed guidance on managing risks is also issued by ICAO: Doc 9815 Manual on Laser Emitters and Flight Safety (ICAO, 2003). This manual supports the laser-related Standards or Recommended Practices (SARPs) in Annexes 11 and 14 (ICAO, 2003). It focuses on the medical, physiological and psychological effects on flight crew of exposure to laser emissions. The information and guidance material provided in this manual are primarily directed to decision-makers at government level, laser operators, air traffic control officers, aircrew, aviation medicine consultants to and medical officers of the regulatory authorities, and doctors involved in clinical aviation medicine, occupational health and preventive medicine. The manual is aimed both at reducing the need for regulatory authorities to seek individual expert advice and at reducing inconsistencies between Member States in the implementation of national regulations.

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
				▪ CAP 736 Operation of Directed Light, Fireworks, Toy Balloons and Sky Lanterns within UK Air Space (Civil Aviation Authority, 2011a). Provides policy and supporting guidance for commercial organizations and individuals planning to operate directed light, fireworks, toy balloons and sky lanterns in UK airspace. Information on notification procedures and CAA application forms are contained within the document; provided event information will enable the aviation community to properly assess the impact of any such proposed activity and take appropriate measures to mitigate any dangers to flight safety. ▪ CAP 722: Unmanned Aircraft System Operations in UK Airspace – Guidance (Civil Aviation Authority, 2015). This guidance has been compiled by the Civil Aviation Authority's Intelligence, Strategy and Policy (ISP) division. It is Intended to assist those who are involved in the development of Unmanned Aircraft System (UAS) to identify the route to certification, outline the methods by which permission for aerial work may be obtained and ensure that the required standards and practices are met by all UAS operators. Furthermore, the document highlights the safety requirements that have to be met, in terms of airworthiness and operational standards, before a UAS is allowed to operate in the UK. ▪ CAP 1627: Drone Safety Risk: An assessment (Civil Aviation Authority, 2018b). The Civil Aviation Authority (CAA) supports the safe development of drones in the UK. The CAA has undertaken an assessment of available information about the likelihood of an unintentional drone collision and the severity of any possible impact between an aircraft and a smaller unmanned vehicle (defined as under 2 kg in this report). The findings are: ▪ The drones most likely to end up in proximity to manned aircraft are smaller drones, typically of 2 kg or less, flown by operators who either do not know the aviation safety regulations or have chosen to ignore them. - It is considered unlikely that a small drone would cause significant damage to a modern turbo-fan jet engine; even if it did, a multi-engine aircraft would still be likely to be able to land safely.
Industrial action	An industrial action leading to a major accident. This could be initiated by the fire service, the police or ground crew			**Scoped out as does not meet Scoping Test 3** (would not increase risk compared to do-minimum)
Widespread public disorder	Conduct in a public place which is likely to cause, or intends to cause harassment, alarm or distress to anyone present			These risks are considered to be the same as for current operations. Contingency measures are already in place as part of Gatwick Airport operations, including restricting operations. The Project would be included under the existing arrangements.
Cyber-attack and digital/data security	Cyber-attack and digital/data security (infrastructure/services), leading to major accident/initiator at airport			**Scoped out as does not meet Scoping Test 3** (would not increase risk compared to do-minimum) Although there is always a risk of a cyber-attack, the risk is not considered to be greater with the proposed development compared to the existing airport operations, and there are extensive mitigation and contingency measures in place to manage these risks. These issues are therefore proposed to be scoped out of further assessment. The design and operation of the Gatwick scheme must comply with the National Aviation Security Program regulations and guidance: ▪ CAP 1574: 26 Security Controls for Regulation Civil Aviation Authority, 2017b). This details 26 cyber security controls as a framework for the regulation of cyber induced risks within the aviation industry, both in respect of aviation safety and economic resilience.

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
Displaced population	Movement of people out of the Project area due to the Project			**Scoped out as does not meet Scoping Test 2** (no source, pathway or receptor route for the event) No populations would be displaced by the Project.
External objects (for example bird strike/fireworks/sky lanterns/wind turbine)	Flying animals or objects that can impact on airport operations			**Scoped out as does not meet Scoping Tests 3 and 4** (no increase in risk due to the Project and adequate protocols already in place) Although there is always a risk of a collision with an external object (non-malicious source), the risk is not considered to be higher with the proposed development compared to the existing airport operations, and there are extensive mitigation and contingency measures in place to manage these risks. The proposals would also not result in an airspace change. There are established management and contingency measures already in place as part of Gatwick Airport operations adhering the following: ▪ CAP 772: Wildlife Hazard Management at Aerodrome (Civil Aviation Authority, 2017c). The guidance assists aerodrome operators in establishing and maintaining an effective Bird Control Management Plan (BCMP), including the measures necessary to assess the bird strike risk at the aerodrome, and the identification of appropriate action to minimise that risk. ▪ CAP 736: Operation of Directed Light, Fireworks, Toy Balloons and Sky Lanterns within UK Air Space (Civil Aviation Authority, 2011a). It provides policy and supporting guidance for commercial organizations and individuals planning to operate directed light, fireworks, toy balloons and sky lanterns in UK airspace. Information on notification procedures and CAA application forms are contained within the document; provided event information will enable the aviation community to properly assess the impact of any such proposed activity and take appropriate measures to mitigate any dangers to flight safety.
Fire/explosion at neighbouring site	Accidents related to fire and potential explosion, for example a gas explosion at neighbouring sites			**Scoped out as does not meet Scoping Test 3** (no increase in risk compared to do-minimum) Although there is always a risk of events at neighbouring sites, the risk is not considered to be higher with the Project compared to the existing airport operations and do-minimum scenario. In addition, there are extensive mitigation and contingency measures in place as part of Gatwick Airport operations to manage these risks. These issues are therefore proposed to be scoped out of further assessment. The following legislation has also been considered for offsites with extractive industry waste: ▪ The Major Accident Off-Site Emergency Plan (Management of Waste from Extractive Industries) (England and Wales) Regulations 2009. These Regulations transpose Directive 2006/21/EC of the European Parliament and of the Council on the management of waste from extractive industries and amending Directive 2004/35/EC in respect of the requirements in Article 6 of the Directive concerning the preparation of an off-site (external) emergency plan, which must specify the measures to be taken off-site in the event of an accident.
Structural collapse at neighbouring site	Collapse of buildings and other structures at neighbouring sites			
Excavation failure at neighbouring site	Accidents related to excavation at neighbouring sites			
Transport accident (runway taxiway and apron)	Aircraft incident on runways, taxiways and apron (note this includes standing, pushback/towing and taxing, take-off and landing)			**Scoped out as does not meet Scoping Test 4** (adequate protocols already in place)

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
				There is potential for an incident due to aircraft movements on the ground. However, there are strong established protocols in place to manage these risks which the Applicant would adhere to if the Project were to go ahead. This includes the following management and mitigation guidelines and standards: ▪ EASA Licensing/CAP 168: Licensing of Aerodromes (Civil Aviation Authority, 2019). The purpose of this document is to give guidance to applicants and licence holders on the procedure for the issue and continuation of, or variation to, an aerodrome licence issued under Article 211 of the ANO 2009, and to indicate the licensing requirements that are used for assessing a variation or an application. The document also describes the CAA's aerodrome licensing requirements relating to operational management and the planning of aerodrome development. This document represents the minimum standards necessary to meet the licensing requirement. ▪ CAP 738: Safeguarding of Aerodromes Appendix C/EASA CS-ADRDSN Certification Specifications and Guidance Material for Aerodromes Design – Book 2 – Chapter H (Civil Aviation Authority, 2006). This document offers guidance to those responsible for the safe operation of an aerodrome or a technical site, to help them assess what impact a proposed development or construction might have on that operation. ▪ CAP 1168: Guidance Material for Organizations, Operations and Design Requirements for Aerodromes, Chapter: Emergency Planning (Civil Aviation Authority, 2017d). Emergency planning arrangements at aerodromes may be developed to align with UK best practice and the requirements of civil contingencies legislation. Further guidance can be found in the ICAO Airport Services Manual, Part 7, Airport Emergency Planning (Doc 9137-AN/898). The Aerodrome Emergency Plan may describe how an emergency situation or incident can be managed in order to minimise the effects it may have on life, property, the environment, and aerodrome operations, and how the best use of appropriate available resources should be applied to achieve that aim. ▪ CAP 748: Aircraft Fueling and Fuel Installation Management (Civil Aviation Authority, 2004). This CAP is intended to provide guidance to aerodrome licencees whose aerodromes have facilities for fuel storage however complex or simple these facilities may be. This guidance is intended to assist them in the production of procedures for fuel storage, management, handling and distribution where these are required of them by the Air Navigation Order (ANO) 2016, and for the safe delivery of fuel to an aircraft in a condition that is fit for use. Other personnel who have a responsibility towards any part of the safe storage, management, handling or distribution of aviation fuel are encouraged to develop similar appropriate procedures.
Transport accident (airborne)	Aircraft Incident whilst airborne and under control of Gatwick (Includes initial climb, and approach. Departing aircraft that have completed their initial climb and aircraft flying to Gatwick but not yet on approach, are outside the bounds of the assessment)			**Scoped out as does not meet Scoping Test 4** (adequate protocols already in place) A new Runway End Safety Area (RESA) is proposed to be established for the proposed northern runway usage which would reduce the risk to a tolerable level. Any intolerable risk under Department of Transport guidelines would therefore be designed out. In addition, the proposals would not result in a change to airspace. Therefore, the risk of air accidents is scoped out. The following management and mitigation guidelines and standards apply: ▪ CAP 789: Requirements and guidance materials for operators (Civil Aviation Authority, 2011b). The risk of aero planes flying into the ground, water or a man-made obstacle requires determined preventive action by operators. Operators should develop and publish procedures that will help flight crew to avoid getting into situations in which controlled flight into terrain (CFIT) becomes a possibility. Guidance as to what should be addressed can be found in UK Aeronautical Information Circulars, in the Flight Safety Foundation's "CFIT

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
				Education and Training Aid", and in its "Approach and Landing Accident Reduction (ALAR) Toolkit". There is potential for a transport accident as a result of construction activities and changes in airport operations. ▪ CAP 493: Manual of Air Traffic Services, Section 4 Chapter 2: Area Control Procedures (Civil Aviation Authority, 2017e). The Manual of Air Traffic Services contains procedures, instructions and information, which are intended to form the basis of Air Traffic Services (ATS) within the UK. It is published for use by civil Air Traffic Controllers and may also be of general interest to others associated with civil aviation. ▪ EASA Certificate of Airworthiness validated annually with an Airworthiness Review Certificate. All EASA aircraft types that qualify for an EASA Certificate of Airworthiness (C of A) are issued with a non-expiring C of A, which is validated annually with an Airworthiness Review Certificate. ▪ CAP 747: Mandatory requirements for Airworthiness (Civil Aviation Authority, 2017f). This provides a single source of mandatory information for continuing airworthiness as issued by the CAA. Airworthiness Directives for Annex II aircraft published in CAP 476 are included. Airworthiness Directives issued by EASA are available on the EASA website. ▪ CAP 1616: Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements (Civil Aviation Authority, 2017g). The CAA's airspace change process in this published guidance sets out how we give effect to our role to approve changes to airspace design, and to the law and policy which govern our role. This guidance sets out the framework for the stages of the process and activities involved, from the conception of the need for a change to the airspace design, to consulting and engaging with those potentially impacted, assessing the impacts of different design options from a safety, operational and environmental perspective, and ultimately regulatory decision.
Aircraft wake vortex	Wake turbulence is a disturbance in the atmosphere that forms behind an aircraft as it passes through the air			**Scoped out as does not meet Scoping Test 1** (not classified as a 'major' accident or disaster) There is potential for pitched roofed properties to be affected by aircraft wake vortex, within 10 degrees of the takeoff/landing zone and within 6 km of the runway. However, the consequence of such an event is not considered to result in 'serious' effects and therefore not meet the criteria of a 'major' event.
Transport accident – airside (other vehicles)	Collision involving ground vehicle, including air bridges, leading to injury/loss of life			**Scoped in as meets all scoping tests** There is potential for changes in risks as a result of changes in airside vehicle operations which would need to be tested and any additional mitigation or management protocols identified. The following management and mitigation guidelines and standards are already established as part of Gatwick Airport operations: ▪ EASA Licensing/CAP 168: Licensing of Aerodromes (Civil Aviation Authority, 2019). The purpose of this document is to give guidance to applicants and licence holders on the procedure for the issue and continuation of or variation to an aerodrome licence issued Article 211 of the Air Navigation Order 2009, and to indicate the licensing requirements that are used for assessing a variation or an application. The document also describes the CAA's aerodrome licensing requirements relating to operational management and the planning of aerodrome development. This document represents the minimum standards necessary to meet the licensing requirement.
Transport accident – landside road or construction site	Vehicle (car/HGV/passenger vehicle) collision with another vehicle, or structure			

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
				▪ CAP 738: Safeguarding of Aerodromes Appendix C/EASA CS-ADRDSN Certification Specifications and Guidance Material for Aerodromes Design – Book 2 – Chapter H. This document offers guidance to those responsible for the safe operation of an aerodrome or a technical site, to help them assess what impact a proposed development or construction might have on that operation. ▪ CAP 1168: Guidance Material for Organizations, Operations and Design Requirements for Aerodromes, Chapter: Emergency Planning (Civil Aviation Authority, 2017d). Emergency planning arrangements at aerodromes may be developed to align with UK best practice and the requirements of civil contingencies legislation. Further guidance can be found in the ICAO Airport Services Manual, Part 7, Airport Emergency Planning (Doc 9137-AN/898) (ICAO, 1991). The Aerodrome Emergency Plan may describe how an emergency situation or incident can be managed in order to minimise the effects it may have on life, property, the environment, and aerodrome operations, and how the best use of appropriate available resources should be applied to achieve that aim.
Transport accident – rail	Collision with trains, trams or inter terminal rail Smoke – building fire, warehouse, bonfire, leading to low visibility			**Scoped in during construction as meets all scoping tests** **Scoped out during operation as does not meet Scoping Test 3** (no increased risk compared to the do-minimum) The Brighton mainline adjoins the airport to the east. The risk of construction activities affecting operation of the railway will be scoped in. During operation, the risk to the rail line is not considered to be higher with the proposed development compared to the existing airport operations and do-minimum scenario, and there are extensive mitigation and contingency measures in place to manage these risks. Operational risks are therefore proposed to be scoped out of further assessment. The following management and mitigation guidelines and standards are already established as part of Gatwick Airport operations: ▪ Low visibility operations (LVO) are covered in EASA Licensing/CAP 168: Licensing of Aerodromes (Civil Aviation Authority, 2019). The purpose of this document is to give guidance to applicants and licence holders on the procedure for the issue and continuation of or variation to an aerodrome licence issued under Article 211 of the under Article 211 of the Air Navigation Order 2009, and to indicate the licensing requirements that are used for assessing a variation or an application. The document also describes the CAA's aerodrome licensing requirements relating to operational management and the planning of aerodrome development. This document represents the minimum standards necessary to meet the licensing requirement. ▪ EASA Annex to ED 2012/019/R, Subpart E – Low visibility operations. For a low visibility take-off (LVTO) with an aero plane the following provisions should apply: (a) for an LVTO with a runway visual range (RVR) below 400 m the criteria specified in Table 1.A: (b) for an LVTO with an RVR below 150 m but not less than 125 m: (1) high intensity runway center line lights spaced 15 m or less apart and high intensity edge lights spaced 60 m or less apart that are in operation; (2) a 90 m visual segment that is available from the flight crew compartment at the start of the take-off run; and (3) the required RVR value is achieved for all of the relevant RVR reporting points

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
				(c) for an LVTO with an RVR below 125 m but not less than 75 m: (1) runway protection and facilities equivalent to CAT III landing operations are available; and (2) the aircraft is equipped with an approved CAT III lateral guidance system.
Accidental release of hazardous chemical	From storage, movement via pipeline and other modes and handling of hazardous material including third parties/tenants and contractors during demolition, construction, operation			**Scoped in as meets all scoping tests** The risk of accidental release of hazardous chemicals or flammable substances, and explosion will need to be tested and any additional design measures, mitigation or management protocols identified.
Fire	Release of flammable substance with ignition from storage and handling			
Explosion	Boiler explosion/pressure vessel failure (or example design, inspection, maintenance, human error, externa heating (boilers))			
Structural collapse	Structural collapse/failure leading to injury/loss of life/damage to the environment (from buildings, structures, bridges, tunnels, storage, roads, construction equipment, mobile equipment, waste and spoils)			**Scoped in as meets all scoping tests** The risk of structural collapse would need to be tested and any additional design measures, mitigation or management protocols identified.
Collapse of excavation	Collapse of any earthwork, trench, well, shaft, tunnel or underground working			**Scoped in during construction as meets all scoping tests** **Scoped out during operation as does not meet Scoping Test 3** (no increased risk compared to the do-minimum) There is potential for collapse of excavations during construction and this topic would therefore be considered further to identify appropriate control measures.
Legacy issues	Unexploded ordinance			**Scoped in during construction as meets all scoping tests** **Scoped out during operation as does not meet Scoping Test 3** (no increased risk compared to the do-minimum) There is potential for unexploded ordnance from previous military activities at the site and bombing during World War II. This risk would therefore be considered further in the assessment. The risk of legacy issues is scoped out for operation as the risk is no greater than in the do-minimum scenario
Occupational hazards	Occupational hazards, including fall from heights			**Scoped in during construction as meets all scoping tests** **Scoped out during operation as does not meet Scoping Test 3** (no increased risk compared to the do-minimum) There is potential for occupation hazards to occur especially as a result of construction activities and this risk is therefore scoped into the assessment. Operational risks are scoped out as there would be no increased risk compared to the do-minimum scenario.

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
				The following management and mitigation guidelines and standards apply: ▪ CAP 642: Airside safety management system (Civil Aviation Authority, 2018c). This document sets out the hazards and risks that respective employers operating in the airside environment should be expected to consider and manage, but it should be noted that this guidance is not necessarily comprehensive nor exhaustive. Employers are ultimately required to determine the hazards their employees and others face and assess the risk posed by these hazards. Where information has not been provided to cover a particular situation, it is expected that users would be guided by the general safety management principles to identify and create a safe working and operating environment. ▪ Health and Safety at Work etc. Act 1974. Lays down wide-ranging duties on employers. Employers must protect the 'health, safety and welfare' at work of all their employees, as well as others on their premises, including temps, casual workers, the self-employed, clients, visitors and the general public.
Damage to important artefacts	Damage to an object made by a human being, typically one of cultural or historical interest			**Scoped out as does not meet Scoping Test 1** (not classified as a major accident or disaster) The Project site is extensively disturbed, and effects on buried artefacts would not result in an event which could be considered a 'major' accident or disaster'. General effects on buried archaeology will be dealt with in the PIER/ES Chapter 7: Historic Environment. Operational risks in relation to handling of nationally and internationally important artifacts are scoped out as there would be no increased risk compared to the do-minimum scenario. The following management and mitigation guidelines and standards apply: ▪ The CAA has identified ground handling in its Safety Plan (Civil Aviation Authority, 2018d) as one of the 'Significant Seven' – the main seven areas of risk in the UK Aviation sector.
Deficient safety/environmental management systems	For example, inadequate planning, resource provision, procedures			**Scoped out as does not meet Scoping Tests 3 and 4** (no increase in risk due to the Project and adequate protocols already in place) The risk is not considered to be higher with the proposed development compared to the existing airport operations and do-minimum scenario, and there are extensive processes, mitigation and contingency measures currently in place as part of Gatwick Airports operations to manage these risks. The following management and mitigation guidelines and standards apply: ▪ EASA Licensing/CAP 168: Licensing of Aerodromes CAP 168: Licensing of Aerodromes (Civil Aviation Authority, 2019). The purpose of this document is to give guidance to applicants and licence holders on the procedure for the issue and continuation of or variation to an aerodrome licence issued under Article 211 of the under Article 211 of the Air Navigation Order 2009, and to indicate the licensing requirements that are used for assessing a variation or an application. The document also describes the CAA's aerodrome licensing requirements relating to operational management and the planning of aerodrome development. This document represents the minimum standards necessary to meet the licensing.
Deficient emergency planning, preparedness or provision	For example, a major accident resulting from failure to identify and prepare for foreseeable emergencies (resource, mobilization and communication, information equipment) failure to maintain/train/exercise)			

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
				▪ CAP 670: Air Traffic Services Safety Requirements, Part B Section 2 ATC 03: Emergency or Contingency Facilities (Civil Aviation Authority, 2014). Air Navigation Service Providers (ANSPs) are required, under the EU Regulations, to develop and implement contingency Plans. Advice and guidance on the European requirements and their application to specific units may be obtained from the appropriate Air Traffic Service (ATS) Regional Office (RO). ▪ CAP 760: Guidance on the Conduct of Hazard Identification, Risk Assessment and the Production of Safety Cases (Civil Aviation Authority, 2010). The purpose of this document is to provide guidance to aerodrome operators and ANSPs on the development of a Safety Case and, in particular, on hazard identification, risk assessment and the mitigation techniques that may be used.
Loss of utilities	Electrical/gas/site water/wastewater/refrigeration/fuel leading to injury/loss of life or damage to the environment			**Scoped in for construction as meets all scoping tests** **Scoped out for operation as does not meet Scoping Tests 3 and 4** (no increase in risk due to the Project and adequate protocols already in place) The risk of loss of utilities, for example due to damage to the electricity or water supply, on airport operations during construction will be scoped in. During operation, the risk is not considered to be higher with the proposed development compared to the existing airport operations and do-minimum scenario, and there are extensive processes, mitigation and contingency measures currently in place as part of Gatwick Airports operations to manage these risks.
Loss of essential air safety or airside systems	Air safety and air side systems (communication, airstrip lighting, emergency lighting, navigational aid, radar signage emergency power, emergency isolation, detection)			**Scoped out as does not meet Scoping Tests 3 and 4** (no increase in risk due to the Project and adequate protocols already in place) During construction and operation, the risk is not considered to be higher with the proposed development compared to the existing airport operations and do-minimum scenario, and there are extensive processes, mitigation and contingency measures currently in place as part of Gatwick Airports operations to manage these risks. The following management and mitigation guidelines and standards apply: ▪ EASA Licensing/CAP 168: Licensing of Aerodromes CAP 168: Licensing of Aerodromes (Civil Aviation Authority, 2019). The purpose of this document is to give guidance to applicants and licence holders on the procedure for the issue and continuation of or variation to an aerodrome licence issued under Article 211 of the under Article 211 of the Air Navigation Order 2009, and to indicate the licensing requirements that are used for assessing a variation or an application. The document also describes the CAA's aerodrome licensing requirements relating to operational management and the planning of aerodrome development. This document represents the minimum standards necessary to meet the licensing. ▪ CAP 670 Air Traffic Services Safety Requirements, Part B Section 2 ATC 03 (Civil Aviation Authority, 2014).

Event/Scenarios	Description	Construction (including demolition)	Operation	Justification/Comments
				Emergency or Contingency Facilities ANSPs are required, under the EU Regulations, to develop and implement Contingency Plans. Advice and guidance on the European requirements and their application to specific units may be obtained from the appropriate ATS RO.
Deficient security provision	Deficient security management system – for example inadequate planning, resource provision, procedures			**Scoped out for operation as does not meet Scoping Tests 3 and 4** (no increase in risk due to the Project and adequate protocols already in place) During operation, the risk is not considered to be higher with the proposed development compared to the existing airport operations and do-minimum scenario, and there are extensive processes, mitigation and contingency measures currently in place as part of Gatwick Airports operations to manage these risks. The following management and mitigation guidelines and standards apply: ▪ CAP 1223: Framework for an Aviation Security Management System (SeMS) (Civil Aviation Authority, 2018a) SeMS provides a formalized, risk-driven framework for integrating security into the daily operations and culture of an Entity. The SeMS enables an Entity to identify and address security risks, threats, gaps and weaknesses in a consistent and proactive way. SeMS is not a mandated process but if an Entity has a SeMS which contains all the elements which are identified in this framework, it will help the Entity to meet the internal quality control provisions of articles 12, 13 and 14 of EC 300/20081. ▪ Guidance on policing at airports (National Policing Improvement Agency, 2011). ▪ Airside Operations Adverse Weather (Security plans) (Gatwick Airport Limited, 2018). The document contains provisions and procedures in place as regards security in the scenario of an adverse weather event. Current facilities would be extended proportionally to the Project with the same quality of provision.

Annex 4

CDOIF Guideline MATTE Tolerability and Risk Tables

A4.1 CDOIF Guideline MATTE Tolerability and Risk Tables

CDOIF Annex 4, Table 4.1 Severity / Harm Criteria for Consideration as a Major Accident

Row	DETR Table Ref	Receptor Type	Severity of Harm				Reference to Table 4.2	Comments
			Significant *While this level of harm might be significant pollution, it is not considered a MATTE.*	**Severe** *DETR Criteria - the lowest level of harm that might be considered a MATTE.*	**Major**	**Catastrophic**	*Corresponding Harm/Duration/Recovery row in Table 4.2.*	*The 'Severe' to 'Catastrophic' levels of harm are considered to be included as 'Serious' with respect to the COMAH definition of a major accident. Receptors include:*
		Severity Level	**1**	**2**	**3**	**4**		
1	**1**	Designated Land/Water Sites (Nationally important)	<0.5 ha or <10%	>0.5 ha or 10-50% of site area, associated linear feature or population.	>50% of site area, associated linear feature or population.	*N/A*	Land or Surface Water.	NNR, SSSI, MNR
2	**2**	Designated Land/Water Sites (Internationally important)	<0.5 ha or <5% (<5% LF/Pop)	>0.5 ha or 5-25% of site area or 5-25% of associated linear feature or population.	25-50% of site area, associated linear feature or population.	>50% of site area, associated linear feature or population.	Land or Surface Water.	SAC, SPA, RAMSAR.
3	**3**	Other Designated Land	<10 ha or <10%	10-100 ha or 10-50% of land.	>100 ha or >50% of land.	*N/A*	Land.	ESA, AONB, National Park, etc.
4	**4**	Scarce Habitat	<2 ha or <10%	2-20 ha or 10-50% of habitat.	>20 ha or >50% of habitat.	*N/A*	Land or Surface Water.	BAP habitats, geological features.
5	**5**	Widespread Habitat – Non-Designated Land	<10 ha	Contamination of 10-100 ha of land, preventing growing of crops, grazing of domestic animals or renders the area inaccessible to the public because of possible skin contact with dangerous substances. Alternatively, contamination of 10 ha or more of vacant land.	100-1,000 ha (applied as per text under 'Severe').	>1,000 ha (applied as per text under 'Severe').	Land.	Land/water used for agriculture, forestry, fishing or aquaculture.
6	**5**	Widespread Habitat – Non-Designated Water		Contamination of aquatic habitat which prevents fishing or aquaculture, or renders is inaccessible to the public.	*N/A*	*N/A*	Surface Water.	Land/water used for agriculture, forestry, fishing or aquaculture.

Row	DETR Table Ref	Receptor Type	Severity of Harm				Reference to Table 4.2	Comments
			Significant *While this level of harm might be significant pollution, it is not considered a MATTE.*	**Severe** *DETR Criteria - the lowest level of harm that might be considered a MATTE.*	**Major**	**Catastrophic**	*Corresponding Harm/Duration/Recovery row in Table 4.2.*	*The 'Severe' to 'Catastrophic' levels of harm are considered to be included as 'Serious' with respect to the COMAH definition of a major accident. Receptors include:*
		Severity Level	**1**	**2**	**3**	**4**		
7	**6**	Groundwater Source of Drinking Water	Interruption of drinking water supply <1,000 person-hours or For England & Wales only <1 ha SPZ.	Interruption of drinking water supplied from a ground or surface source (where persons affected x duration in hours [at least 2] > 1,000) or For England & Wales only 1-10 ha of SPZ where drinking water standards are breached.	>1 x 10^7 person-hours interruption of drinking water (a town of ~100,000 people losing supply for month) or For England & Wales only 10-100 ha SPZ drinking water standards breached.	>1 x 10^9 person-hours interruption of drinking (~1 million people losing supply for 1 month) or For England & Wales only >100 ha SPZ drinking water standards breached.	Groundwater or surface water drinking water source (public or private).	Drinking water sources (SPZs in England and Wales) – See 3.2.3 for further guidance.
8	**6**	Groundwater – Non-Drinking Water Source	<1 ha	1-100 ha of aquifer where water quality standards are breached (or hazardous substance is discernible).	100-10,000 ha.	>10,000 ha.	Groundwater (except drinking water sources).	Aquifers (non-drinking water sources). Principal and secondary as depicted as coloured areas on aquifer maps – See 3.2.3 for further guidance.
9	**6**	Groundwater in Unproductive Strata	Groundwater not a pathway to another receptor.		*Where the groundwater is a pathway for another receptor assess against relevant criteria for the receptor.*		*N/A*	Uncoloured areas on aquifer maps.
10	**7**	Soil or Sediment (ie as a receptor rather than purely a pathway)	Contamination not leading to environmental damage (as per ELD), or not significantly affecting overlying water quality.	Contamination of 10-100 ha of land etc. as per Widespread Habitat; Contamination sufficient to be deemed environmental damage (Environmental Liability Directive).	Contamination of 100-1,000 ha of land, as per Widespread Habitat; Contamination rendering the soil immediately hazardous to humans (eg skin contact) or the living environment, but remediation available.	Contamination of >1,000 ha of land, as per Widespread Habitat; Contamination rendering the soil immediately hazardous to humans (eg skin contact) or the living environment and remediation difficult or impossible.	Land.	
11	**8**	Built Environment	Damage below a level at which designation of importance would be withdrawn.	Damage sufficient for designation of importance to be withdrawn.	Feature of built environment subject to designation of importance entirely destroyed.	*N/A*	Built Environment.	This is limited to Grade 1/Cat A listed buildings, scheduled monuments, conservation area, etc.

Row	DETR Table Ref	Receptor Type	Severity of Harm				Reference to Table 4.2	Comments
			Significant *While this level of harm might be significant pollution, it is not considered a MATTE.*	**Severe** *DETR Criteria - the lowest level of harm that might be considered a MATTE.*	**Major**	**Catastrophic**	*Corresponding Harm/Duration/Recovery row in Table 4.2.*	*The 'Severe' to 'Catastrophic' levels of harm are considered to be included as 'Serious' with respect to the COMAH definition of a major accident. Receptors include:*
		Severity Level	**1**	**2**	**3**	**4**		
12	**9**	Various Receptors. (Should not be used to identify and assess MATTE)	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	Refer to DETR. Standards relating to continuous emissions, contained in other EU legislation.
13	**10**	Particular Species (Note – these criteria apply nationally – ie England, Wales, Scotland)	Loss of <1% of animal or <5% of plant ground cover in a habitat.	Loss of 1-10% of animal or 5-50% of plant ground cover.	Loss of 10-90% of animal or 50-90% of plant ground cover.	Total loss (>90%) of animal or plant ground cover.	Land.	-
14	**11**	Marine	<2 ha littoral or sub-littoral zone, <100 ha of open sea benthic community, <100 dead sea birds (<500 gulls), <5 dead/significantly impaired sea mammals.	2-20 ha littoral or sub-littoral zone, 100-1,000 ha of open sea benthic community, 100-1,000 dead sea birds (500-5000 gulls), 5-50 dead/significantly impaired sea mammals.	20-200 ha littoral or sub-littoral zone, 100-10,000 ha of open sea benthic community, 1,000-10,000 dead sea birds (5,000-50,000 gulls), 50-500 dead / significantly impaired sea mammals.	>200 ha littoral or sub-littoral zone, >10,000 ha of open sea benthic community, >10,000 dead sea birds (>50,000 gulls), >500 dead / significantly impaired sea mammals.	Surface Water.	-
15	**12**	Fresh and Estuarine Water Habitats	Impact below that of Severity level 2.	WER Chemical or ecological status lowered by one class for 2-10 km of watercourse or 2-20 ha or 10-50% area of estuaries or ponds. Plus, interruption of drinking water supplies, as per DETR Table 6.	WER Chemical or ecological status lowered by one class for 10-200 km of watercourse or 20-200 ha or 50-90% area of estuaries and ponds. Plus, interruption of drinking water supplies, as per DETR Table 6.	WER Chemical or ecological status lowered by one class for >200 km of watercourse or >200 ha or >90% area of estuaries and ponds. Plus, interruption of drinking water supplies, as per DETR Table 6.	Surface Water.	-

Notes for Table 4.1

In applying the criteria on this sheet, an estimate of the mean population of species would be required, subject to data available. Variability in population might be relevant for later detailed scenario assessments, but a mean is more relevant to the initial selection criteria here.

When applying the criteria above, note that receptors are not mutually exclusive - for example some sites are both Ramsar and SSSI, while the 'widespread habitat' rows might apply irrespective of any specific designations.

To avoid disproportionate application of percentage criteria on small receptors, for small sites, the percentage criteria will not reduce the threshold to lower than half the area/distance criteria.

Glossary of Terms for Table 4.1

Littoral: pertaining to the shore of a lake, sea, or ocean.

Sub-littoral zone: from the low water line to the edge of the continental shelf.

Benthic community: is made up of organisms that live in and on the bottom of the ocean floor.

WER: Water Framework Directive.

SAC: Special Area of Conservation.

SPA: Special Protection Area.

RAMSAR: Wetlands of international importance.

NNR: National Nature Reserve.

MNR: Marine Nature Reserve.

BAP habitat: Biodiversity Action Plan habitat.

ESA: Environmentally Sensitive Area.

CDOIF Annex 4, Table 4.2 - Duration / Recovery Criteria

Description	Short-term Harm with such short recovery is not considered a MATTE	Medium term	Long-term	Very long-term
Harm Duration Category	1	2	3	4
Groundwater or surface water drinking water source (public or private)			Harm affecting drinking water source or SPZ: < 6 years	Harm affecting drinking water source or SPZ: >6 years
Groundwater (except drinking water sources): WER hazardous/non-hazardous substances	WER hazardous substances < 3 months	WER hazardous substances > 3 months	WER hazardous substances > 6 years	WER hazardous substances >20 years
	WER non-hazardous substances < 1 year	WER non-hazardous substances > 1 year	WER non-hazardous substances >10 years	WER non-hazardous substances >20 years
Surface water (except drinking water sources – see above)	< 1 year	>1 year	>10 years	>20 years
Land	< 3 years or < 2 growing seasons for agricultural land	> 3 years or > 2 growing seasons for agricultural land	>20 years	>50 years
Built environment	Can be repaired in < 3 years, such that its designation can be reinstated	Can be repaired in > 3 years, such that its designation can be reinstated	Feature destroyed, cannot be rebuilt, all features except world heritage site	Feature destroyed, cannot be rebuilt, world heritage site

N.B. New groundwater duration categories have been included in Version 2 of this guideline (c.f. Version 1) to set a duration threshold below which pollution of groundwater would not be considered a MATTE (irrespective of extent & severity), and to aid prioritisation of larger risk scenarios by further differentiating between different scales of a MATTE to groundwater.

Notes for Table 4.2

Separate criteria are provided in Table 4.2 depending on the nature of the site, be it land, surface water or groundwater - these shall be applied in conjunction with the corresponding harm criteria in Table 4.1.

Durations have been derived through working group discussion, and expert judgement with reference to other legal requirements. For example, the 6-year threshold for drinking water duration cat. 3 vs 4 has been derived considering the WFD European reporting cycle. The difference between groundwater hazardous substances and surface water is derived from the WFD directive duty to prevent entry to groundwater (see http://ec.europa.eu/environment/water/water-framework/info/intro_en.htm for discussion of the different approach to groundwater vs surface water). Land generally takes longer to recover naturally than surface water environments, so has longer duration thresholds. Groundwater generally has the longest recovery periods however due to the Water Framework Directive requirements to prevent pollution to groundwater more stringent thresholds have been applied.

It is common for the chemical quality of receptors to recover more rapidly than ecological/conservation status. Both chemical and ecological/conservation status should be considered, and the duration category should be based on the longest duration. Thus, even if the chemical quality of a receptor can recover in the short-term, ecological damage may have been caused which involves a longer-term recovery.

The criteria are based on estimating the likely time for the habitat (or species, etc.) to substantially recover (unaided) from the damage caused. For ecological criteria, complete recovery is difficult to judge and hence it is suggested that this should be clarified as >80% of the damage recovered. For chemical criteria (eg drinking water standards), recovery to below standard concentration should be considered.

For harm affecting drinking water, duration is also covered by the severity calculation (person-hours) in Table 4.1. For guidance on identifying water framework directive groundwater hazardous substances see (http://www.wfduk.org/stakeholders/mrv-work-area).

For harm to particular species, duration of recovery relates to the population as a whole. Further guidance on species recovery can be found in Environmental Damage Regulations Guidance, DEFRA (2009) - eg pages 85 onwards illustrate the issues using a Red Kite example.

The time specified for long and very long-term harm durations are stated as guides to help assess potential recovery time if the impact to the receptor was left to natural recovery alone. Consider the mechanisms that could influence this, such as (weathering, natural bio-remediation or breakdown and replenishment through flushing, dilution, repopulation of species from neighbouring areas etc.) and if these alone could achieve the natural recovery in this specified time. When demonstrating the tolerability of risk, credit can be claimed for intervention where this results in more rapid recovery.

CDOIF Annex 4, Table 4.3 - Method and Matrix for Deriving Receptor Tolerability for a MATTE (Based on Unmitigated Consequences)

1 Identify scenario and receptor affected.
2 Select Harm Severity Level (CDOIF Appendix 4, Table 4.1).
3 Select Duration / Recovery Category (CDOIF Appendix 4, Table 4.1).
4 Apply to Tolerability Assessment Matrix to determine tolerability boundaries.

Severity of Harm					
	4		C	D	D
	3		B	C	D
	2		A	B	C
	1	*Sub-MATTE Harm*			
		1	2	3	4
		Harm Duration Category			

Frequency at which the CDOIF consequence level is reached or exceeded	Frequency per receptor per establishment per year	
	Intolerable (greater than)	Broadly Acceptable (less than)
A	1.0 E-02	1.0 E-04
B	1.0 E-03	1.0 E-05
C	1.0 E-04	1.0 E-06
D	1.0 E-05	1.0 E-07

NOTE: The tolerability thresholds above are derived from DETR (1999) and the DETR (1998) Harm Report combined with a verification exercised based on 10 years of major accident hazard data in the UK.

Annex 5

Literature Review of Major Fires

A5.1 Literature Review of Major Fires

A5.1.1 The findings of a literature review of historical major accidental fires, in terms of their potential to result in environmental damage are summarised below.

Fires and Explosions involving Oil and Gas

- The Buncefield fire was the largest fire in Europe since the 2nd World War; it involved 22 storage tanks and consumed approximately 60 million litres of fuel oils and generated a large plume of smoke which could be seen from many kilometres away. The Major Incident Investigation Board's Final Report[3] concluded that there were, "no serious health effects reported among the public or the emergency response workers from exposure to the plume of smoke" and that, "any pollutants from the smoke plume were spread over a wide area and caused little damage to soil and plants". The other documents reviewed support this view. However, it was noted that lack of air quality impacts was likely to be due to the combination of the high buoyancy of the plume and the favourable meteorological conditions at the time of the incident and that ground level air pollution impacts would have been higher had this event occurred in the summer months.
- In-situ burning of crude oil, as a means of mitigating crude oil spills on water, has been studied extensively during the early 1990s by the U.S. Minerals Management Service and a consortium of 15 government agencies in the U.S. and Canada. Extensive sampling of downwind pollutants and burn residues were obtained from mesoscale trials[4]. Overall, indications from these trials are that emissions from in-situ burning are low in comparison to other sources of emissions and acceptable beyond 500 metres downwind.
- In an investigation into the potential hazards from operations in the Canvey Island/Thurrock area, the HSE noted that they anticipate that smoke from refinery fires would cause little more than irritation to people[5].
- Descriptions of a number of major accidents in the Major Hazard Incident Data Service (MHIDAS) accident database[6] do not refer to any environmental damage from oil fire smoke plumes. These include the largest crude oil tank fire in UK history, namely the Tank 11 fire at the Amoco Refinery in Milford Haven on 30 August 1983 (see below).
- The 1983 Amoco Refinery fire started in a crude oil storage tank (Tank 11). At the time of the fire the tank held 60,000 m^3 of material. The fire burned for over 12 hours before the floating roof lost structural integrity and sank into the crude oil. As the roof sank it trapped pockets of water under the oil, which later led to the rare phenomenon of multiple boil-overs. As noted above, the fire is not known to have resulted in significant off-site/environmental damage.
- An explosion at the Texaco Refinery, Pembrokeshire in July 1994 resulted in a major hydrocarbon fire and a number of secondary fires. Although the fires burned for over two days, the HSE report[7] into the incident noted that off-site damage was very limited.
- On 16 April 2001 a fire and explosion incident occurred at the ConocoPhillips Humber Refinery following the catastrophic failure of an overhead gas pipe. The explosion resulted in significant damage to the refinery and to properties nearby. The incident caused concern to residents in the vicinity and received national and local press coverage. The HSE report[8] into the accident noted that, although the incident had the potential to cause fatal injury and environmental impact, no serious injury occurred and there were only short-term impacts on the environment.

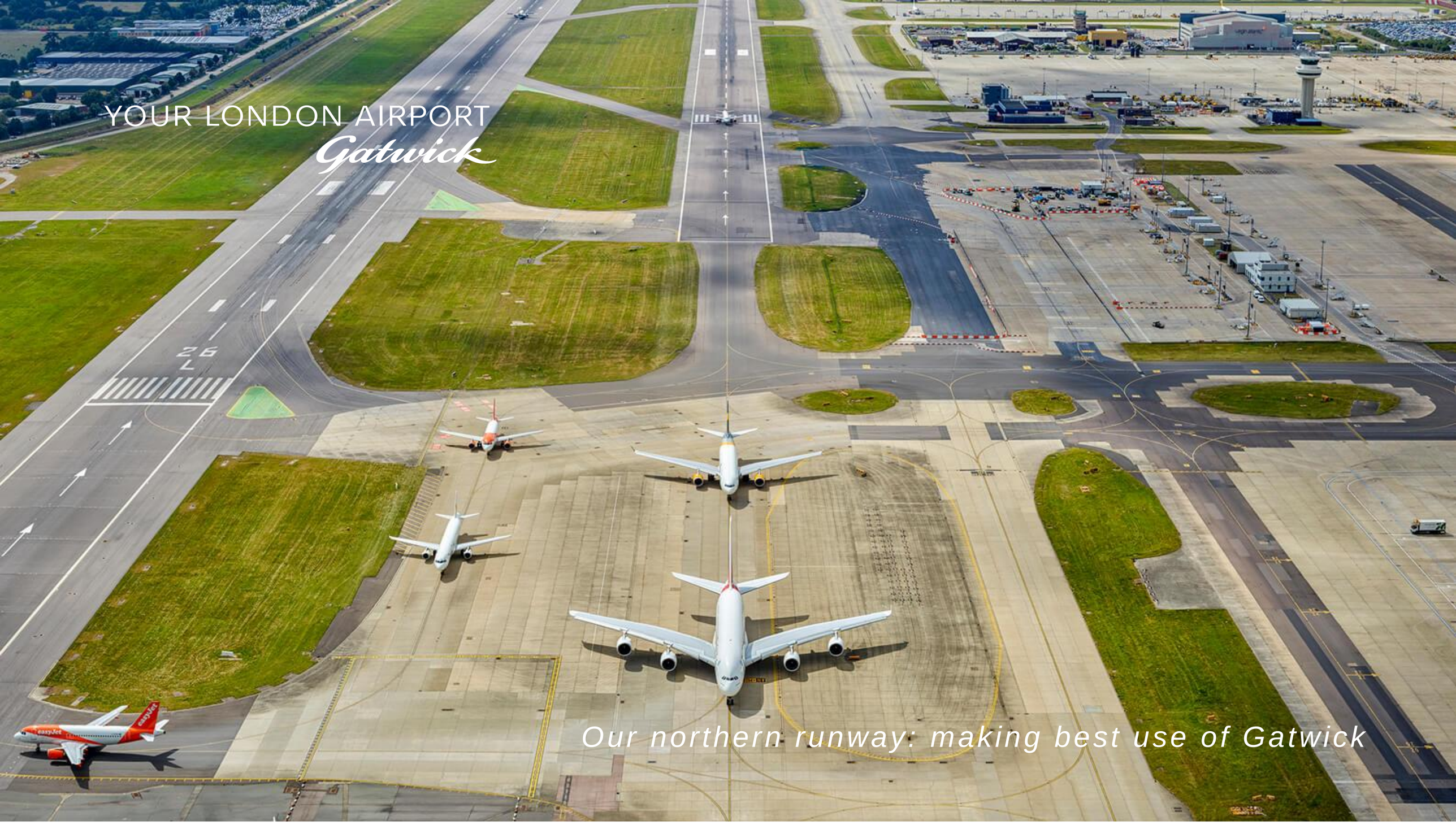
Fires Involving Chemicals and Plastics

- In July 1992 a series of explosions leading to an intense fire took place at Allied Colloid's raw materials warehouse in Bradford. The fire consumed in the region of 400 different chemicals and generated a black cloud of smoke that gave rise to concerns about environmental pollution and the toxicity of the fire plume. The HSE report into the incident[9] stated that there were no fatalities, however, 33 people (including 3 residents) were taken to hospital and treated for smoke inhalation. Eight properties immediately adjacent to the site were evacuated and approximately 2,000 residents were confined to their properties. After the fire, vegetation and vegetables in nearby properties and gardens was sampled, however the test results did not indicate the presence of any unsafe levels of deposition products (eg dioxins, PAH (Polycyclic Aromatic Hydrocarbons)). The HSE report suggests that despite the scale and nature of the fire, there were no significant or long-term effects to residents or the environment as a result of the fire.
- The British Standards Institute (BSI) has published a British Standard[10] (BS) to provide guidance to site operators, emergency planners and local authorities on the likely environmental impact of large-scale fires involving significant quantities of stored plastics. Due to the chemical characteristics of the materials involved and the use of additives in plastics manufacture, plastics fires are more likely to produce a greater range of toxic combustion products (eg hydrogen chloride, volatile organic compounds (VOCs), dioxins and metals) than hydrocarbon fires. Nonetheless, the BS is considered to be a useful source of information and a summary of some of the findings and examples of the effects of historical plastic fires are presented below.
- The BS concludes that impacts from short-term exposure, arising from atmospheric releases, are principally associated with asphyxiant gases, irritant gases and smoke. The toxic, carcinogenic and "exotic" organic releases (associated with plastics fires) are unlikely to be produced in sufficiently high concentrations to result in short-term impacts and toxicity would only be likely to occur through long-term exposure.
- In October 1995, a fire, involving 10,000 tonnes of materials, occurred in a warehouse of a polypropylene producer at the Wilton site in Cleveland (UK). The predominant materials involved in the blaze were polypropylene and building and construction materials and the firefighting operations lasted for eight hours and involved 200 fire fighters. Despite the occurrence of a large, black plume of smoke, it was concluded that the available evidence indicated that this

3 Buncefield Major Incident Investigation Board, The Buncefield Incident 11 December 2005 - The final report of the Major Incident Investigation Board, Volume 1, 2008 - available at http://www.buncefieldinvestigation.gov.uk/reports/volume1.pdf.
4 M. F. Fingas, et al., Emissions from Mesoscale In-situ Oil Fires: The Mobile 1991 and 1992 Tests, presented at 1993 Arctic and Marine Oil Spill Program.
5 An Investigation of Potential Hazards from Operations in the Canvey Island/Thurrock area, HSE 1978, ISBN 011883200X.
6 AEAT, MHIDAS Database.
7 The explosion and fires at Texaco Refinery, Milford Haven 24th July 1994, A report of the investigation by the Health and Safety Executive into the explosion and fires on the Pembroke Cracking Company Plant at Texaco Refinery, Milford Haven on 24th July 1994, HSE, 1997, ISBN 0 7176 1413 1.
8 Public Report of the Fire and Explosion at the CONOCOPHILLIPS Humber Refinery on 16 APRIL 2001, HSE.
9 Angus Fire Material Safety Data Sheet: F02-04/N2 (Tankmaster), Issue 8, 14.10.09 and http://www.angusfire.co.uk/utcfs/ws-404/Assets/5067-5%20Tankmaster.pdf; Angus Fire Material Safety Data Sheet: F04-01/N2 (Expandol), Issue 9, 19/05/06 and Angus Fire Material Safety Data Sheet: No:2037 (Polarfoam), 1/12/00.
10 BSI 7982:2001, Guidance on the Environmental Impacts of Large-Scale Fires Involving Plastics Materials, 2001.

incident had no measurable impact on the environment, or on the health of locals.

- In July 1997, a fire occurred at a plastics recycling facility in the urban area of Hamilton, Ontario, Canada. The fire lasted for over two days and involved a minimum of 400 tonnes of polyvinyl chloride and polyurethane foam. Initially the fire resulted in a dense black cloud of smoke rising hundreds of metres into the air before the wind transported the plume over the centre of the city. A strong night time temperature inversion resulted in reduced rise of the plume from the fire, which increased the impacts around the fire site. Four thousand people were evacuated, and a number of residents complained of respiratory symptoms. However, although a number of hazardous substances were emitted during the fire, no long-term or environmental health effects were reported as a result of the fire.



Preliminary Environmental Information Report
Appendix 5.4.1 Draft Energy Strategy

September 2021

Table of Contents

1 Introduction and Purpose

1.1 Introduction

1.1.1 This document forms Appendix 5.4.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of GAL's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides a draft energy strategy for the Project.

1.1.3 This draft energy strategy also supports Chapter 15: Climate Change and Carbon of the PEIR and provides an evidence base for a subset of the operational greenhouse gas (GHG) emissions that are assessed in that chapter, specifically the operational GHG emissions resulting from the operation of airport buildings, assets and vehicles, including energy use (heating/cooling/power), fuel consumption in vehicles and mobile plant, and fixed electrical ground power (FEGP).

1.1.4 The Project would involve the construction of buildings and other facilities. These buildings and facilities are described in Chapter 5: Project Description of the PEIR. These developments are likely to increase the demand and consumption of energy.

1.1.5 GAL has demonstrated its commitment to operating and developing the airport in a sustainable way and has communicated this through the publication of its 2nd Decade of Change sustainability policy (DofC), released in June 2021 (GAL, 2021). The strategy sets ten-year goals (2021 – 2030), including for direct GHG emissions from energy and fuel. The goals take into account the Project and confirm new targets, such as an 80% reduction on 1990 emissions by 2030 and GAL's commitment to reach net zero emissions before 2040.

1.1.6 GAL seeks to achieve its aims by investing in energy efficient buildings and technologies, improving the energy and GHG performance of its existing assets, and expanding its sourcing of energy from renewable sources.

1.1.7 The recently published 2nd Decade of Change sustainability policy sets a 2030 goal for Scope 1 & 2 emissions that is slightly more ambitious than the pathways contained within this draft energy strategy (which was prepared prior to publication of the latest DofC). As such, the CO_2 emissions pathway to 2040 that is demonstrated through the interventions, which form the basis for the strategy, do not, at the present time, fully align with those now represented in the latest DofC document. However, the draft energy strategy CO_2 pathway does demonstrate a progressive reduction of CO_2 emissions over time to 2050.

1.1.8 It is intended for the draft energy strategy work to be revisited and revised prior to submission of the application for development consent, both to set out the measures and actions needed to support delivery of the greenhouse gas emissions targets proposed within the second DofC policy and to provide the technical basis for the relevant parts of GAL's detailed Carbon and Climate Change Action Plan. This updated energy strategy will form part of the Environmental Statement.

1.2 Purpose

1.2.1 The aim of this appendix is to provide a summary of GAL's draft energy strategy. This draft energy strategy supports a pathway to net zero carbon for emissions associated with the airport's ground operations by 2050[1]. The estimated consumption of energy and fuel and the corresponding GHG emissions are extrapolated out from a baseline year of 2018 to 2050.

1.2.2 This draft energy strategy sets out the following.

- A summary of the policy context, drawing on the GHG policy context in the Climate Change and Carbon chapter of the PEIR and highlighting the implications for energy systems.
- A summary of GAL's achievements so far in its DofC sustainability policy related to direct GHG emissions and energy consumption, prior to the release of its second DofC sustainability policy.
- An outline description of GAL's existing energy infrastructure.
- Estimates of GAL's energy consumption and GHG emissions for a 2018 baseline year.
- An energy strategy for the future baseline scenario and for the Project, taking into account proposals for the development of the airport and predicted levels of aircraft operations and passenger throughputs in the future baseline and with Project scenarios.
- A summary of the estimated energy consumption and GHG emissions for the two scenarios out to 2050.
- Conclusions and next steps for GAL to develop a robust energy strategy to support its DCO application.

1.2.3 There are some important groupings and designations for energy systems, energy consumption and GHG emissions within this appendix:

- GAL infrastructure: refers to buildings owned and operated by GAL and third-party occupied buildings that are supplied with energy via GAL-owned electricity and gas infrastructure.
- GAL infrastructure emissions: refers to emissions from this system expressed as CO_2e. GAL has direct control over its own emissions and influence over third party emissions from GAL infrastructure.
- Airport stand-alone third parties: this refers to buildings operated by third parties that are supplied with energy by electricity and gas infrastructure that is not owned by GAL. GAL does not have direct control over these emissions.

[1] This will be updated to include changes to align the pathway with net zero carbon for 2040 in line with the latest DofC

- Airport or Gatwick: refers to the entire airport ie the combination of GAL and third parties described above.

1.3 Policy Context

1.3.1 The policy context for GHG is set out in the Climate Change and Carbon chapter of the PEIR (Chapter 15) and it sets much of the context for GAL's developing energy strategy. Key policy drivers for GAL's energy strategy (in addition to its own sustainability policy and practices) are summarised below.

1.3.2 The GHG policy context in the PEIR notes the amendment to Section 1 of the Climate Change Act 2008 and the UK's national commitment to ensuring the net UK carbon account is 100% lower than the 1990 baseline by 2050. This is likely to result in tighter interim carbon targets for all sectors of the economy, including aviation.

1.3.3 To ensure progress is achieved towards meeting the national climate change target by 2050, the Committee on Climate Change (CCC) sets five-yearly carbon budgets, which currently run through until 2037 and set out budgets by sector.

1.3.4 These target reductions (all relative to 1990 levels) are:

- 3rd carbon budget (2018 to 2022) - 37% reduction by 2020;
- 4th carbon budget (2023 to 2027) - 51% reduction by 2025;
- 5th carbon budget (2028 to 2032) - 57% reduction by 2030; and
- 6th carbon budget (2032 to 2037) - 78% reduction by 2035.

1.3.5 The UK's economy-wide goal to reach net zero GHG emissions by 2050 was set out in July 2019 following the CCC's 'Net Zero' report (CCC, 2019).

1.3.6 The Airports National Policy Statement (NPS) (Department for Transport, 2018)((paragraph 5.70) sets out the GHG assessment requirements for airport development and states that:

'the Government's key objective on aviation emissions is to ensure that the aviation sector makes a significant and cost-effective contribution towards reducing global emissions'

Related to an airport's energy strategy, the Airports NPS (paragraph 5.78) notes that:

'the Secretary of State will need to be satisfied that the mitigation measures put forward by the applicant are acceptable, including at the construction stage.'

1.3.7 Mitigation measures noted in the Airports NPS that are relevant to GAL's energy strategy include:

- zero or low-emission hybrid or electric vehicle use, charging and fuel facilities; and
- reduced emissions from airport buildings (for example from lower carbon heating).

1.3.8 The National Planning Policy Framework (NPPF) (MHCLG, 2021) supports and advises on the transition to a low carbon future. Paragraph 154 states that:

'new development should be planned for in ways that … can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the government's policy for national technical standards'

1.3.9 Paragraph 155 states that:

'To help increase the use and supply of renewable and low carbon energy and heat, plans should:

(a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);

(b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and

(c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.'

1.3.10 Paragraph 157 of the NPPF also states that;

'In determining planning applications, local planning authorities should expect new development to:

(a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and

(b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption'

1.3.11 The Project is a Nationally Significant Infrastructure Project and therefore, an application for development consent will be made under the Planning Act 2008 and determined in accordance with the relevant National Policy Statement(s). As such, the local development plan is not the starting point for the consideration of an application for development consent. Nevertheless, local policy has been considered through the EIA process where relevant.

1.3.12 Plans and policies relevant to GHGs for all adjacent local authorities have been considered in the Climate Change and Carbon chapter of the PEIR. In this appendix, however, only appropriate policies from Crawley Borough Council are included as this is the local authority in which the airport is located.

1.3.13 In July 2019, Crawley Borough Council declared a climate emergency and made a commitment to reduce emissions from its activities by at least 45% by 2030 and achieve net zero carbon by 2050. The relevant planning policies in its Local Plan to 2015-2030 (Crawley Borough Council, 2015) for new developments related to energy are as follows.

- Policy ENV6: Sustainable Design and Construction – this sets the requirement for new non-domestic buildings to achieve BREEAM Excellent (for water and energy credits) where technically and financially viable, together with a range of other requirements relating to using renewable and low carbon energy technologies, improving existing buildings and establishing district energy networks within heat priority areas or near potential sources of waste energy, with futureproofing developments for new connections.

- Policy ENV7: District Energy Networks – sets requirements for the development of district energy networks, including connections to existing networks and the establishment of new ones, together with the need to provide alternative approaches to decentralised low carbon energy where district networks are not viable.

1.3.14 The Department for Transport's Decarbonising Transport plan (Department for Transport, 2021) will be considered in the development of this draft energy strategy and ahead of the submission of the application for development consent.

1.4 Gatwick's Decade of Change

1.4.1 GAL has strong and effective leadership and governance structures in place that are delivering positive change and improvements for energy and GHG emissions across the airport. GAL's overarching vision is '*to be an airport of the future and a model for sustainable growth'.*

1.4.2 The DofC sustainability policy, first established in 2010, set ten-yearly goals including for the reduction of carbon emissions and energy consumption in airport ground operations. The goals and progress against them for carbon and energy in the first and second DofC strategies for 2020 and 2030 respectively are summarised in Table 1.4.1.

1.4.3 Since 2010, the airport's annual passenger throughput has increased from 31 million passengers per annum (mppa) to over 46 mppa (in 2019). Despite this, GAL has achieved a 11.7% reduction in airport energy consumption, and a 40% reduction in energy consumption per passenger.

1.4.4 As of 2019, GAL has also achieved a 54.5% reduction in its direct carbon emissions from fuel and energy, compared to a 1990 baseline, and over 70% decrease in fuel and energy carbon emissions per passenger. It has also obtained and retained a level 3+ 'Neutral' airport carbon accreditation since 2017. This is achieved by continuing to reduce direct emissions, continuing to purchase 100% renewable electricity via a power purchasing agreement (PPA) and offsetting remaining direct emissions with gold standard carbon offsets.

1.4.5 Energy efficiency continues to be a priority focus to reduce carbon emissions from operations within GAL's direct control, such as the airfield, car parks, terminals and administration buildings. GAL has used its business-wide capital investment plan to invest in energy efficiency so that improvements are built into all new developments, refurbishments and maintenance driven asset changes. A summary of investments in energy efficiency over the last decade is provided below.

1.4.6 Since 2010 significant investment has been made in lighting efficiency through the use of light emitting diode (LED) technology and improved lighting control. On the airfield, GAL's runway, many taxiways and all aircraft stands have LED lighting. New lighting has been provided to all GAL's long-stay surface and multi-storey car parks. Within the terminal and admin buildings significant areas have been upgraded to LED lighting with centralised lighting control systems as part of refurbishment and maintenance programmes.

Table 1.4.1: Decade of Change Targets

Topic	1st DofC Target (to 2020)	2nd DofC Target (to 2030)	1990 Baseline	Progress (to 2019)
Energy	20% reduction in airport energy consumption (against 1990 baseline) by 2020 Benchmark metric **4 kWh** per passenger 25% of airport energy from renewables	Sourcing **50% of airport network electricity** and **50% of heat network** from UK **renewable** sources (onsite generation and PPAs) by 2030	Total Energy (gas & electricity combined) **240GWh**	Total Energy (gas & electricity combined) **212 GWh** Represents a **11%** reduction (from 1990 baseline) **4.55 kWh** per passenger
Carbon	Reduce GAL scope 1& 2 carbon emissions by 50% (relative to 1990 baseline)	Reduce GAL scope 1& 2 carbon emissions by further 25% by 2030 (-80% relative to 1990 baseline) as part of the goal of reaching net zero by 2040	15,001 tCO_{2e} (Scope 1) 67,842 tCO_{2e} (Scope 2) 82,843 tCO_{2e} (Total)	**37,666 tCO_{2e}** (Total) **54.5%** reduction on baseline
				100% renewable electricity (70% of airport energy use) purchased to run the airport since 2013; backed by Renewable Energy Guarantee of origin certificates

1.4.7 In 2016, GAL devised a strategy to replace life expired centralised gas fired boilers serving its South Terminal heat network with 'local' low temperature high efficiency gas boilers. The replacement programme has started and 30% of the heating requirement previously provided by the heat network is now served by local boilers. This replacement programme will be reviewed in light of the DofC emissions targets.

1.4.8 GAL has a large asset base and asset replacements provide an ideal opportunity to introduce energy efficiency solutions to the airport as a whole entity. Over the last decade there has been significant investment in new baggage and security systems, lifts and escalators, HVAC systems and system controls.

1.4.9 Where terminal or administration buildings are being refurbished GAL has also taken the opportunity to upgrade its assets. Examples include the North Terminal & Pier 5 redevelopment projects, the replacement of South Terminal Pier 1, the Airline Moves programme and more recently a full mechanical and electrical refurbishment of its airfield maintenance base and fire station.

1.4.10 Through its Capital Investment Programme, GAL is also investing in electric vehicle infrastructure for airport operations and public transport services. There are presently around 200 sockets and charge-points on the airfield, and GAL is working with its airfield partners to develop additional provision.

1.4.11 Almost 40% of airfield ground services equipment (GSE) at the airport is already electric, including baggage tugs and a growing number of pushback tugs and high-loaders. The conversion of GAL fleet vehicles to electric or ultra-low emission equivalent has commenced. Gatwick expects that by 2030 all light and medium duty vehicles used on the airfield will be electric or ultra-low equivalent, as required by the 2nd DofC.

1.4.12 GAL has provided rapid-charging infrastructure for the official airport taxi provider, upgraded existing charge-points in short-stay car parks and introduced electric charging as part of the valet parking service. Metrobus, which serves the local Fastway 10 and 20 routes to and from the airport, have invested £10M in ultra-low and zero emissions buses in the last year and have secured partnership funding for 20 hydrogen buses. Moreover, GAL is collaborating with GRIDSERVE to provide an Electric Vehicle Charging forecourt at Gatwick in 2021, which will be the first of its kind at any UK airport.

1.4.13 All new developments at the airport must align with GAL's 2nd DofC objectives and targets and consider social, economic and environmental impacts in equal measure. This includes considering the embodied carbon emissions and the wider impact of material selection and procurement. The sustainability of projects is reviewed at all key phases.

1.4.14 In 2019 GAL's long-standing Section 106 agreement with Crawley Borough Council and West Sussex County Council was extended for the period to 2022. This continues to define how GAL's operation, growth and environmental impacts should be managed. The agreement also helps to ensure that GAL's approach to sustainable development is aligned with those of its local authority partners. This alignment included initiatives to reduce GAL's emissions impact, such as the provision of fixed electrical ground power (FEGP) units to supply any new aircraft stands and to ban the use of diesel-powered ground power units in any circumstances where FEGPs are available.

1.4.15 In 2018, with 46.1 million passengers, GAL's combined Scope 1 and 2[2] emissions were 50.3% lower than the 1990 baseline, when Gatwick had 20.4 million passengers a year. This means that GAL achieved its 1st DofC emissions goal before 2020.

1.4.16 GAL is continuing to build on this progress and has developed further goals in its second DofC strategy. An ambitious energy strategy that is reviewed and updated as new technologies emerge at scale will contribute to delivering on further emission reduction targets over the next decade and beyond.

1.5 Existing Energy Infrastructure and Usage

1.5.1 Energy is currently delivered to the airport via grid supplied electricity and gas as well as from a small amount of on-site generated renewable energy.

Electricity Infrastructure

1.5.2 UK Power Networks (UKPN) is the Distribution Network Operator (DNO) that operates the off-site electricity network around the airport. The airport is supplied from two 132 kV UKPN substations: Three Bridges and Smallfield. Both are supplied from a National Grid 400 kV substation at Bolney.

1.5.3 GAL has a long-term agreement with UKPNS for UKPNS to own, maintain and operate defined electrical infrastructure. Any on-airport electrical infrastructure development is undertaken in conjunction with UKPNS. Within the site boundary, all GAL facilities and the majority of on-airport third parties are supplied by the airport's HV and LV networks.

1.5.4 GAL recently undertook a review of power requirements to meet current and future demand. The site's capacity was recently increased to provide 'firm' supply serving current demand. GAL proposes to increase this proportionally to meet future demand, accounting for both baseline growth and the Project.

1.5.5 GAL will continue to undertake regular reviews of the power requirement to ensure alignment with the Capital Investment Programme, draft energy strategy (moving to Energy Strategy) and the Project Programme.

Gas Infrastructure

1.5.6 Within the site boundary, gas is supplied direct to multiple GAL and third party owned/leased airport buildings from national gas distribution networks operated by SGN. Gas is primarily used for heating, hot water generation and commercial catering. GAL operates numerous gas fired boiler plant that feeds district and local heat networks to its buildings; these operate at high, medium and low temperatures.

1.5.7 The heat networks feed a broad range of plant & equipment used for heating GAL's buildings. GAL also operates a number of small private gas networks to supply third party commercial catering facilities and local boiler houses.

1.5.8 In South Terminal, GAL has adopted a 'boiler decentralisation programme' to replace life expired large, centralised boiler plant feeding a high temperature network with smaller boiler houses housing high efficiency boilers feeding local plant at low temperature.

On-site Renewables

1.5.9 There is a 300m² photovoltaic (PV) ground mounted array installed at the north west corner of the airport[3], with a capacity of 50 kW peak. The airfield operations building, which is an exemplar in terms of a practical, low carbon building, also has a PV array and solar water heating installation. In addition, the

[2] GHG Protocol Scope 1 and 2 emissions refer to those. emissions from GAL fuel and energy use. Indirect emissions, including airport third parties' use of fuel and energy, travel by passengers and airport staff to the airport, and GAL business travel, are reported in Scope 3.

[3] This array may be removed as part of future airport development. However, the current energy strategy proposes large-scale deployment of PV across building roof and ground areas.

recently completed Boeing hangar has incorporated a roof-mounted PV array, ground source heat pumps and rainwater harvesting technology to achieve a BREEAM excellent standard.

Vehicle Fuel

1.5.10 There is an on-site petrol and diesel fuel storage and dispensing facility for provision of GAL and third-party operational vehicles, including hybrid-electric and ultra-low emission fuel vehicles.

2 Baseline Assessment

2.1 Current Energy Consumption

2.1.1 An energy baseline has been developed for energy consumption on the airport for the 2018 calendar year (January to December). The energy baseline includes the following consumption for GAL and for airport third parties.

Baseline Electricity Consumption

2.1.2 Gatwick's baseline energy consumption has been calculated based on metered data when available and was integrated with estimates from benchmarks.

2.1.3 GAL's electricity data include for provision of power for lighting, baggage systems, lifts and escalators, safety systems, IT and controls, ventilation systems and cooling system.

2.1.4 Fixed electrical ground power (FEGP) used for aircraft group operations has been included in the baseline assessment, while pre-conditioned air (PCA) has not been included in the assessment.

2.1.5 Electricity generation from the existing on-site PV array is around 52,000 kWh annually, which makes a small contribution to the total airport energy consumption.

2.1.6 Gatwick's baseline year electricity consumption (including FEGP) is estimated at approximately 150 GWh.

Baseline Natural Gas Consumption

2.1.7 For natural gas, Gatwick's baseline energy consumption was calculated based on metered data when available and was integrated with estimates from benchmarks.

2.1.8 The baseline natural gas consumption has been adjusted using degree days.

2.1.9 Gatwick's (GAL and third parties) baseline year natural gas consumption is estimated at approximately 70 GWh.

Baseline Fuel Consumption for Airside Vehicles

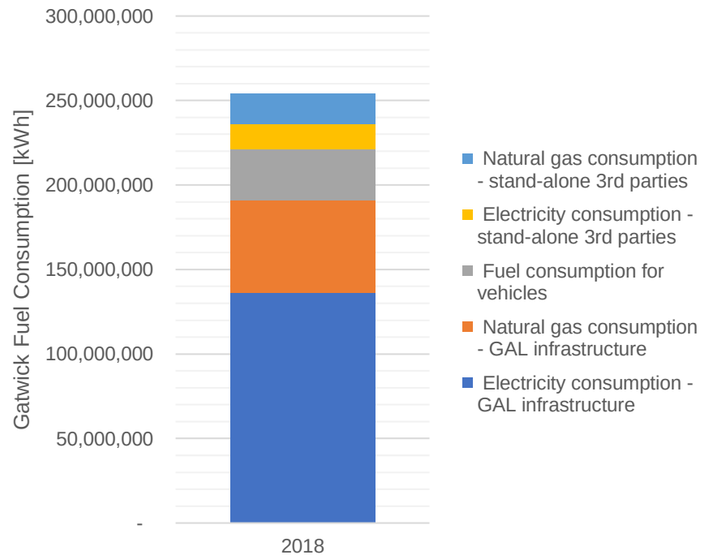
2.1.10 Fuel consumption data for airport operations vehicles were gathered as part of the baseline assessment. This includes diesel, petrol and AdBlue fuel consumption for airside vehicles.

2.1.11 Gatwick's baseline fuel consumption for airside vehicles is estimated at approximately 30 GWh.

Baseline Energy Summary

2.1.12 Gatwick's total baseline energy consumption for 2018 is estimated to be approximately 250 GWh (Diagram 2.1.1).

Diagram 2.1.1: Gatwick's Baseline Energy Consumption



3 Energy Strategy

3.1 Overview

3.1.1 GAL aims to continue to reduce its direct scope 1 and scope 2 emissions, including from the power and energy used on site and in its operational vehicle fleets and equipment, in line with its commitment to be net zero before 2040. GAL's energy strategy will continue to evolve and respond to local and national changes to energy infrastructure and to future improvements in the efficiency of energy systems. GAL is planning to carry out regular reviews of the energy strategy, so it continues to support delivery of GAL's carbon emission targets.

3.1.2 In parallel with its plans for the airport, GAL recognises that the UK's energy infrastructure is going through a fundamental transition as the electricity grid continues to decarbonise and options are sought nationally and locally to decarbonise heat. This transition, the rate of progress and the nationally significant decisions along the way, such as the potential for hydrogen to replace natural gas across the UK, have profound implications for heating in the UK, not just GAL's energy strategy. GAL's energy strategy must therefore be adaptable to the inevitable changes that are coming, both in its demand for energy and the way this is generated and supplied.

3.1.3 Irrespective of the Project, GAL is committed to continuing to explore ideas and taking practical steps to investing in efficient energy technologies, improving the energy performance of existing assets and sourcing energy from renewable sources.

3.1.4 The draft energy strategy is based on the following hierarchy.

- **Energy efficiency** - in design, construction and operation through highly efficient building envelopes, passive design to reduce heat gains and losses, widespread use of heat recovery, efficient plant and systems, LED lighting and smart building management systems.
- **Efficiency of energy supply** – through on-site generation and use of power and heat, with low-carbon heat exported to other users, including the potential for district heating initiatives and the use of smart technology in the electricity and heat networks to support demand management and the matching of supply to demand.
- **Renewable energy** – generated from locally produced biogas from on-site waste and photo-voltaic systems, heat pumps and other low and zero carbon sources integrated into the design of new facilities.

3.1.5 The sections below describe GAL's draft energy strategy in broad principle for the baseline scenario and the Project. This is followed by a summary of the estimated GHG emissions that support the GHG assessment in the Climate Change and Carbon chapter of the PEIR.

4 Future Baseline

4.1 Overview

4.1.1 The future baseline scenario represents the future for the airport without the Project. In this scenario some building work is planned, but this is far less significant than is planned for the Project. The future baseline scenario is described in full in the Chapter 4: Existing Site and Operation of the PEIR.

4.1.2 The draft energy strategy for the future baseline scenario incorporates the following energy interventions for existing buildings / areas.

- Continue with 100% procurement of renewable electricity via supply agreements, gradually increasing the % sourced from 'natural' renewable sources. Investigate purchasing electricity through power purchase agreements (PPAs) to support the growth of 'additional' renewable electricity capacity in the UK and the region.
- Implement additional on-site PV where feasible and financially viable to integrate into new or existing facilities.
- Continue to implement energy efficiency measures in existing buildings where technically practical and financially viable. These could include a range of energy retrofits (such as LED light replacements, installation of variable speed drives and improvements in insulation, ventilation and heat recovery improvements and upgrades) as well as optimisation of building management systems (BMS) and controls.
- Improve heat generation and supply efficiencies as older gas boilers and heat networks are replaced with the latest technology.
- Improve cooling efficiencies as existing chillers and cooling networks are replaced with the latest technology and demand-based controls are implemented (through additional variable speed secondary pumps).
- Continue electrification programme of vehicles and ground support equipment. This would be particularly applicable for light duty vehicles, and common types of ground support equipment as electric versions are readily available on the market, while some large vehicles including buses may require ultra-low fuels as a bridge to electrification.

4.1.3 In addition, GAL will implement and/or influence a range of energy interventions for new buildings that are part of the baseline. These will include:

- Designs will be driven to improve the inherent energy efficiency performance of new buildings, using sensible and practical approaches to passive design and the appropriate incorporation of technology.
- The building regulations are anticipated to change over time, and they will set the minimum standards for buildings. GAL will continue to seek to go beyond the legal minimum, aspiring to achieve high energy performance standards that will enable long term efficient use of energy as well as supporting, from an energy perspective, high ratings of wider environmental standards such as BREEAM, where economically and practicably feasible.
- The decarbonisation of the national grid is expected to make a major contribution to reducing GHG emissions from the direct use of electricity, in electric based cooling systems and in electric based heating via air source heat pumps.

4.1.4 Based on the forecast increase in passengers and air traffic movements in the future baseline scenario and the implementation of the measures described above, the aggregated effect on future baseline energy demand and consumption is expected to be as follows.

- Increase in electricity requirements for buildings. This is due to the increase in passenger numbers and air traffic movements and the associated increased requirements for functions such as lighting, ventilation, baggage, vertical transport, cooling and FEGP. This also includes the development of new buildings already planned as part of Gatwick's Capital Investment Programme (CIP). This increase is only marginally mitigated by the energy efficiency measures.
- Increase in electricity requirement for airside vehicles and decrease in diesel/petrol requirements, due to gradual electrification of light and medium duty vehicles and equipment used airside.
- Decrease in overall carbon emission (using BEIS carbon factors) mainly due to the grid decarbonisation, from around 1.0 $kgCO_2e$ per PAX in 2018 to around 0.2 $kgCO_2e$ per PAX in 2050. This includes GAL emissions as well as emissions from stand-alone third parties such as hangars and hotels.

4.1.5 GHG emissions have been estimated for the future baseline scenario and are summarised in Diagrams 5.2.1 to 5.2.4, below.

5 The Project

5.1 Overview

5.1.1 The Project would involve alterations to the existing northern runway and the development of a range of infrastructure and facilities, including terminal extensions, a new pier, hotels, offices, car parks, a hangar, and the replacement of facilities displaced by alterations required to the airfield, as described in Chapter 5: Project Description of the PEIR.

5.1.2 The Project would bring cost efficiencies and investment that would support a more ambitious level of energy interventions to support GAL's aims and pathway to zero carbon by 2050 at the latest.

5.1.3 Analysis of projections of GHG emissions for the future baseline scenario and the Project indicates that the Project would deliver accelerated reductions in GHG emissions. Summary graphs of this analysis are shown in Diagrams 5.2.1 to 5.2.4, below. Diagram 5.2.5 compares the estimated GHG emissions in 2050 for the future baseline and Project scenarios and shows that the Project is predicted to result in a net decrease of 10,000 tonnes of GHG emissions compared to the baseline.

5.1.4 In addition to applying the future baseline interventions outlined in 4.1.2 and 4.1.3 to the Project, GAL will explore interventions that go beyond those in the future baseline scenario.

- A greater implementation of PV compared to future baseline scenario.
- A higher number of energy efficiency measures in existing buildings as part of the terminal extension and retrofit works involved in the Project.
- Additional improvements in cooling efficiencies as compatible cooling systems are combined, integrating the existing cooling systems with the new ones required for the expansion of new buildings.
- Evaluate available and financially viable options for provision of heating/cooling to aircraft on stand, to reduce and over time eliminate use of aircraft auxiliary power unit (APU) for this purpose.
- Notwithstanding the potential for hydrogen (combined with carbon capture, utilisation and storage) to decarbonise the UK's primary thermal energy vector (currently served by 100% natural gas), the draft energy strategy includes a transition of GAL's heating systems from a reliance on natural gas to electric heat pumps (using a variety of heat sources, including air, water and sewage), retaining some of the most recent gas boilers as back-up/peaking plant. Given the complexity and existing temperature regime of GAL's heat generation, distribution and delivery systems, this transition presents a significant technical and financial challenge.
- GAL will also explore the potential to implement an additional district heating network or networks (DHN) for the provision of thermal energy for space heating and hot water (DHW) to several buildings from existing and new energy centres drawing on a variety of technologies and heat sources. Understanding the linear heat density, technical feasibility and economics of potential networks; including the capital costs, demand, consumption quantum and patterns and the potential for operational disruption, will inform their potential.
- An accelerated rate of electrification for airside vehicles and equipment by requiring all airside vehicles and equipment to meet ultra-low emission standards by 2030 and achieve at least 50% electrification for larger vehicles, buses and GSE by 2038.
- In addition, GAL will explore energy interventions for new buildings like those in the future baseline scenario (4.1.2), with some changes to improve efficiencies, such as the use of ground source (GSHP) and water source heat pumps (WSHP) prioritised over air source heat pumps (ASHP) to achieve higher seasonal performance factors.

5.1.5 Based on the passengers and air traffic movement forecasts, the aggregated impact on future energy demand, consumption and GHG would be as follows.

- Increase in electricity requirements for buildings. This is due to the increase in passenger numbers and the associated increased requirements for functions such as lighting, ventilation, baggage, vertical transport, cooling and FEGP. This is only marginally mitigated by the energy efficiency measures.
- Increase in electricity requirement for airside vehicles and decrease in diesel/petrol requirements, due to gradual electrification of cars, buses and other vehicles used airside.
- Decrease in natural gas requirements and increase in electricity requirements for space heating and domestic hot water, due to partial electrification of heat supply in existing buildings and total electrification of heat supply in new buildings.
- Decrease in overall carbon emission (using BEIS carbon factors) mainly due to the grid decarbonisation, from around 1.0 $kgCO_2e$ per PAX in 2018 to around 0.2 $kgCO_2e$ per PAX in 2050. This includes GAL emissions as well as emissions from stand-alone third parties such as hangars and hotels.

5.2 Summary of Estimated GHG Emissions

5.2.1 Drawing on the proposals in the future baseline and the Project scenarios (as set out in the Project Description in Chapter 5 of the PEIR) and the anticipated interventions identified in this draft energy strategy, estimates of the consumption of electricity, natural gas and vehicle fuel have been extrapolated from the 2018 baseline year to 2050. These estimates have been used to calculate corresponding GHG emissions over the same timeline, using BEIS and market-based grid carbon factors (Annex 1).

5.2.2 These estimates of fuel consumption and GHG emissions provide the basis of some of the GHG assessment in Chapter 15: Climate Change and Carbon of the PEIR. Summary graphs of this analysis for fuel consumption and GHG emissions, reported as $kgCO_2e$ per year, are set out in Diagrams 5.2.1 to 5.2.4, below.

Diagram 5.2.1: Estimated Fuel Consumption for the Future Baseline Scenario

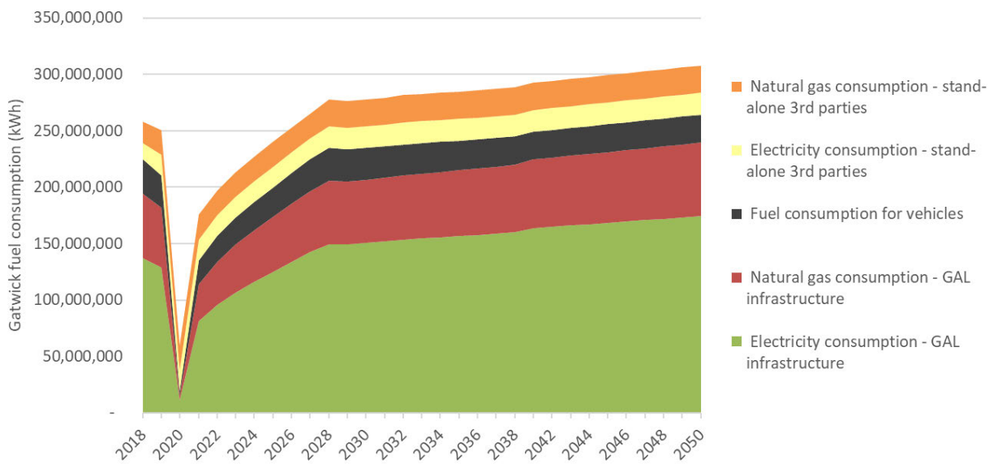


Diagram 5.2.2: Estimated Fuel Consumption for the Project

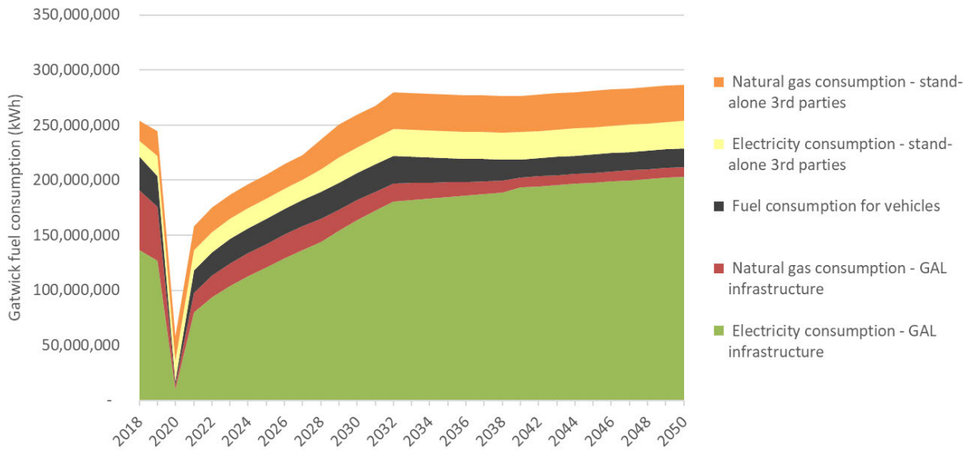


Diagram 5.2.3: Estimated Emissions Expressed as $kgCO_{2e}$/year for the Future Baseline Scenario

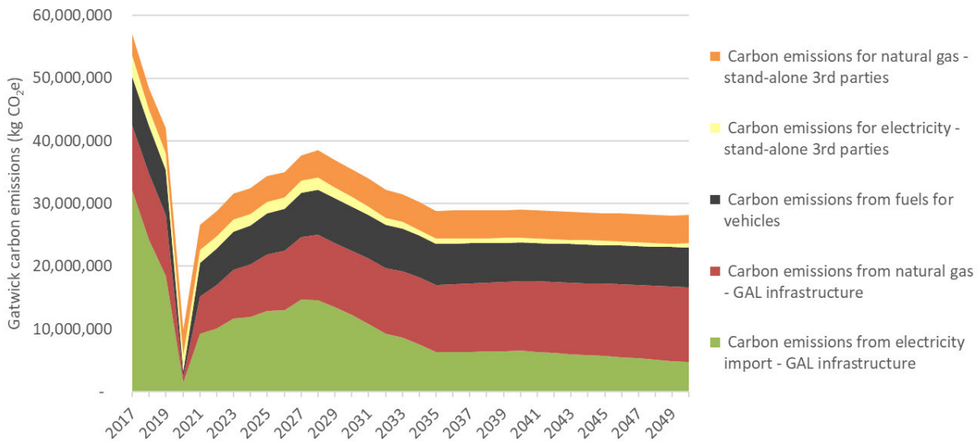


Diagram 5.2.4: Estimated Emissions Expressed as $kgCO_{2e}$/year for the Project

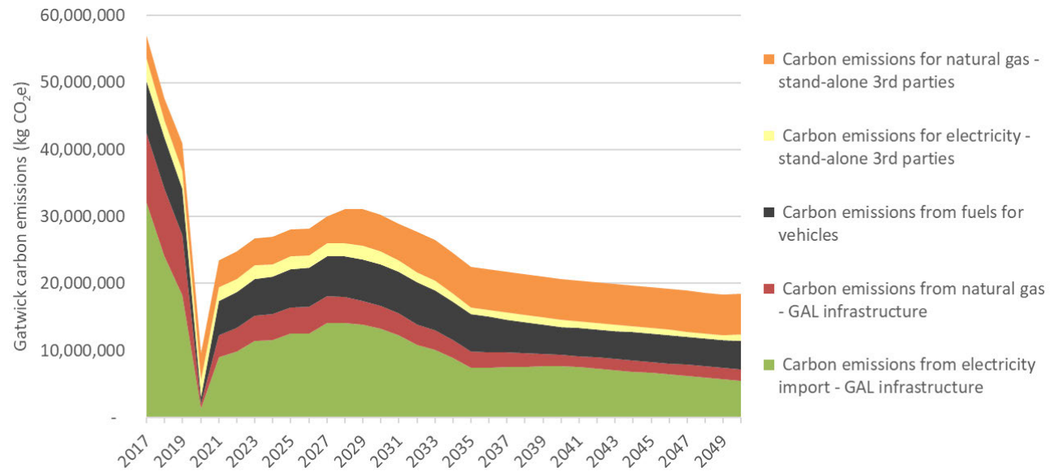
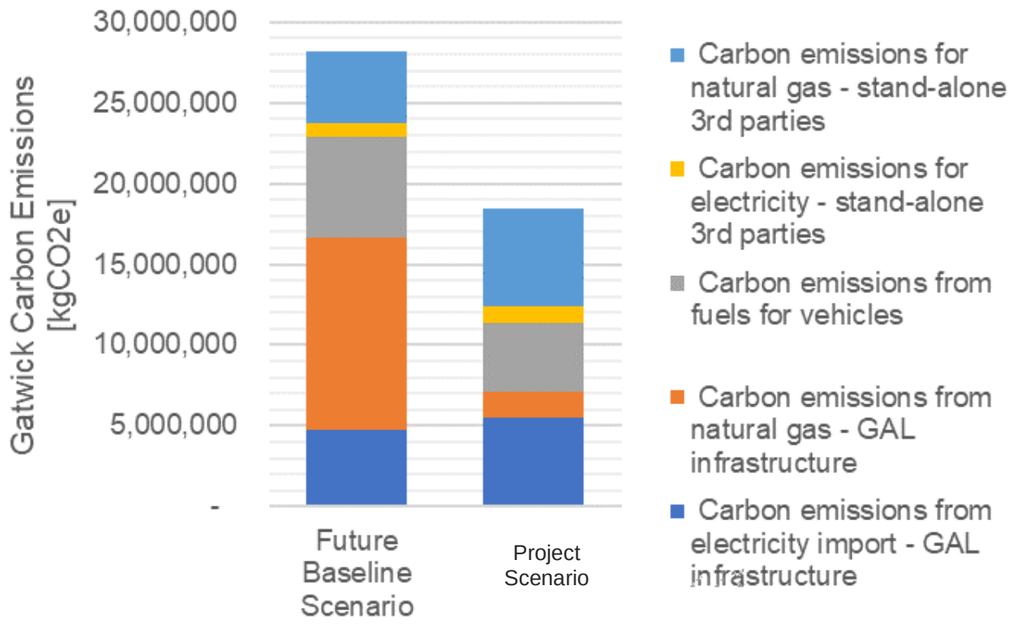


Diagram 5.2.5: Estimated Emissions Expressed as $kgCO_2e$/year in 2038 for the Future Baseline Scenario and the Project



6 Conclusions

6.1 Energy Strategy Summary

6.1.1 The UK's energy infrastructure is going through a process of rapid and fundamental change and the recent amendment to the Climate Change Act 2008, which sets a net zero carbon target for the UK by 2050, has provided further emphasis to the need for immediate action to decarbonise.

6.1.2 Government has adopted the Climate Change Committee 's recommended carbon budgets out to 2035 and the 2050 economy-wide goal of net zero GHG emissions by 2050. However, post-2035 carbon budgets and Government policy roadmaps are not yet in place across all sectors to drive the transition that is required at the pace necessary to hit the 2050 target.

6.1.3 GAL is committed to achieving net zero carbon before 2040 for direct emissions from ground operations. It has demonstrated its intent and capability to improve its sustainability performance across a range of topics, including energy efficiency and GHG emissions, through its 1st DofC sustainability policy. These intents are carried forward through its 2nd DofC policy, which aims at achieving net zero before 2040. GAL achieved its target of reducing its scope 1 & 2 carbon emissions by 50% (relative to a 1990 baseline) in 2018, two years in advance of the target year 2020.

6.1.4 Gatwick Airport is a highly complex, operational site. Its energy infrastructure for both electrical and thermal energy is complex, with myriad systems of varying age, condition, energy and carbon efficiency and ease of replacement or retrofit.

6.1.5 GAL is committed to developing a very progressive energy strategy in support of the application for development consent for the Project. This strategy needs to be adaptable to the national energy transition and must be able to respond to local changes and technological improvements. This strategy will be refined and finalised for the DCO submission, and with a view to it being regularly reviewed thereafter.

6.1.6 The analysis behind the development of draft energy strategies for the future baseline scenario and the Project has demonstrated that there are opportunities across new buildings and infrastructure and the retrofit of existing buildings and energy systems to make substantial carbon savings for GAL and to put it on a largely decarbonised emissions pathway before 2050.

6.1.7 A comparison of the analysis for the future baseline scenario and Project shows that the consumption of energy for the Project is predicted to be lower than for the future baseline and that the greater displacement of natural gas by electricity leads to an accelerated reduction and an overall smaller quantity of GHG emissions for the 'with Project' scenario. This is a function of the greater capacity for change in the Project, together with higher levels of investment and assumptions around improved and lower carbon systems.

6.2 Next Steps

6.2.1 This draft energy strategy sets out a pathway of decarbonisation to 2050 and a supporting evidence base for the GHG assessment in the Carbon and Climate Change chapter of the PEIR.

6.2.2 The current draft energy strategy does not provide a carbon emissions pathway that fully aligns with GAL's new emissions targets in its 2nd DofC sustainability policy, but further work will now be undertaken to review and revise the draft energy strategy to understand how this will align with the aims and ambitions of the 2nd DofC sustainability policy.

6.2.3 The options for energy efficiency and other low or zero carbon energy interventions set out in this draft energy strategy will now be investigated in more detail and be updated for the submission as part of the application for development consent.

6.2.4 The next stages of analysis will also test in more detail the assumptions behind the differences in rate of change of GHG reductions in the future baseline scenario and the Project.

7 References

Climate Change Committee (CCC) (2019) Net Zero: The UK's Contribution to Stopping Global Warming, May 2019 [online] https:// [redacted]

Crawley Borough Council (2015) Crawley 2030: Crawley Borough Local Plan 2015 – 2030.

Department for Transport (2018) Airports National Policy Statement [online] https://www.gov.uk/government/publications/airports-national-policy-statement. Accessed October 2019.

Department for Transport (2021) Decarbonising Transport – A Better, Greener Britain [online] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1009448/decarbonising-transport-a-better-greener-britain.pdf

GAL (2021) Second Decade of Change to 2030 [online] [redacted]]

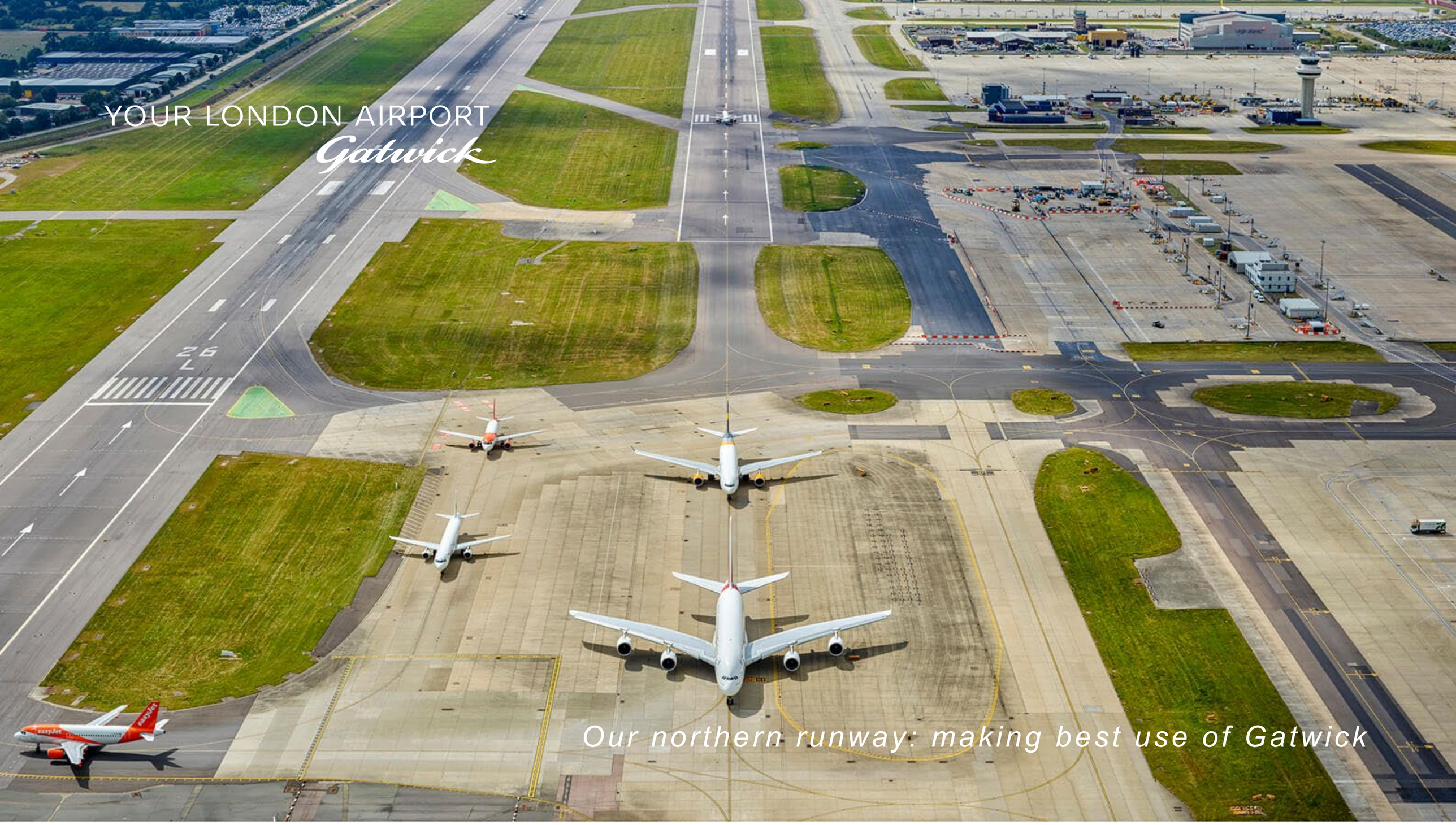
Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework (NPPF). [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005759/NPPF_July_2021.pdf

Annex 1

BEIS electricity and gas carbon factors

A1.1 Electricity carbon factors from 2018 to 2050 were taken from the *"UK Government Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal"*, lastly updated in March 2020. This includes an electricity grid decarbonisation projection. The natural gas carbon factor was taken from the 2019 BEIS greenhouse gas reporting conversion factors. It is assumed that this would remain constant throughout the study period.

Year	Electricity carbon factor ($kgCO_2e/kWh$)	Natural gas carbon factor ($kgCO_2e/kWh$)
2018	0.177	0.184
2019	0.143	0.184
2020	0.138	0.184
2021	0.113	0.184
2022	0.105	0.184
2023	0.110	0.184
2024	0.102	0.184
2025	0.103	0.184
2026	0.097	0.184
2027	0.103	0.184
2028	0.098	0.184
2029	0.090	0.184
2030	0.081	0.184
2031	0.072	0.184
2032	0.060	0.184
2033	0.056	0.184
2034	0.048	0.184
2035	0.040	0.184
2036	0.040	0.184
2037	0.040	0.184
2038	0.040	0.184
2039	0.040	0.184
2040	0.040	0.184
2041	0.039	0.184
2042	0.038	0.184
2043	0.036	0.184
2044	0.035	0.184
2045	0.034	0.184
2046	0.032	0.184
2047	0.031	0.184
2048	0.030	0.184
2049	0.028	0.184
2050	0.027	0.184



Our northern runway: making best use of Gatwick

Preliminary Environmental Information Report
Appendix 5.5.1: Key Parameters and Indicative Construction Programme

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 5.5.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the key parameters and indicative construction programme for the Project.

2 Key Project Parameters

2.1 Summary

2.1.1 The assessment has been based on the parameters identified within Chapter 5: Project Description.

2.1.2 Table 2.1.1 below identifies the key parameters relevant to this assessment. Where options exist, the maximum design scenario selected is the one having the potential to result in the greatest effect on an identified receptor or receptor group. Effects of greater adverse significance are not predicted to arise should any other option identified in Chapter 5 be taken forward in the final design of the Project.

Table 2.1.1: Summary of Key Parameters

Element of the Project	Key Parameter for Assessment
Changes to Enable Dual Runway Operations	
Development consent application area	820 hectares
Works within existing GAL land ownership	747 hectares
Permanent land take (third party)	68 hectares
Temporary land take (third party)	6 hectares
Passenger throughput	
Future airport throughput (without Project 2038)	62.4 mppa
Project additional throughput (2038)	13.2 mppa
Proposed new airport throughput (with Project 2038)	75.6 mppa
Airport passenger throughput (without Project: 2047)	67.2 mppa
Project additional throughput (2047)	13.0 mppa
Proposed new airport throughput (with Project 2047)	80.2 mppa
Air Traffic Movements and Non-Commercial Air Traffic Movements	
Approx. future commercial air traffic movements (2038 without Project)	318,000
Approx. future non-commercial air traffic movements (2038 without Project)	2,000
Approx. future total aircraft movements (2038 without Project)	321,000
Project additional commercial air traffic movements (2038 with Project)	64,000
Approx. future commercial air traffic movements (2038 with Project)	382,000
Approx. future non-commercial air traffic movements (2038 with Project)	3,000
Approx. future total aircraft movements (2038 with Project)	385,000
Approx. future commercial air traffic movements (2047 without Project)	326,000
Approx. future non-commercial air traffic movements (2047 without Project)	2,000
Approx. future total aircraft movements (2047 without Project)	328,000
Project additional passenger air traffic movements (2047 with Project)	61,000
Approx. future commercial air traffic movements (2047 with Project)	386,000
Approx. future non-commercial air traffic movements (2047 with Project)	3,000
Approx. future total aircraft movements (2047 with Project)	389,000
Cargo throughput	
Future cargo throughput (2038 without Project)	254,000 tonnes
Project additional cargo (2038)	69,000 tonnes
Proposed cargo (with Project, 2038)	323,000 tonnes
Future cargo throughput (2047 without Project)	290,000 tonnes
Project additional cargo (2047)	58,000 tonnes
Proposed cargo (with Project, 2047)	348,000 tonnes

Element of the Project	Key Parameter for Assessment
Alterations to the Existing Northern Runway	
Centreline repositioning	12 meters to the north
Reconfiguration of Taxiways	
Taxiway Juliet realignment	Taxiway Juliet West: 27 metres to the north Taxiway Juliet East Code E: 19.5 metres to the north Taxiway Juliet East Code C: 5 metres to the north
Aircraft holding area	Area: 15 hectares
Taxiway Lima extension	Length: 300 metres Width: 23 metres
Taxiway Tango cut-through	Length: 85 metres Width: 23 metres
Exit taxiways	Eight new/modified runway exits/entrances between northern runway and Taxiway Juliet. Footprint: 2,000 m^2 each. Six new/modified runway exits/entrances between main and northern runway. Footprint: 5,000 m^2 each.
End around taxiways	End around taxiway west – new taxiway. Footprint: 30,000 m^2. End around taxiway east (Yankee) – new exit taxiway linking to Taxiway Yankee. Footprint: 35,000 m^2.
Pier and Stand Amendments	
Pier 7	Area: 10.1 hectares Height: 18 metres
Proposed number of stands	See Table 5.2.1 in Chapter 5 of the PEIR
Reconfiguration of Existing Airport Facilities	
CARE facility (Phases 1 and 2)	Footprint: 17,550 m^2, Height: 22 metre building and 50 metre high flue Depth: 5 metres
Motor transport maintenance facilities	Site area: 15,600 m^2, Height: 15 metres Depth: 5 metres
Grounds maintenance facilities	Site area: 1,230 m^2, Height: 8 metres
Airfield surface transport facilities	Site area: 1,440 m^2, Height: 15 metres Depth: 5 metres
Cargo facility	No external changes proposed
Fire training ground	Area: 1.2 hectares

Element of the Project	Key Parameter for Assessment
	Rig height: 25 metres Tank depths: 5 metres
Satellite airport fire service facility	Area: 8,000 m^2 Height: 15 metres
Hangar	Area: 12,440 m^2 Height: 32 metres
Extensions to North and South Terminals	
North Terminal International Departure Lounge (IDL) extensions	Footprint: 3,120 m^2 and 3,180m m^2 Floorspace: 9,000 m^2 and 10,000 m^2 Height: 32.5 metres and 27.1 metres
North Terminal baggage hall extension	Footprint: 6,552 m^2 Height: 12.5 metres
North Terminal baggage reclaim extension	Footprint: 650 m^2 Height: 7 metres
South Terminal IDL extension and forecourt	Footprint: 3,780 m^2 Floorspace: 15,000 m^2 Height: 30.5 metres
Hotel and Commercial Facilities	
Offices (three new blocks- South Terminal)	Footprint: 1,024 m^2(x3) Floorspace: 9,000 m^2 Height: 27 metres
South Terminal hotel	400 bedrooms (27 metres in height)
North Terminal Hotel	400 bedrooms (27 metres in height)
Hotel at the building compound adjacent to the car rental site	200 bedrooms (16.3 metres in height)
Car Parking	
	See Table 5.2.2 in Chapter 5
Surface Access Improvements	
North Terminal roundabout expansion	Height: 8 meters
South Terminal roundabout expansion	Height: 8 metres
Water Management	
Museum Field flood compensation area	Footprint: 97,680 m^2 Depth: 2.6 metres
East of Museum Field flood compensation area	Depth: 1.8 metres
Car park X flood compensation area	Footprint: 217,250 m^2 Depth: 2 metres
Gatwick Stream flood compensation area	Footprint: 51,250 m^2 Depth: Up to 3 metres (greatest depth)

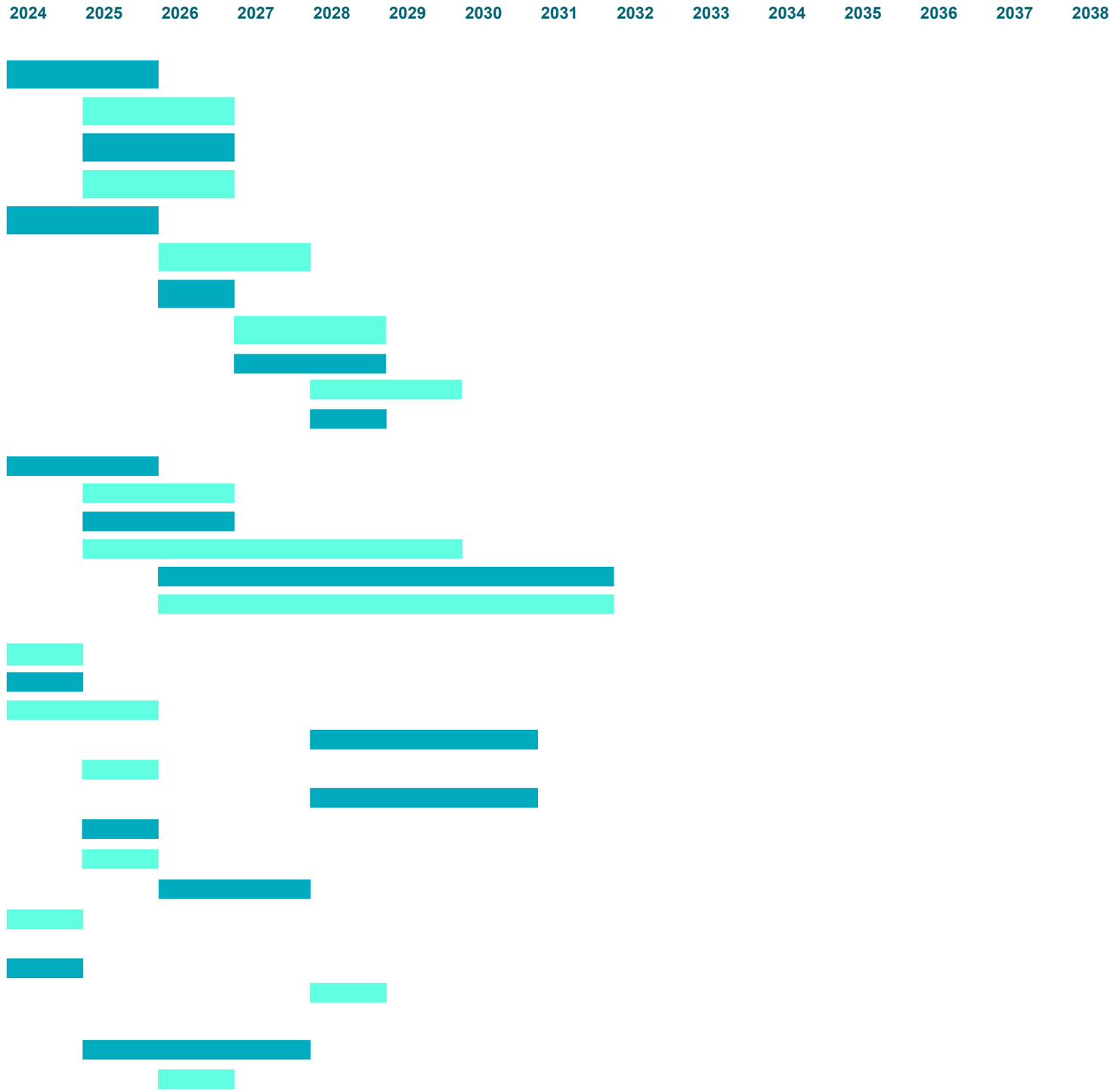
Element of the Project	Key Parameter for Assessment
Underground treatment/storage	Depth: 4 metres
Pumping Station 7a	Fenced Compound Footprint: 260 m^2. Height: 3 metres Depth: 6 metres Capacity: Approximately 80 liters/second.
Pumping Station 2a	Fenced Compound Footprint: 50 m^2. Height: 2 metres. Depth: 10 metres. Capacity: Approximately 40 liters/second.
Pumping Station east of Railway	Fenced Compound Footprint: 190 m^2. Height: 3 metres Depth: 3 metres Capacity: Approximately 45 liters/second
Substation J	Footprint: 180 m^2 Height: 6 metres Depth: 3 metres
Substation BK	Footprint: 144 m^2 Height: 6 metres Depth: 3 metres
Relocation of substations BP, BR and A	Footprint: 25 m^2 Height: 5 metres Depth: 3 metres
New substation east of railway New substation to facilitate Pier 7	Footprint: 25 m^2 Height: 5 metres Depth: 3 metres
Construction Compounds (temporary)	
Main contractor construction compound MA1.	Footprint: 5 hectares Height: 30 metres (batching plant)
Airfield satellite contractor compound.	Footprint: 6 hectares Height: 30 metres (batching plant)
Surface access satellite contractor compound (South Terminal)	Footprint: 2 hectares Height: 15 metres
Surface access satellite contractor compound (North Terminal)	Footprint: 1.6 hectares Height: 15 metres
Longbridge roundabout contractor compound	Footprint: 0.65 hectares Height: 5 metres
Phasing	
Pre-construction activities	2023
Commencement of main construction phase	2024
Year of opening	2029
Completion of construction works	2038

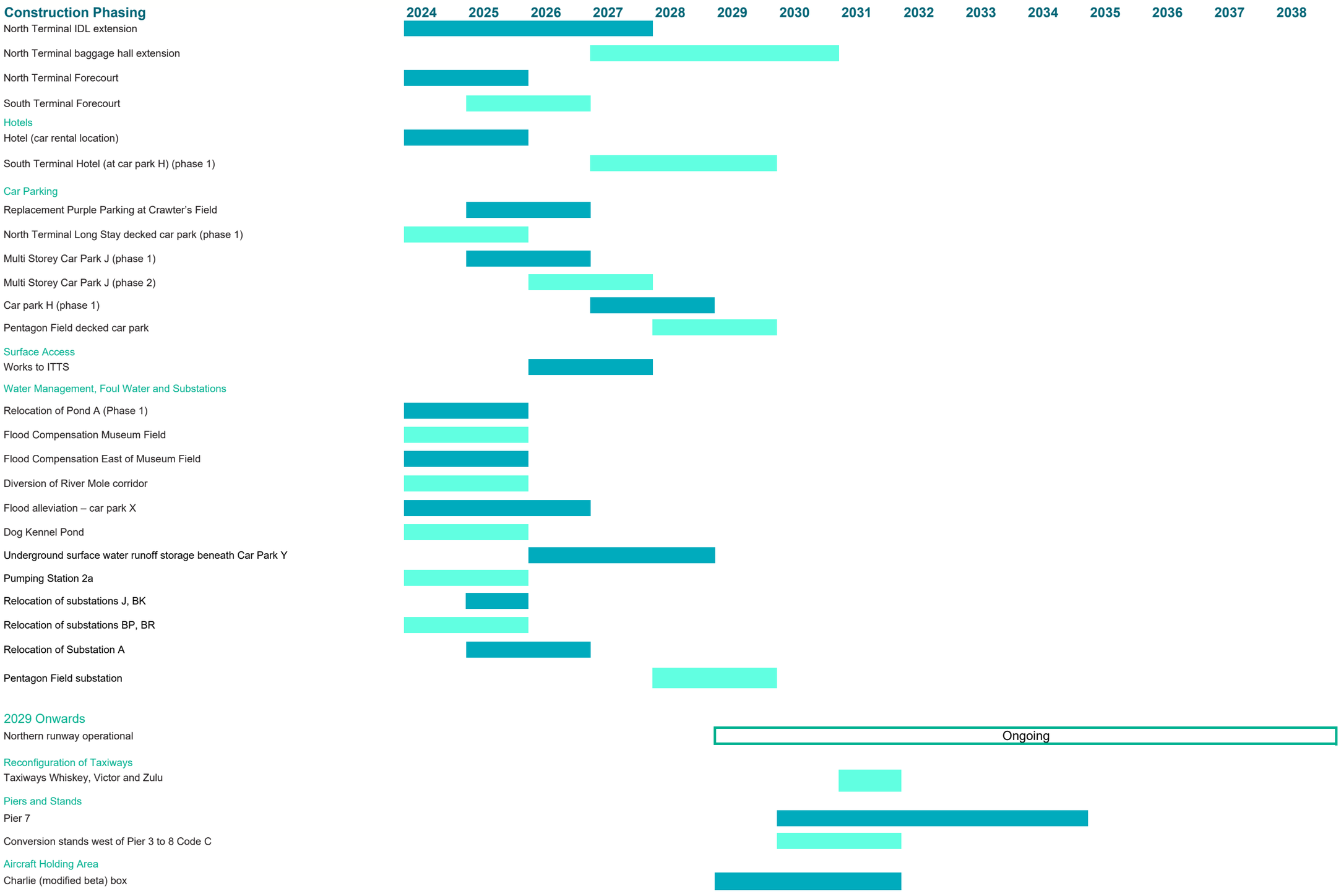
3 Indicative Construction Programme

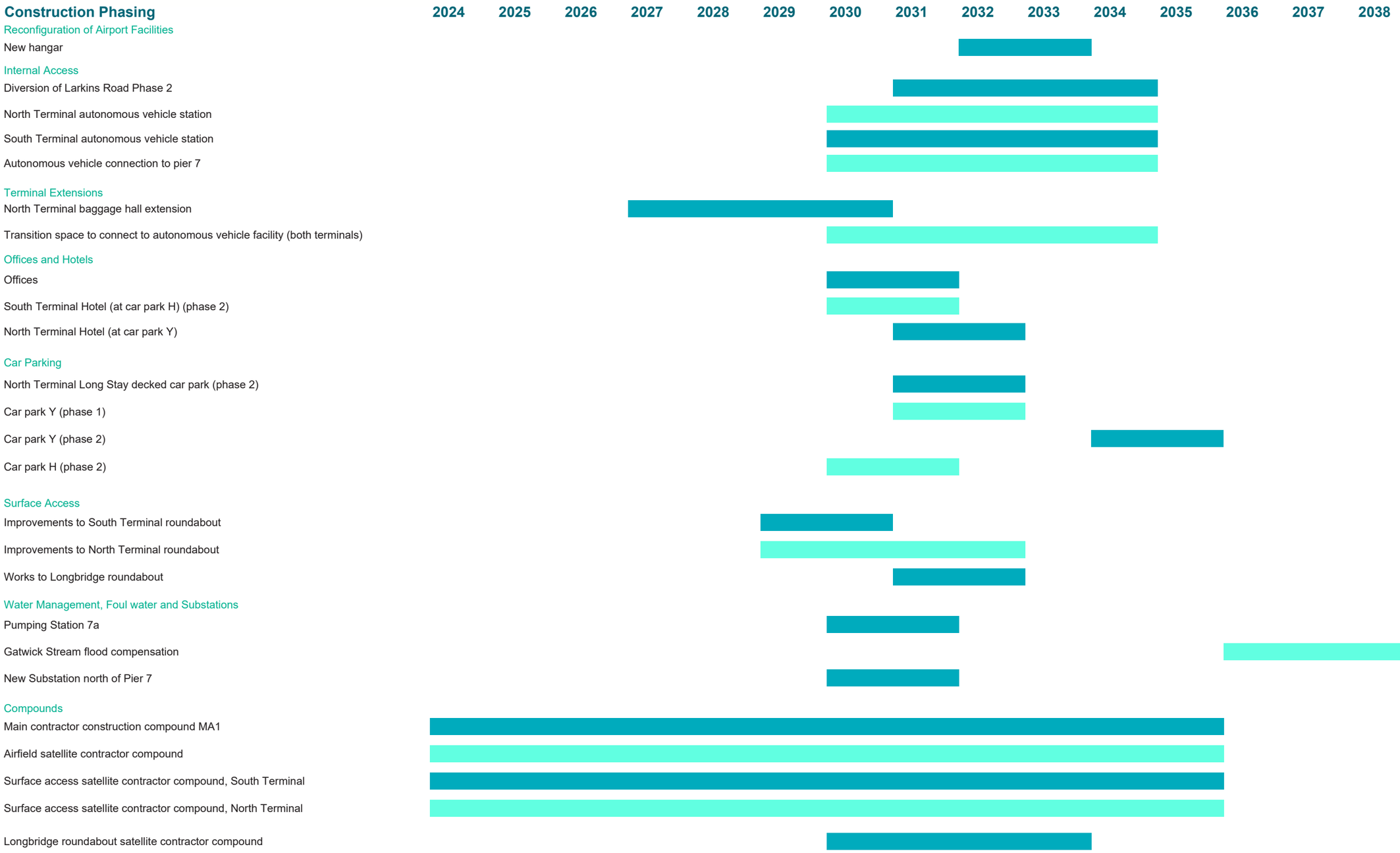
3.1 General

3.1.1 The details of the proposed construction methods, timing and phasing are necessarily broad at this stage. These details will be refined throughout the EIA process. The programme below sets out the indicative construction phasing that has informed the assessments within the PEIR.

Construction Phasing
2024 to 2029




Construction Phasing
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
North Terminal IDL extension
North Terminal baggage hall extension
North Terminal Forecourt
South Terminal Forecourt
Hotels
Hotel (car rental location)
South Terminal Hotel (at car park H) (phase 1)
Car Parking
Replacement Purple Parking at Crawter's Field
North Terminal Long Stay decked car park (phase 1)
Multi Storey Car Park J (phase 1)
Multi Storey Car Park J (phase 2)
Car park H (phase 1)
Pentagon Field decked car park
Surface Access
Works to ITTS
Water Management, Foul Water and Substations
Relocation of Pond A (Phase 1)
Flood Compensation Museum Field
Flood Compensation East of Museum Field
Diversion of River Mole corridor
Flood alleviation – car park X
Dog Kennel Pond
Underground surface water runoff storage beneath Car Park Y
Pumping Station 2a
Relocation of substations J, BK
Relocation of substations BP, BR
Relocation of Substation A
Pentagon Field substation
2029 Onwards
Northern runway operational
Ongoing
Reconfiguration of Taxiways
Taxiways Whiskey, Victor and Zulu
Piers and Stands
Pier 7
Conversion stands west of Pier 3 to 8 Code C
Aircraft Holding Area
Charlie (modified beta) box

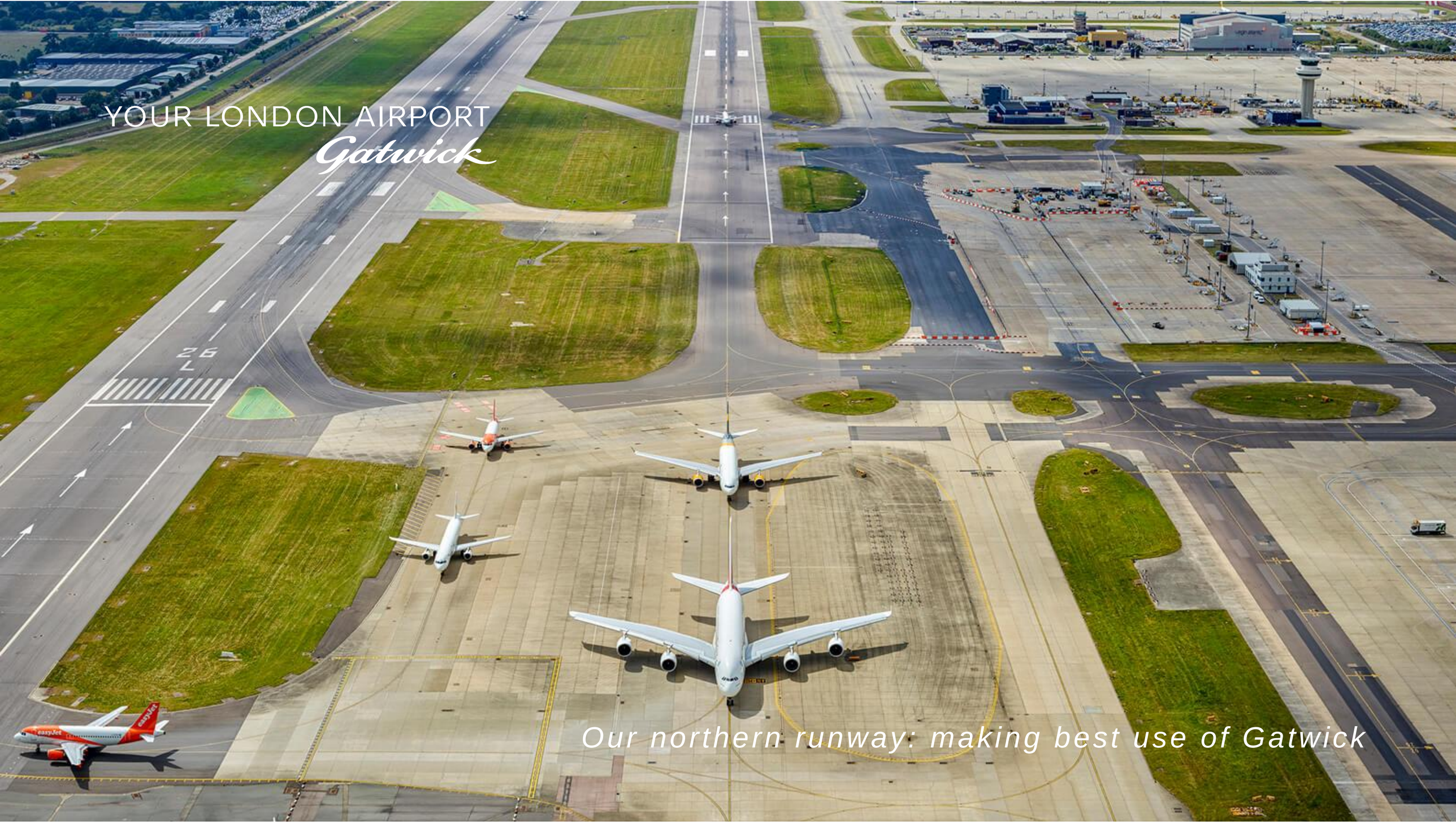

Construction Phasing
2024
2025
2026
2027
2028
2029
2030
2031
2032
2033
2034
2035
2036
2037
2038
Reconfiguration of Airport Facilities
New hangar
Internal Access
Diversion of Larkins Road Phase 2
North Terminal autonomous vehicle station
South Terminal autonomous vehicle station
Autonomous vehicle connection to pier 7
Terminal Extensions
North Terminal baggage hall extension
Transition space to connect to autonomous vehicle facility (both terminals)
Offices and Hotels
Offices
South Terminal Hotel (at car park H) (phase 2)
North Terminal Hotel (at car park Y)
Car Parking
North Terminal Long Stay decked car park (phase 2)
Car park Y (phase 1)
Car park Y (phase 2)
Car park H (phase 2)
Surface Access
Improvements to South Terminal roundabout
Improvements to North Terminal roundabout
Works to Longbridge roundabout
Water Management, Foul water and Substations
Pumping Station 7a
Gatwick Stream flood compensation
New Substation north of Pier 7
Compounds
Main contractor construction compound MA1
Airfield satellite contractor compound
Surface access satellite contractor compound, South Terminal
Surface access satellite contractor compound, North Terminal
Longbridge roundabout satellite contractor compound

4 Glossary

4.1 Glossary of Terms

Table 4.1.1: Glossary of Terms

Term	Description
CARE	Central Area Recycling Enclosure
EIA	Environmental Impact Assessment
GAL	Gatwick Airport Limited
IDL	International Departure Lounge
ITTS	Inter-Terminal Transit System
PEIR	Preliminary Environmental Information Report



Preliminary Environmental Information Report
Appendix 6.2.1: Scoping Responses and Location within PEIR

September 2021

Table of Contents

1 Scoping Responses and Location within PEIR

1.1 General

1.1.1 This document forms Appendix 6.2.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.2 Purpose

1.2.1 In September 2019, GAL submitted a Scoping Report to the Planning Inspectorate, which described the scope and methodology for the Environment Impact Assessment (EIA) process being undertaken to provide an assessment of any likely significant effects and, where necessary, to determine suitable mitigation measures for the construction and operational phases of the Project. It also described those topics or sub-topics which are proposed to be scoped out of the EIA process and provided justification as to why the Project would not have the potential to give rise to significant environmental effects in these areas.

1.2.2 Following consultation with the statutory bodies, the Planning Inspectorate (on behalf of the Secretary of State) provided a Scoping Opinion on 11 October 2019.

1.2.3 This document sets out details of the overarching points raised by the Planning inspectorate in its Scoping Opinion dated October 2019. This includes points raised in Sections 1, 2, 3 and 4.16 of the Scoping Opinion and the response to these/location in which information can be found within the PEIR. Details of the response on topic-specific matters covered in Section 4.1 to 4.15 of the Scoping Opinion are provided in Chapters 7 to 19 of the PEIR and in Appendices 5.3.2 (for waste) and 5.3.3 (for major accidents and disasters).

Table 1.2.1: Summary of Scoping Responses

PINS Ref	Details	How/where addressed in PEIR
1.1.14	An assessment under The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations) may be required. This assessment must be co-ordinated with the EIA in accordance with Regulation 26 of the EIA Regulations. The Applicant's Environmental Statement (ES) should therefore be co-ordinated with any assessment made under the Habitats Regulations.	The EIA has been undertaken with due regard for the Habitats Regulations. Appendix 9.9.1: Habitat Regulations Assessment – Non-Significant Effects Report, presents the initial assessment undertaken in relation to the Habitats Regulations. This will inform the ES and a final version will support the application for development consent.
1.2.3	The final ES should demonstrate consideration of the points raised by the consultation bodies. It is recommended that a table is provided summarising the applicant's responses from the consultation bodies and how they are, or are not, being addressed in the EIA.	This appendix provides a summary of how the 'general' comments in the Scoping Opinion have been addressed while each of the topic chapters (Chapters 7-19) provides a summary table of points raised by the Planning Inspectorate during scoping relating to their topic and how these are addressed in the PEIR. The ES will include similar tables relating to responses from consultation bodies received during the scoping and future consultation exercises.
2.3.1/2	The ES should include a description of the Proposed Development. Specific information on the characteristics of elements in the Proposed Development should be set out in the ES, including the location of existing buildings/facilities and clarification on what will be retained and how existing structures will co-exist with the Proposed Development.	The design, location and parameters of elements within the existing and future baseline are outlined in Chapter 4: Existing Site and Operation. The design, location and parameters of the Project which have been used to undertake the environmental assessment are set out in Chapter 5: Project Description. Further details will be provided in the ES as design development evolves in consultation with relevant stakeholders.
2.3.3	Detailed information is requested on the specifications of proposed CARE facility including the type of waste managed, the throughput, methods of processing and relevant outputs.	Chapter 5: Project Description of the PEIR sets out the two design options for the central airfield maintenance and recycling (CARE) facility at the current stage of design development with further detail found in Appendix 5.3.2: Draft Waste Strategy. A single option will be selected for the ES, together with further details of the CARE facility and its components (including the types of waste managed).

PINS Ref	Details	How/where addressed in PEIR
2.3.4	The ES must include details of how elements of the Proposed Development are to be delivered within the DCO and to relevant design detail.	The design, location and parameters of the Project which are used to undertake the environmental assessment are set out in Chapter 5: Project Description. An Outline Code of Construction Practice (CoCP) is provided at Appendix 5.3.1. This will be refined further and will form the basis of implementation of mitigation and monitoring measures during construction. The ES and draft Development Consent Order (DCO) will contain details of implementation for mitigation and monitoring measures as part of the application for development consent.
2.3.5	The description of the Proposed Development provided in the ES must be sufficiently certain to meet the requirements of the EIA Regulations. This requires the inclusion of a description of all components including reference to the location, alignments and dimensions of each individual element, including maximum heights, design parameters and Limits of Deviation (LoD) (if required).	The design, location and parameters of the Project which are used to undertake the environmental assessment are set out in Chapter 5: Project Description. If required, Limits of Deviation will be made clear in the ES and in the plans accompanying the application for development consent.
2.3.6	Detailed information requested on the North and South terminal junction access improvements, including any land take associated with the North terminal junction improvements.	A preliminary description of the highway works is included in Chapter 5: Project Description. Further details of the design will be provided in the ES as design development evolves in consultation with Highways England and local highway authorities.
2.3.7	The ES should include a quantification of the total temporary and permanent land take at Riverside Garden Park affected by the Proposed Development and a description of any proposed mitigation.	Details are provided in Chapter 18: Agricultural Land Use and Recreation.
2.3.8	The Scoping Report refers to a “satellite Airport Fire Service” (AFS) facility but fails to describe where any such a facility will be located. The ES should describe any such facility (if required) and clearly explain its proposed location.	A description of the Satellite AFS is included in Chapter 5: Project Description. This would be located to the south of the main runway (see Figure 5.2.1a, Sheet 2).
2.3.9	The description of the Proposed Development should explain the Proposed Developments relationship to other proposed/ consented projects.	A description of proposed/ consented projects and projects undertaken by others at Gatwick Airport is provided in Section 4.4 of Chapter 4: Existing Site and Operation. Details of other relevant proposed developments are provided in Chapter 19: Cumulative Effects and Inter-relationships and Appendix 19.4.1.
2.3.10	A clear description of any additional foul water treatment facilities either within the airport boundary or adjacent to the existing Crawley Sewage Treatment Works on land owned by the Applicant. The effects of this should assessed in the ES.	A description of the proposed wastewater treatment is included in Chapter 5: Project Description and have been assessed as part of the Project in each topic chapter of the PEIR (where relevant), including Chapter 11: Water Environment. Further details of the preferred option will be provided within the ES.
2.3.11	Provide details of the reasonable alternatives studied and the reasoning for the selection of the chosen option(s), including a comparison of the environmental effects. This should specifically address all of the scenarios presented by the Applicant in the Scoping Report. The ES should also give consideration to the prospect of a ‘no development’ and ‘no growth scenario’ for comparative purposes and in support of the justification for the Proposed Development.	A description of three alternatives scenarios is located in Chapter 3: Need and Alternatives Considered. Scenario 1 is considered the ‘do minimum’ or ‘no development’ scenario, as it would go ahead in the absence of the Project. Section 3.2 of Chapter 3 highlights the need for project, concluding that Government policy and studies undertaken to date demonstrate that additional capacity is required at airports in the south east of England. In particular, the Airports Commission clearly identified that a third runway at Heathrow should be pursued while other airports should make best use of their existing runways. Details of the likely changes in passenger numbers in the absence of the Project are provided in Chapter 4: Existing Site and Operation.
2.3.14/15	Note that where flexibility is required within the design, parameters should not be so wide ranging as to represent different developments. Design parameters to be clearly defined in the application for development consent and accompanying ES.	Chapter 5: Project Description includes details of the currently proposed design, including key parameters included in the assessment. The EIA process remains ongoing and the ES will include details of the Project, corresponding to the parameters set out in the draft DCO.
2.3.20	The Scoping Report seeks to scope out the Airspace Change Process entirely from the ES. The Inspectorate does not consider that the Airspace Change Process is, in itself, an aspect or matter that can be scoped out from the ES. Instead, the Inspectorate considers that the ES methodology should be compatible with the methodological approaches outlined in the CAA’s CAP 1616 and CAP 1616a3 documents to ensure consistency and continuity	In order to determine whether an airspace change is required to enable dual runway operations at Gatwick, GAL submitted a Statement of Need within the scope of CAP 1616 to the CAA on 11 November 2019. This set out details of the Project. The CAA issued CAP 1908 in May 2020, assigning the airspace change as Level 0[1] as the proposal would not alter traffic patterns and in December

PINS Ref	Details	How/where addressed in PEIR
	between the Proposed Development and Airspace Change process assessments. The ES should explain how the methodologies used for the assessment of the Proposed Development are compatible with the CAP methodologies.	2020, the CAA issued its decision (Decide Gateway) which approved the implementation of the proposed airspace change proposal. These will be considered, where relevant, within the ES.
3.1.2	The ES should be based on the Scoping Opinion in so far as the Proposed Development remains materially the same as the Proposed Development described in the Applicant's Scoping Report.	This appendix and each of the technical aspect chapters of the PEIR (Chapters 7-19) describe how the assessment has taken into account the Scoping Opinion. It is not considered that there have been any material changes to the Project which would warrant a request for a new Scoping Opinion.
3.1.4 and 3.3.18	Any mitigation relied upon for the purposes of the assessment should be explained in detail, with an explanation of its effectiveness and impact on residual effects. The ES should also address how any mitigation proposed is secured, with reference to specific DCO requirements or other legally binding agreements and whether relevant consultees agree on the adequacy of the measures proposed.	Chapter 5: Project Description includes details of the embedded mitigation measures within the Project. Each of the topic chapters of the PEIR (Chapters 7-18) also provide a summary of how these mitigation measures and specific measures relevant for the technical topic assessment and their relation to the resulting effects. An Outline Code of Construction Practice (CoCP) (is provided at Appendix 5.3.1. This will be refined further and will form the basis of implementation of mitigation and monitoring measures during construction. The ES and draft DCO will contain details of implementation for mitigation and monitoring measures as part of the application for development consent.
3.2.2	In order to assist the decision-making process, a recommendation is made to use tables to complete the following: ▪ to demonstrate how the assessment has taken account of the Scoping Opinion; ▪ to identify and collate the residual effects after mitigation for each of the aspect chapters, including the relevant interrelationships and cumulative effects; ▪ to set out the proposed mitigation and/ or monitoring measures including cross-reference to the means of securing such measures (eg a DCO requirement); ▪ to describe any remedial measures that are identified as being necessary following monitoring; and ▪ to identify where details are contained in the Habitats Regulations Assessment (HRA report) (where relevant), such as descriptions of European sites and their locations, together with any mitigation or compensation measures, are to be found in the ES.	▪ Information on how the PEIR has taken into account the Scoping Opinion has been presented in tables in this appendix and in each of the topic chapters (Chapters 7-19), as well as within key appendices (eg Appendix 5.3.2 and 5.3.3). ▪ Effects are presented in tables at the end of each aspect chapter and a further summary is provided in Chapter 20: Summary of Effects. ▪ Proposed mitigation and/ or monitoring measures are presented in tables in each topic chapter. The ES will include further details of implementation for mitigation and monitoring measures as part of the application for development consent. ▪ At the current stage of design, development of monitoring proposals is at the early stages and therefore, remedial measures have not been clarified. More details will be provided in the ES as design development evolves. ▪ Appendix 9.9.1: Habitat Regulations - Non-Significant Effects Report presents the initial assessment dedicated to achieving compliance with the Habitat Regulations. This has informed the relevant topic chapters and will inform the ES.
3.3.3/4	Include a description of the baseline scenarios with and without implementation of the development based on available environmental information and scientific knowledge. The introductory or concluding chapters of the ES should set out a holistic summary of the various scenarios considered.	The predicted passenger growth in the absence of the Project is set out in Chapter 4: Existing Site and Operation. Baseline conditions relevant to each topic are set out in topic Chapters 7-18. Details of assessment scenarios are set out in Chapter 6: Approach to the Environmental Assessment.
3.3.5	The description of the Proposed Development should explain the Proposed Development's spatial and temporal relationship to other projects, stating which works have been assessed and whether they form part of the DCO application or whether certain assumptions or reliance is otherwise placed on their delivery. Where these works do not specifically form part of the DCO application, the ES should ensure that they are adequately assessed as part of the baseline (and future baseline) conditions or within the cumulative effects assessment where significant effects are likely to occur.	Section 4.3 and 4.4 of Chapter 4: Existing Site and Operation present other developments proposed within Gatwick Airport but subject to separate consent. These are included as part of the baseline/future baseline assumptions. An update will be provided at the ES stage regarding the status of these developments.
3.3.6	The ES should clearly define the future baseline and explain the extent to which the growth in passenger numbers are associated with and/or reliant upon other consents and assumptions. The ES should also set out any additional consents needed to enable the growth.	Chapter 4: Existing Site and Operation presents details of the future baseline, including predicted future changes in passenger and cargo throughput. Further details are presented in the Forecast Data Book.
3.3.8	Timescales of the surveys which underpin the technical assessments are requested. For clarity, this information should be provided either in the introductory chapters of the ES (with confirmation that these timescales apply to all chapters), or in each aspect chapter.	The technical topic chapters (Chapters 7-19) provide the details of topic specific surveys undertaken to support each assessment, including details of their timing. Further details are provided in supporting appendices for some topics (eg Ecology and Nature Conservation).

PINS Ref	Details	How/where addressed in PEIR
3.3.9	Zones of Influence (ZoI) of the Proposed Development should be described to determine the extent of study areas and receptors which have the potential to be affected. Study areas should be defined with regard to relevant aspect specific guidance and where arbitrary distances or professional judgement is relied upon in defining them, this should be explained, and justification provided (including reference to agreement with relevant consultation bodies).	Each topic chapter (Chapters 7-19) present the specific ZoI and/or study areas for that assessment in the methodology section.
3.3.10	ES to include a chapter setting out the overarching methodology for the assessment, which clearly distinguishes effects that are 'significant' from 'non-significant' effects (the Scoping Report does not define the level(s) of effect that would be determined as ‘significant’). Any departure from that overarching methodology in applying these definitions should be described in the individual aspect assessment chapters as relevant.	The general EIA methodology is presented in Chapter 6: Approach to the Environmental Assessment. Each individual topic assessment chapter (Chapters 7-19) also contains a dedicated section detailing the specific methodologies for that assessment with clear parameters to define a 'significant' and 'non-significant' effect.
3.3.11	The aspect chapters will need to carefully present how the reported levels of significance are derived (in a general sense and on a receptor-by-receptor basis) where the matrix based approach leads to a judgement as to the outcome between two potential descriptors.	The general EIA methodology is presented in Chapter 6: Approach to the Environmental Assessment. Section 4 of each individual topic chapter (Chapters 7-18) contains information regarding the use of significance matrices for that technical discipline. Section 9 in the topic chapters conducts the assessment of significance with due regard for individual receptors.
3.3.12	The ES should include details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Chapter 6: Approach to the Environmental Assessment presents the general assumptions and limitations within the assessment with regard to project parameters and the establishment of a future baseline. Each individual topic chapters (Chapters 7-18) also contain a dedicated section detailing the specific assumptions and uncertainties relating to that assessment.
3.3.13	The extent to which each of the assessment years account for variability in the potential opening date of Heathrow’s third runway should be clearly set out and assessed (using sensitivity analysis where relevant).	Given the continuing uncertainty surrounding Heathrow R3, it has been decided that the most robust assumption to adopt, at least for the purpose of preparing the PEIR, is to assume that a third runway does not come forward at Heathrow. This has been explained further in Appendix 4.3.1: Forecasts Data Book.
3.3.14	Include a detailed phasing plan against which aspect chapters have based their assessment, and it should describe how the predicted rates of growth in air traffic movements (ATMs) fit in with the demand and delivery of the various components of the Proposed Development	The indicative phasing of the construction works to be undertaken is detailed in Section 5.3 of Chapter 5: Project Description.
3.3.15	Clear explanation of what constitutes a ‘temporary’ effect. The ES should explain this with regards to the duration of effect and the proposed construction phasing.	A definition of temporary is not provided within the EIA Regulations. For the purposes of this assessment it is defined as an effect that occurs for a limited period of time (ie is not permanent), as explained in Chapter 6: Approach to the Environmental Assessment. The duration of each temporary effect has been considered using the terms short, medium and long term, as described in Chapter 6: Approach to the Environmental Assessment.
3.3.16	The EIA Regulations require an estimate, by type and quantity, of expected residues and emissions. Specific reference should be made to water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases, where relevant.	A description of the estimate, by type and quantity, of expected residues and emission is included in Chapter 5: Project Description and within the topic chapters of the PEIR (Chapters 7-19).
3.3.17	The air quality assessment should take into account any proposals from relevant Environment Act 1995 Directions and how this may affect the Proposed Development during both construction and operation.	The air quality assessment takes into account the existing Air Quality Management Areas (AQMA) in the area where necessary and will review all local policy including the Air Quality Action Plans for the ES.
3.3.19/20	Clarification should be provided in relation to proposed mitigation areas, the ‘Environmental Bund’ and mitigation and enhancement at Riverside Garden Park.	Details of the proposed mitigation areas are provided within Chapter 5: Project Description and in Chapters 8 and 9. The mitigation remains under development and further details will be provided in the ES. Details of effects on the Riverside Garden Park, together with potential mitigation outcomes, are set out Chapter 18: Agricultural Land Use and Recreation.

PINS Ref	Details	How/where addressed in PEIR
3.3.21	Supporting technical documents such as an earthworks strategy, a lighting strategy, surface water drainage strategy and Code of Construction Practice (CoCP) should be included as part of the Application documents. These must be sufficiently detailed, and cross referred to as part of the ES to inform the assessments and understanding of mitigation measures.	Work on these aspects is ongoing during the EIA process. Initial details regarding earthworks and lighting are provided in Chapter 5: Project Description. More detailed documents will be provided in the ES. An outline Code of Construction Practice is provided at Appendix 5.3.1. Details of the drainage strategy are provided in Chapter 5: Project Description, Chapter 11: Water Environment and Appendix 11.9.1: Flood Risk Assessment.
3.3.22	Description and assessment (where relevant) of the likely significant effects resulting from accidents and disasters applicable to the Proposed Development. Any risk assessment used to inform this assessment must be in line with European and national legislation and provide details of measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	Appendix 5.3.3: Major Accidents and Disasters provides the preliminary results of the assessment of the risks associated with the Project with respect to potential major accidents and disasters. It includes details of the vulnerability of the Project to a potential accident or disaster and assesses significant effects resulting from the risks to human health, cultural heritage or the environment including any measures that will be employed to prevent and control significant effects.
3.3.25	Description and assessment (where relevant) of the likely significant effects the Proposed Development has on the climate (for example having regard to the nature and magnitude of greenhouse gas (GHG) emissions) and the vulnerability of the project to climate change. Where relevant, the ES should describe and assess the adaptive capacity that has been incorporated into the design of the Proposed Development. This may include, for example, alternative measures such as changes in the use of materials or construction and design techniques that will be more resilient to risks from climate change.	The assessment of the Project's resilience to climate change and carbon emissions is completed at Chapter 15: Climate Change and Carbon.
3.3.27	Schedule 4 Part 5 of the EIA Regulations requires a description of the likely significant transboundary effects to be provided in an ES. The Scoping Report has not indicated whether the Proposed Development is likely to have significant impacts on another European Economic Area (EEA) State (Reg 32).	A transboundary screening exercise is provided at Appendix 6.2.3 (also provided at the scoping stage) which identifies that significant effects on other EEA States are not likely, therefore a transboundary assessment has been scoped out of the EIA process.
3.3.32	A reference list detailing the sources used for the descriptions and assessments must be included.	Each chapter and accompanying appendices within the PIER clearly specifies all references that have informed the assessment.
4.16.1	The Inspectorate agrees that a separate sustainability chapter is not required.	No action required.
4.16.2	The Inspectorate agrees that a separate consideration of material assets is not required.	No action required.
4.16.3	The Inspectorate agrees that a separate consideration of radiation effects is not required (and that where relevant these can be considered within the major accidents and disasters assessment). The ES should consider effects in relation to thermal emissions from increased air traffic movements and whether effects on heat may arise from additional heating and power plant.	Effects in relation to heat to be considered within the ES.
4.16.4	The Inspectorate agrees that a separate consideration of sunlight/daylight is not required. Microclimatic effects should be assessed within the ES.	Effects in relation to microclimate to be considered within the ES
4.16.5	Effects in relation to decommissioning to be considered within the ES.	An explanation as to why decommissioning effects are scoped out are set out in Paragraph 6.2.15 of Chapter 6: Approach to Environmental Assessment. No further action required
4.16.6	As 2.3.20 above	As 2.3.20 above.

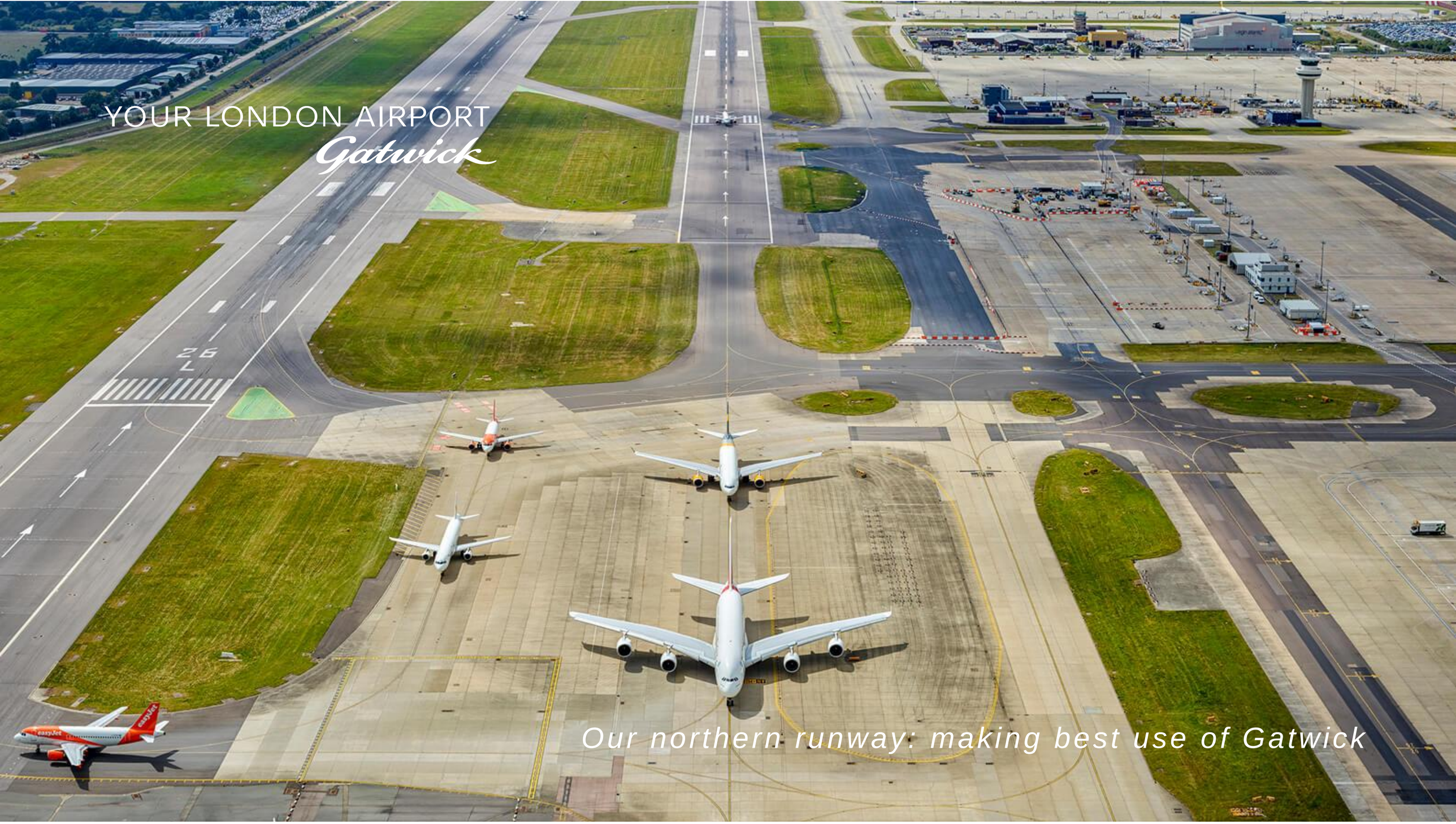
2 References

Airports Commission (2015) Airports Commission: Final Report, July 2015. [Online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/440316/airports-commission-final-report.pdf

3 Glossary

3.1 Glossary of Terms

Term	Description
AFS	Airport Fire Service
ATM	Air Traffic Movement
BPM	Best Practicable Means
CAA	Civil Aviation Authority
CARE	Central Airfield Maintenance and Recycling Enclosure
CoCP	Code of Construction Practice
CTMS	Construction Traffic Management Strategy
DCO	Development Consent Order
EEA	European Economic Area
EIA	Environmental Impact Assessment
EMS	Environmental Management System
ES	Environmental Statement
GAL	Gatwick Airport Limited
GHG	Greenhouse Gas
LoD	Limits of Deviation
NPS	National Policy Statement
PEIR	Preliminary Environmental Information Report
SoS	Secretary of State
ZoI	Zone of Influence



Preliminary Environmental Information Report
Appendix 6.2.2: Schedule 4 Requirements of the Infrastructure Planning Regulations: Location Within PEIR

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 6.2.2 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the Appendix 6.2.2: Schedule 4 of the Infrastructure Planning (EIA) Regulations 2017, as amended: Information for Inclusion in Environmental Statements.

2 Schedule 4 of the EIA Regulations 2017: Information for Inclusion in Environmental Statements

Required Information		Location within PEIR
1. A description of the development, including in particular -	a) a description of the location of the development;	Chapter 4: Existing Site and Operation
	b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;	Chapter 5: Project Description
	c) a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity if the materials and natural resources (including water, land, soil and biodiversity) used;	Chapter 5: Project Description
	d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.	Chapter 5: Project Description; Chapter 6: Approach to Environmental Assessment; Chapter 10: Geology and Ground Conditions; Chapter 11: Water Environment; Chapter 13: Air Quality; Chapter 14: Noise and Vibration
2. A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.		Chapter 3: Need and Alternatives Considered
3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.		Chapters 4 to 20
4. A description of the factors specified in regulation 5(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.		Chapters 7 to 20
5. A description of the likely significant effects of the development on the environment resulting from, inter alia—	a) the construction and existence of the development, including, where relevant, demolition works;	Chapter 5: Project Description

Required Information		Location within PEIR
	b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;	Chapter 7 to 20
	c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;	Chapter 6: Approach to Environmental Assessment; Chapter 10: Geology and Ground Conditions; Chapter 13: Air Quality; Chapter 14: Noise and Vibration; Appendix 5.3.2: Waste Strategy
	d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);	Chapter 7: Historic Environment; Chapter 17: Health and Wellbeing; Appendix 5.3.3: Major Accidents and Disasters
	e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;	Chapter 19: Cumulative effects and Inter-relationships
	f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;	Chapter 15: Climate Change and Carbon
	g) the technologies and the substances used.	Chapter 5: Project Description; Chapter 7 to 20
	The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC(a) and Directive 2009/147/EC(b).	Chapter 7 to 20
6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.		Chapter 7 to 20
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.		Chapter 5: Project Description; Chapter 7 to 20
8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU of the European Parliament and of the Council(c) or Council Directive 2009/71/Euratom(d) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.		Appendix 5.3.3: [Major Accidents and Disasters]
9. A non-technical summary of the information provided under paragraphs 1 to 8.		Non-Technical Summary
10. A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.		Chapter 1 to 20

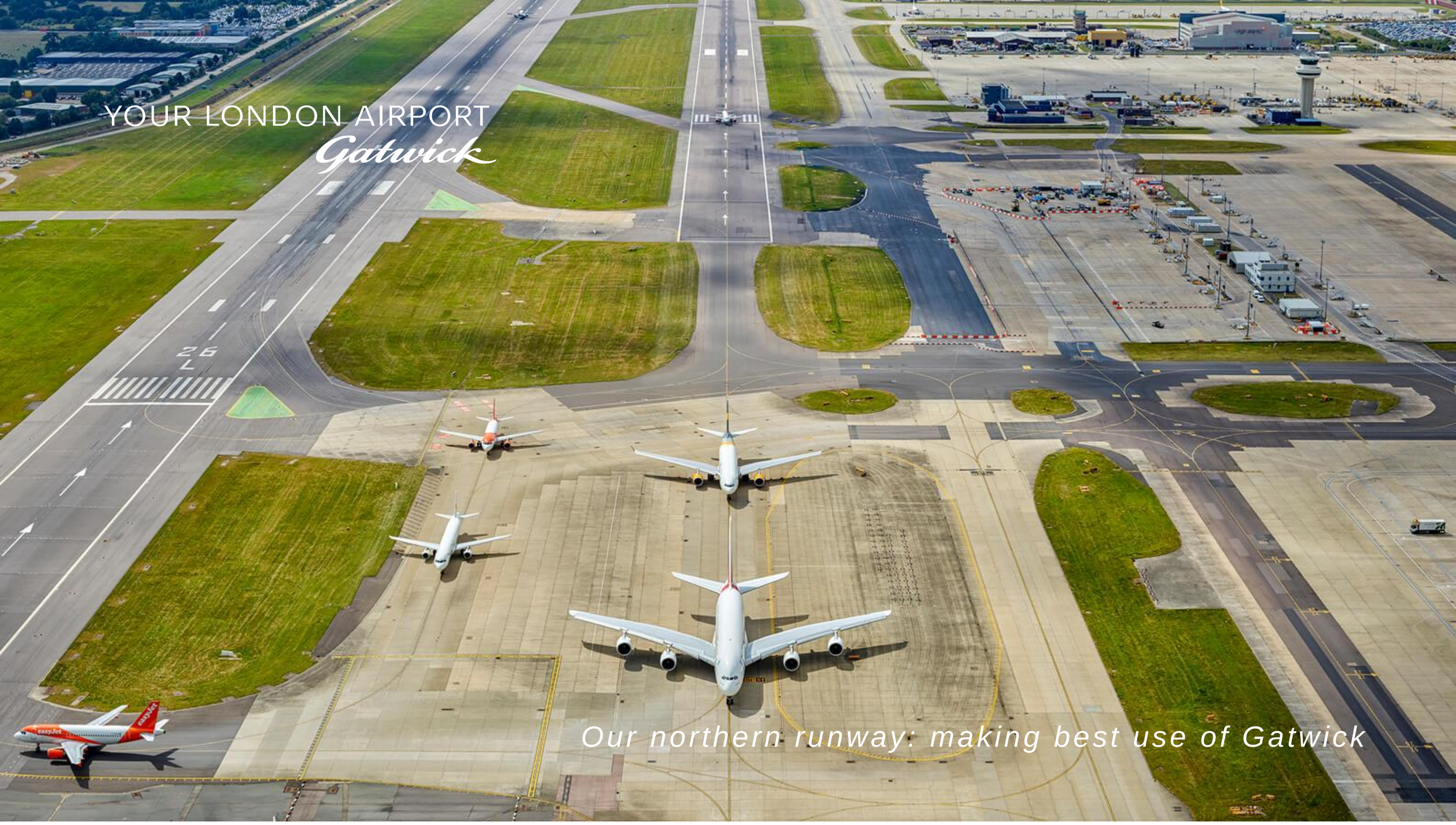
3 References

The Infrastructure Planning (Environmental Impact Assessment) Regulations, 2017. 2017 No. 572.

4 Glossary

4.1 Glossary of terms

Term	Description
EC	European Commission
EEC	European Economic Community
EIA	Environmental Impact Assessment
EU	European Union
GAL	Gatwick Airport Limited
PEIR	Preliminary Environmental Information Report
UK	United Kingdom



Preliminary Environmental Information Report
Appendix 6.2.3: Transboundary Screening Matrix

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 6.2.3 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the Transboundary Screening Matrix, considering the potential for effects to occur on other European Economic Area (EEA) States.

1.2 Transboundary Screening

Table 1.2.1: Transboundary Screening Matrix

Screening Criteria	Comments
Characteristics of the Project. Size. Use of natural resources. Production of waste. Pollution and nuisances. Risk of accidents. Use of technologies.	Gatwick Airport is served by a single main runway. The airport also has a further runway, which is located north of the main runway and which is only available for use when the main runway is closed. This runway is known as the northern runway. The Project proposes alterations to move the centreline of the existing northern (standby) runway north by 12 metres to form a realigned northern runway which, along with the lifting of the current restrictions on its use, would enable dual runway operations in accordance with international standards. It is anticipated that by 2038 this could increase airport capacity up to approximately 75.6 million passengers per annum (mppa), compared to a maximum potential capacity based on existing (and consented/committed future facilities) facilities of 62.4 mppa within the same timescale. This represents an increase of approximately 13.2 mppa. A range of natural resources would be indirectly required for the Project as a consequence of the manufacture of the necessary materials, eg the constituents of concrete. However, natural resources which would be directly used by the Project during construction would be limited to those typical of construction projects, eg soils used during earthworks, aggregate and bentonite used in excavation and foundation works, wood and gypsum used in the construction of buildings and structures, ecological resources displaced by the Project, and hydrocarbon fuels. **Use of Natural Resources, Production of Waste** During operation, use of natural resources would be limited to those currently used by Gatwicks' airport operation, eg fuels and water. The use of these natural resources would not directly impact other EEA states. Nevertheless, during the detailed design stage, measures will be explored to design out waste where appropriate, eg using site won materials for earthworks and minimising construction vehicle trips. The Project would result in the loss of some agricultural land, but this is not of international value. The Project would not result in any land take from international designated nature conservation sites. The Project would not result in any land take in other EEA states. Ecological effects in the locality are being assessed specifically throughout the EIA process and mitigation will be implemented, where practicable and appropriate (see Chapter 9: Ecology and Nature Conservation). Construction measures would be implemented to minimise wastes sent to landfill. Waste management during operation would also seek to minimise waste, including consumption of resources and therefore ultimately reducing exploitation of natural resources. A waste management strategy is included at Appendix 5.3.2. **Pollution and Nuisances** As stated above, the Project is predicted to increase passenger throughput from 62.4 mppa to 75.6 mppa by 2038, which would result in an increase in passenger air transport movements. In addition to this, the Project is predicted to increase the number of cargo movements. Overall, the number of plane movements from Gatwick Airport would increase as a result of the Project, resulting in possible air quality and noise impacts at the departure and landing airports. Air quality and noise impacts as a result of increased air traffic at airports in other EEA states would be minor in the context of existing air traffic at these airports. In addition, the destination airports have been consented under the relevant planning systems in the relevant EEA state, including the airports' planned maximum capacity. Therefore, the increased air traffic from

Screening Criteria	Comments
	Gatwick Airport would be within the destination airports planned maximum capacity and any air quality or noise impacts would have already been assessed as part of the consenting processes and considered acceptable. Therefore, the effect of these impacts will be taken into account in the planning regimes of the relevant EEA states and would be controlled through existing limits on the consents for each airport in terms of the number of/timing of flights and use of flight paths. Therefore, no significant transboundary effects for air quality or noise are likely. Emissions as a result of construction and operation of the Project would include greenhouse gasses, which have the potential to contribute to climate change. These are being assessed throughout the EIA process, as is the case for other UK airport proposals (see Chapter 15: Climate Change and Carbon). The Project does not have any characteristics that would require a different approach to that adopted for other UK airport proposals. **Accidents and Disasters** The potential for accidents and disasters is being considered throughout the EIA process – such effects are identified within Appendix 5.3.3 and primarily relate to potential effects at the airport itself, or associated with takeoff and landing. No significant transboundary effects are considered likely for this topic. **Use of Technologies** Technology used as a part of the construction of the Project, and for its operation, is commensurate to similar projects and unlikely to result in any transboundary effects. **Summary** Based on the above, significant transboundary effects can be ruled out for the majority of aspects. Two environmental aspects have been identified for which there could conceivably be a transboundary effect, and which are considered further (below) - climate change and effects on migratory species.
Location of development (including existing use) and geographical area. Existing use. Distance to another EEA state. Area of impact in EEA state.	Gatwick Airport is located in the county of West Sussex between the towns of Crawley and Horley in the south east of England. The airport's two passenger terminals (North Terminal and South Terminal) are directly served by the M23 spur off the M23, which runs approximately 1.7 km to the east of the airport. The A23 (London Road) runs in a north-south direction adjacent to the eastern boundary of the Airport. The airport sits on the Brighton-London mainline railway. Gatwick Airport's railway station is located at South Terminal, and there is a direct transit link to North Terminal. Gatwick Airport is served by a single main runway. The airport also has a further runway, which is located to the north of the main runway and which is only available for use when the main runway is closed. This runway is known as the northern runway. The closest EEA state to the Project located approximately 130 km to the south east. The maximum zone of influence for environmental effects arising from the Project identified at the PEIR stage is 20 km from the Project (impacts to designated sites). Therefore, impacts originating from the Project site or in relation to land take are unlikely to affect EEA states. There are several European designated sites within 20 km of the Project: Ashdown Forest Special Area of Conservation (SAC) and Special Protection Area (SPA) and Mole Gap to Reigate Escarpment SAC. Ashdown Forest SPA is designated for the European nightjar *Caprimulgus europaeus* and the Dartford warbler (*Sylvia undata*). The European nightjar is a migratory species. Ashdown Forest SAC is designated for its wet and dry heath habitat. No species have been identified as a primary reason for the selection of this site, although it is noted that the site does support assemblages of European nightjar and Eurasian hobby *Falco subbuteo*, both of which are migratory birds. These birds migrate over EEA states to their winter ranges in southern Africa. Mole Gap to Reigate Escarpment SAC is designated for its grassland, scrub and wooded habitats, with great crested newts and bechstein's bats listed as qualifying features (although not a primary reason for designation). The area of impact for climate change is the wider climate.
Environmental importance. Environmental value of areas affected. Capacity of natural environment.	European nightjar and Eurasian hobby are migratory species, which also use habitats in other countries – these birds migrate over EEA states to their winter ranges in southern Africa. The value of these species is high. Climate change as a result of anthropomorphic release of greenhouse gases is a global phenomenon. Therefore, the receptor is the global climate.
Potential impacts and carrier pathways.	The EIA and HRA assessment processes consider whether there could be any potential for impacts on migratory species supported by Ashdown Forest SPA and SAC to be affected by air quality emissions to habitat, should any significant changes in traffic flows arise close to designated sites as a result of the Project. Climate change effects would be as a result of increased greenhouse gas emissions as a result of construction and operation phases exacerbating the greenhouse effect in the

Screening Criteria	Comments
	atmosphere.
Extent. Geographical area/affected population.	Deposition of pollutants from traffic (to habitat) occurs within a limited distance from any road affected by a significant increase in traffic flow. As stated above, climate change is a global issue and therefore has the potential to affect all EEA states.
Magnitude. Likely magnitude of the change.	The potential for effects on European designated sites and species supported by them is under consideration throughout the EIA process and a screening process is being undertaken in consultation with Natural England to determine whether an appropriate assessment under the Habitats Regulations is required. The effect of the Project on European designated sites has been considered following the method set out in the Planning Inspectorate Advice Note Ten: Habitats Regulations Assessment Relevant to Nationally Significant Infrastructure Projects. The conclusions to date are presented in Appendix 9.9.1, the Habitat Regulations Assessment - Non-Significant Effects Report. This report does not identify any significant effects. The consenting process under the Habitats Regulations means that consent cannot be granted if the Project were to result in any significant effect at Ashdown Forest SAC/SPA. It is not anticipated that there would be any change in the population of migratory birds in EEA states (particularly as the European nightjar and Eurasian hobby migrate to Africa) and therefore a significant transboundary effect is not anticipated. Due to the global nature of climate change impacts, the receptor for impacts is the global climate. Impacts should therefore be considered in terms of the contribution to global greenhouse gas levels within the EIA process, as impacts cannot be attributed to any individual EEA states. The assessment of impacts (and effects) on the global climate is provided in Chapter 15: Climate Change and Carbon. Therefore, the remainder of this transboundary screening matrix focuses on potential biodiversity effects (migratory species).
Probability. Likelihood under normal circumstances or exceptional circumstance (accidents and disasters).	Impacts on migratory species are unlikely, given the distance of the European designated sites from the airport, the distance over which any changes in traffic would result in any effect on air quality (and therefore habitat) and the regulatory regime in place to protect European designated sites. The conclusions of the assessment process to date are presented in Appendix 9.9.1, the Habitat Regulations Assessment - Non-Significant Effects Report. This report does not identify any significant effects.
Duration. Temporary, short-term or long-term. Phase of occurrence.	Effects on ecological designated sites have been considered for both the construction and operational phases.
Frequency. Temporal pattern.	Any effects on designated sites would be as a result of any changes in traffic flow along roads close to the designated sites, whether during peak construction or during the operational phase.
Reversibility. Reversible or irreversible.	If the Project was to go ahead, a reduction in the number of flights/passengers (and therefore also traffic impacts) would reverse the impact.
Cumulative impacts. Other major developments.	The PEIR identifies other developments in the locality which may cause cumulative impacts. A list of ‘other developments’ to be considered within a cumulative assessment has been identified and the combined effects of the Project with the ‘other developments’ are assessed in Chapter 19: Cumulative Effects and Inter-relationships. No cumulative impacts are likely to result in significant effects in EEA states.
Conclusion.	This screening exercise has identified no significant transboundary effects. Assessment in Chapter 9: Ecology and Nature Conservation and Appendix 9.9.1 considers the potential for air quality effects on European designated sites (and any migratory species they support). Effects on climate change have been considered within Chapter 15: Climate Change and Carbon as set out within this screening matrix and in accordance with the process adopted for other proposed development at UK airports. Under Regulation 32 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the 2017 EIA Regulations, as amended) and on the basis of the current information available, no significant effects on the environment in any other EEA State have been identified.

2 References

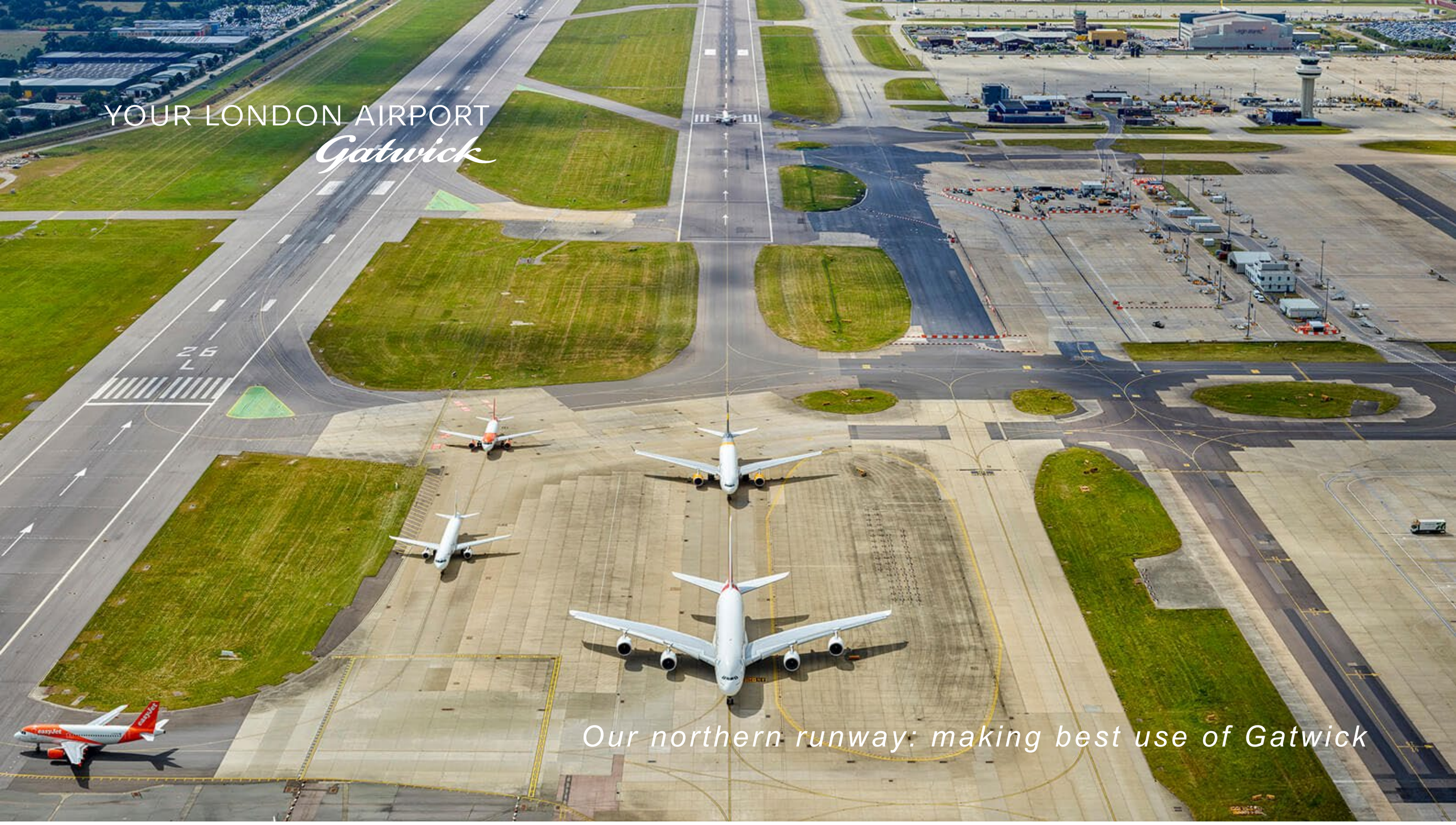
The Infrastructure Planning (Environmental Impact Assessment) Regulations, 2017. 2017 No. 572.

3 Glossary

3.1 Glossary Terms

Table 3.1.1: Glossary of Terms

Term	Description
EEA	European Economic Area
EIA	Environmental Impact Assessment
ES	Environmental Statement
GAL	Gatwick Airport Limited
IEMA	Institute of Environmental Assessment and Management
MPPA	Million passengers per annum
PEIR	Preliminary Environmental Information Report
SAC	Special Area of Conservation
SPA	Special Protection Area
UK	United Kingdom



Preliminary Environmental Information Report
Appendix 7.3.1: Summary of Stakeholder Scoping Responses - Historic Environment

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 7.3.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the summary of stakeholder scoping responses for historic environment for the Project.

2 Summary of Stakeholder Scoping Responses for Historic Environment

Consultee	Date	Details	How/where addressed in PEIR
Crawley Borough Council	14 October 2019	The physical impacts on historic listed and locally listed buildings of any potential noise mitigation (eg additional glazing, insulation or mechanical ventilation) that could be required in noise affected locations should be scoped in and considered as part of the Environmental Statement (ES).	Noise effects are discussed in Chapter 14: Noise and Vibration, with the details of the proposed noise insulation schemes discussed in Section 14.8 and the proposed Noise Insulation Scheme zones identified in Figure 14.8.1. The ES will include the identification of the number and locations of listed buildings within the proposed Noise Insulation Scheme zones.
Crawley Borough Council	14 October 2019	It is unclear what para 7.1.39 [of the Scoping Report] considers as "*the more urbanised areas of Horley and Crawley*" in respect of the impact on settings and what is assumed to be scoped out. Crawley Borough Council would like more certainty on the scope of the assessment and would recommend that the assets are listed within the ES in order to ensure that no important assets are excluded.	Further information on assets scoped out of the assessment is provided in Appendix 7.6.1: Historic Environment Baseline Report. Section 7.9 of Chapter 7: Historic Environment provides an assessment of impacts and effects on all assets for which such assessment is considered necessary. Any asset for which no assessment is provided has been scoped out.
Historic England	14 October 2019	Para 7.1.25 [of the Scoping Report] – potential climate change effects on the historic environment are dismissed but we would suggest that there may be some effects; eg climate generated change in hydrology and ground water conditions may affect archaeological preservation environments through drying out of soil or rapid changes in ground saturation.	The potential effects of climate change on aspects of the historic environment are described in the Future Baseline Conditions within Section 7.6 of Chapter 7: Historic Environment.
Historic England	14 October 2019	Para 7.1.26 [of the Scoping Report] – the study area for archaeological assessment is limited to 1 km circumference of the airport; this is very limited and we think this could be wider, perhaps to align with the 3 km zone anticipated for other heritage asset types.	The defined study area for non-designated heritage assets (including archaeological sites) extends for 1 km from the Project site boundary. This provides adequate context for understanding the known and potential archaeological resource within the Project site. The discussion of archaeological potential presented in Appendix 7.6.1: Historic Environment Baseline Report covers a much wider area of South East England.
Historic England	14 October 2019	Para 7.1.27 [of the Scoping Report]– assessment of effects on historic buildings is limited to 3 km; this is likely to be sufficient in most cases. It is acknowledged within the report, however, that some heritage assets beyond 3 km could be affected and therefore may be bought within the scope of the Environmental Impact Assessment (EIA). These are not specified and it would be helpful to have early clarification of which sites or buildings these may be so that appropriate assessment of effects can be factored into the EIA.	The assessment of effects on the significance of designated heritage assets resulting from changes within their settings is based on a study area which extends for 3 km from the Project site boundary. The Zone of Theoretical Visibility (ZTV) established for the Project is also taken into account when assessing visual changes within

Consultee	Date	Details	How/where addressed in PEIR
			settings of heritage assets. Through the Scoping Report, advice was sought as to whether any specific heritage assets beyond the 3 km study area should also be assessed – no such assets were identified within the Scoping Opinion. A much wider study area has been used in the assessment of effects resulting from increased overflights.
Historic England	14 October 2019	It is proposed to scope out any assessment of effects on urban heritage assets (para 7.1.39 [of the Scoping Report]); however, a number of assets within the 3 km assessment area are within the Horley urban area. It is not clear, therefore, if all assets in urban areas will be scoped out or if sites falling within the ambit of paragraph 7.1.27 [of the Scoping Report] will be an exception. Historic England request clarification.	Further information on assets scoped out of the assessment is provided in Appendix 7.6.1: Historic Environment Baseline Report. Section 7.9 of the Chapter 7: Historic Environment provides an assessment of impacts and effects on all assets for which such assessment is considered necessary. Any asset for which no assessment is provided has been scoped out.
Historic England	14 October 2019	While assessment of effects on individual heritage assets may be included within the scope of the EIA, there is no specific mention of settlement level impacts of Charlwood; given the concentration of assets in this location and its proximity to the airport, and in particular to the repositioned northern runway, there is a case for such an assessment to be included.	Section 7.9 of Chapter 7: Historic Environment provides an assessment of impacts and effects on all assets for which such assessment is considered necessary. This includes assessment of the Charlwood Conservation Area and individual designated heritage assets within Charlwood.
Historic England	14 October 2019	Given the scale of the reproductions in the report ([Scoping Report] figure 7.1.1, Volume 2), it has not been possible to check the accuracy of the heritage designations map. We assume it has drawn its data from respective Historic Environment Records; it would be helpful if these were to be confirmed as the sources of data.	Information regarding data sources is provided within Appendix 7.6.1: Historic Environment Baseline Report. The Historic Environment Records for Surrey and West Sussex have been consulted in the preparation of the baseline report.
Historic England	14 October 2019	There is a case for inclusion of heritage/cultural facilities within the non-residential receptors category of the noise assessment chapter (paragraph 7.8.25 [of the Scoping Report]). The enjoyment and appreciation of heritage sites, museums & galleries, and historic parks and gardens could be disproportionately affected by changes in the noise regime and visual intrusion resulting from more flights and additional ground facilities proposed by the project. Some of these could be well beyond the 3 km radius set for the heritage impacts (eg Hever Castle).	The study area for the assessment of effects resulting from increased air noise is much greater than 3 km – it is based on the modelled noise change footprints rather than a predefined distance from the Project site boundary. This is described within Appendix 7.6.1: Historic Environment Baseline Report.
Historic England	14 October 2019	The proposed geographical limitations (1 km for archaeology, 3 km for built heritage) are applied to the proposed cumulative assessment matrix (Table 7.15.2 [of the Scoping Report]); if an extension of those study area limits (eg to the archaeological impacts) are agreed, the revised area of assessment should apply to the cumulative impacts also.	The area of assessment for cumulative impacts aligns with the defined study area for effects resulting from changes within the settings of designated heritage assets.
Horsham District Council	14 October 2019	No figure representing the 3 km area for heritage assets, only a figure representing the 1 km archaeological area. It would therefore be useful for GAL to provide a map at the earliest opportunity that shows the area 3 km from the Project site boundary to confirm that all designated assets within this area have been identified. If this is not currently the case, these sites should be incorporated into the assessment process. It is also suggested that the impact on non-designated heritage assets be identified and considered. Although not of national importance these assets are of local significance and should be protected where possible.	The designated heritage assets within 3 km of the Project site boundary (and within the ZTV) are indicated on Figure 5.2.1 of Appendix 7.6.1: Historic Environment Baseline Report. Potential effects on the significance of non-designated heritage assets are described with Section 7.9 of Chapter 7: Historic Environment.
Kent County Council	14 October 2019	An initial Heritage Assessment has been undertaken; based primarily on readily available resources held by the Kent County Council Historic Environment Record. Rather than a detailed appraisal, it provides a broad initial view on the sensitivity of the historic environment resource in Kent and the way in which this should be approached for assessment of the potential impacts of development at Gatwick. The sensitivity of particular sites	The only part of the heritage assessment that could cover heritage assets within Kent is the assessment of effects resulting from increased air noise. The study area for this assessment is described within Appendix 7.6.1: Historic Environment Baseline Report, whilst

Consultee	Date	Details	How/where addressed in PEIR
		may change following more detailed appraisal and in light of new information. The process of assessment should be reviewed and refined as the consideration of the proposed development progresses.	the assessment of effects is presented within Section 7.9 of Chapter 7: Historic Environment.
Kent County Council	14 October 2019	The proposal is unlikely to have direct impact on Kent's archaeological remains. However, there may also be a more indirect impact from enabling or related works, such as improvements to infrastructure - especially improvements to the M25, A25, A21 or A264, or improvements to services, such as upgrading water, electricity, gas or telecommunication routes. These indirect impacts should be identified and considered within the ES.	The only part of the heritage assessment that could cover heritage assets within Kent is the assessment of effects resulting from increased air noise. The study area for this assessment is described within Appendix 7.6.1: Historic Environment Baseline Report, whilst the assessment of effects is presented within Section 7.9 of Chapter 7: Historic Environment. The Project does not include any infrastructure improvements within Kent.
Kent County Council	14 October 2019	There may be impact from additional overhead planes on the setting of some archaeological sites, such as Squerryes Park Hillfort, in terms of appreciation and understanding of their site and situation.	The study area for the assessment of effects resulting from increased air noise is based on the modelled noise change footprints. This is described within Appendix 7.6.1: Historic Environment Baseline Report whilst the assessment of effects is presented within Section 7.9 of Chapter 7: Historic Environment.
Kent County Council	14 October 2019	The increase in flight numbers arising as a result of the proposal is likely to result in an increase in pollution from the aircraft, as well as the increased traffic travelling to the airport – this may have a direct impact on the designated and non-designated buildings in Kent. The proposal may have an impact on historic buildings within the high status residences, including Squerryes Court, Chiddingstone and Chartwell. The historic buildings within the villages along the A25, such as Westerham and Brasted, and along the A264, such as Ashurst, could also be affected. Furthermore, indirect impacts could result in a detrimental effect on the setting of the more isolated but high status historic buildings, especially in terms of the understanding and appreciation of medieval and post medieval components of buildings within Kent.	The study area for the assessment of effects resulting from increased air noise is based on the modelled noise change footprints. This is described within Appendix 7.6.1: Historic Environment Baseline Report whilst the assessment of effects is presented within Section 7.9 of Chapter 7: Historic Environment.
Kent County Council	14 October 2019	Historic Landscapes: The historic landscapes within the study zone in Kent could be directly affected by the increase in overhead planes and indirectly by increased road traffic. The increase in flights and resulting noise arising from the proposal would be intrusive and would have a detrimental impact on the appreciation, understanding and enjoyment on the extensive designated parklands - some of which are major visitor attractions in Kent. The wider historic landscapes of this study zone are a key part of the historic character of Kent and the tranquility of the historic areas are valued by residents and visitors. There might also be a detrimental visual impact on the views from and towards the historic parklands located on the hills, particularly towards the northern part of the study zone in Kent.	The study area for the assessment of effects resulting from increased air noise is based on the modelled noise change footprints. This is described within Appendix 7.6.1: Historic Environment Baseline Report whilst the assessment of effects is presented within Section 7.9 of Chapter 7: Historic Environment.
Kent County Council	14 October 2019	Although there may only be a localised direct impact on the archaeology, historic buildings and historic landscapes from works associated with the proposal, there may be a considerable range of indirect impacts from the increase in air traffic and the need to improve surface access for the airport. This could range from direct detrimental impact on the fabric of historic buildings through increased air pollution, to the impact of the appreciation of the tranquility of surviving medieval landscapes. Assessment of the environmental impact of the proposal needs to be supported by a thorough and robust assessment of the historic environment and a specialist assessment of archaeology and historic buildings and historic landscapes should be part of the ES.	The assessment of effects on the historic environment is presented within Section 7.9 of Chapter 7: Historic Environment.
Kent County Council	14 October 2019	The ES for this scheme will need to include key local planning policies on heritage of Tunbridge Wells Borough Council, Sevenoaks District Council and Tonbridge and Malling Borough Council. It is essential that the historic environment for these districts and boroughs is considered, particularly in view of the potential impact from noise, pollution and traffic impacts.	The only part of the heritage assessment that could cover heritage assets within Kent is the assessment of effects resulting from increased air noise. The study area for this assessment is described within Appendix 7.6.1: Historic Environment Baseline Report, whilst

Consultee	Date	Details	How/where addressed in PEIR
			the assessment of effects is presented within Section 7.9 of Chapter 7: Historic Environment.
Kent County Council	14 October 2019	Assessment of the historic environment as part of the ES will need to include appropriate assessment of historic/ archaeological landscapes, not just Historic Landscape Character. At present, guidance set out by the Highways Agency could be the best current national model to follow. This is particularly important to ensure robust assessment of designated heritage assets and their significance. In Kent, the impact from noise, pollution, lighting and visible planes is going to be a significant issue moving forward due to the potential impact on all aspects of west Kent's environment.	The only part of the heritage assessment that could cover heritage assets within Kent is the assessment of effects resulting from increased aircraft noise. The study area for this assessment is described within Appendix 7.6.1: Historic Environment Baseline Report, whilst the assessment of effects is presented within Section 7.9 of Chapter 7: Historic Environment.
Mid Sussex District Council	14 October 2019	Any recommendations/ consultation advice received from statutory consultees should be provided and discussed as part of ongoing consultation and design development.	All consultation advice is recorded within Table 7.3.2 in Chapter 7: Historic Environment.
Mid Sussex District Council	14 October 2019	Given that the Design Manual for Roads and Bridges (DMRB) has potentially limited application to airports it should be confirmed how the proposed methodology compares or contrasts to the assessment methods applied in other recent cognate EIAs related to airport schemes.	It is not accepted that DMRB has potentially limited application to airports. The methodology used for the assessment presented Chapter 7: Historic Environment has been informed by DMRB but takes on board other guidance published by statutory bodies.
Mid Sussex District Council	14 October 2019	It should be confirmed how the methods used to define study areas for the Historic Environment have been developed in tandem with other topics, including Landscape, Townscape and Visual Resources and Noise and Vibration.	The assessment of effects on the significance of designated heritage assets resulting from changes within their settings is based on a study area which extends for 3 km from the Project site boundary. The ZTV established for the Project as part of the Landscape and Visual Impact Assessment is also taken into account when assessing visual changes within settings of heritage assets. The study area for the assessment of effects resulting from increased air noise is based on the modelled noise change footprints. This is described within Appendix 7.6.1: Historic Environment Baseline Report whilst the assessment of effects is presented within Section 7.9 of Chapter 7: Historic Environment.
Mid Sussex District Council	14 October 2019	The ES should ensure that it describes the areas in which the Historic Environment and Landscape, Townscape and Visual Resources topics overlap or diverge in their methodological approaches to aspects including: ▪ study areas; ▪ tranquility; ▪ viewpoints, viewsheds, photomontages and visualisations; ▪ definition, verification and use of ZTV(s); ▪ setting assessment; ▪ receptor identification and selection; ▪ receptors shared with Noise and Vibration/Human Health topics; ▪ their roles in providing inputs into design and design principles/ guidance; and ▪ conservation areas, individual historic structures and historic landscape.	The study areas for the heritage assessment are described within Appendix 7.6.1: Historic Environment Baseline Report.
Mole Valley District Council	14 October 2019	Paragraph 7.1.1 [of the Scoping Report] – For the avoidance of doubt, the Council would like to make clear that not all of the Mole Valley Local Plan 2000 policies listed as relevant to the Historic Environment were saved following review of the 2000 Local Plan in 2007. Policies ENV40, ENV41, ENV44, ENV45, and ENV46 were not saved and are therefore not applicable.	It is acknowledged that the stated policies from the Mole Valley Local Plan 2000 are not 'saved' – these policies are not considered within the PEIR and subsequent ES.
Mole Valley District Council	14 October 2019	Paragraph 7.1.39 [of the Scoping Report] – No assessment is proposed to be undertaken with regard to the potential effects on the importance of designated heritage assets located within the more urbanised areas of	Further information on assets scoped out of the assessment is provided in Appendix 7.6.1: Historic Environment Baseline Report.

Consultee	Date	Details	How/where addressed in PEIR
		Horley and Crawley. While this concerns land outside the Council's remit, we are concerned that this is an insufficient approach as there are designated heritage assets such as listed buildings, within the built-up areas of Horley and Crawley, that are within close range of the airport or near to areas where development is planned through the Project. Such heritage assets have the potential to be affected by the development and should therefore be included in the scope of the EIA.	Section 7.9 of Chapter 7: Historic Environment provides an assessment of impacts and effects on all assets for which such assessment is considered necessary. Any asset for which no assessment is provided has been scoped out.
Reigate and Banstead Borough Council	14 October 2019	Following the adoption of the Development Management Plan (DMP) on 26th September 2019, references to the following saved Borough Local Plan Policies should also be removed from Paragraph 7.1.1 of the Scoping Report: ▪ Pc8 "Ancient Monuments & Archaeology"; ▪ Pc9 "Buildings of Historic Interest"; ▪ Pc10 "Buildings of Local Interest"; ▪ Pc11 "Historic Gardens"; and ▪ Pc12-14 "Conservation Areas.	It is acknowledged that the Reigate and Banstead Borough Council DMP 2018-2027 was adopted in September 2019. Consequently, the 'saved' policies from the former Borough Local Plan are not considered within the PEIR or subsequent ES.
Reigate and Banstead Borough Council	14 October 2019	We have some concern regarding the scoping out of the potential effects on the importance of designated heritage assets located within the more urbanised areas of Horley and Crawley. We consider that such a generic blanket approach is not appropriate - whilst we recognise (and appreciate) the justification provided by GAL, namely that because their settings are predominantly urban that it is unlikely that any development at the airport would impact upon them, we note that this may lead to the screening out of the impact of the project on St Bartholomew's Church which is Grade I listed and whilst in the urban area of Horley is within very close proximity to the proposed Project site boundary and proposed improvement works that may be required to the Longbridge roundabout.	Further information on assets scoped out of the assessment is provided in Appendix 7.6.1: Historic Environment Baseline Report. Section 7.9 of Chapter 7: Historic Environment provides an assessment of impacts and effects on all assets for which such assessment is considered necessary. Any asset for which no assessment is provided has been scoped out. The potential effects on the significance of the Grade I listed Church of St Bartholomew have been assessed.
Reigate and Banstead Borough Council	14 October 2019	The Council would expect to see greater clarity as to the proposed definition of the study area for the identification of non-designated heritage assets (locally listed buildings). We note that Paragraph 7.1.20 of the EIA Scoping Report says that the historic environment desk-based assessment will include locally listed buildings but that no study area is proposed for the identification of locally listed buildings within Paragraphs 7.1.26-7.1.28 of the EIA Scoping Report which detail the proposed study areas for heritage assessments.	The defined study area for non-designated heritage assets (including locally listed buildings) extends for 1 km from the Project site boundary.
Surrey County Council	14 October 2019	The area around Gatwick Airport is rich in Prehistoric material and known occupation sites. The Sussex side of the border has produced significantly more evidence – this is likely due to the heavily urbanised and developed nature of the landscape meaning that more investigations have taken place there, rather than any indication of a dearth of occupation on the rather more rural Surrey side. It is notable that some of the Sussex archaeological areas stop at the Surrey border, whilst one of the Surrey ones stops at the edge of Sussex: the assessment will need to be mindful of the fact that these distinctions are artificial.	The assessment takes account of the potential for the boundaries of defined areas of archaeological significance to be artificial constructs based on previous investigations.
Surrey County Council	14 October 2019	One of the proposed construction compound sites is within the Surrey border (the site to the north of Junction 9a of the M23 and A23). This site is adjacent to a Surrey Area of High Archaeology Potential (AHAP) and will require investigation unless it can be demonstrated that the compound will be constructed and operated in a manner which will leave sub-surface deposits undisturbed, including through the possibilities of site compaction. Provision for this appears to be set out in paragraph 7.1.31 [of the Scoping Report], as are the proposals for subsequent mitigation, although it is noted that no mention is made of publication within the discussion on reporting: we will almost certainly require the results of any work to be detailed in the county Archaeological Journal.	Appropriate archaeological investigation of this proposed construction compound location would be undertaken in accordance using methodologies agreed in advance with the archaeology team at Surrey County Council. Any mitigation measures for the protection of archaeological remains would also be agreed in advance with the archaeology team at Surrey County Council, as would the details of the publication of the results of any archaeological investigations undertaken within Surrey in connection with the Project.

Consultee	Date	Details	How/where addressed in PEIR
Surrey County Council	14 October 2019	There is little mention of heritage assets other than archaeology, but as the proposal is largely about reconfiguration of operations within an existing airport, many of the effects on these assets (Listed Buildings, historic landscapes, etc) will already be apparent. It will be important to keep note of the settings of these sites however, particularly with regard to probable increased noise issues.	Section 7.9 of Chapter 7: Historic Environment presents an assessment of the likely effects on all aspects of the historic environment. The chapter includes an assessment of likely effects resulting from increased noise.
West Sussex County Council	14 October 2019	In reference to Paragraph 7.1.2 [of the Scoping Report] - The list of guidance documents should also include the Sussex Archaeological Standards (2019). These are non-statutory local archaeological standards used in providing development management advice by East Sussex County Council, West Sussex County Council and Chichester District Council.	This document is now included within the list of guidance documents described and discussed within Appendix 7.6.1: Historic Environment Baseline Report.
West Sussex County Council	14 October 2019	In reference to Paragraph 7.1.9 [of the Scoping Report] - Deeper deposits of potential geoarchaeological and paleoenvironmental significance (eg late glacial channel deposits, alluvial deposits) may survive below areas of previous heavy ground disturbance.	The potential for deposits of geoarchaeological and palaeoenvironmental interest to be present within the Project site is discussed in Appendix 7.6.1: Historic Environment Baseline Report.
West Sussex County Council	14 October 2019	In reference to Paragraph 7.1.18 [of the Scoping Report] - It is recommended strongly that the information used to inform the detailed Historic Environment Desk Based Assessment (DBA) should include full summaries of the findings of the two archaeological investigations by GAL for the New Pollution Lagoon (Figure 7.5.1 [of the Scoping Report]) and Flood Alleviation Reservoir (to the south of Crawley Sewage Works), both of which are within the Project site boundary. The Flood Alleviation Reservoir construction site included part of a Late Iron Age cremation cemetery, which lies partly within the Water Treatment Works Option 2 Area; the cemetery, from the brief information presently available, appears to be of high archaeological significance, but its extent is not presently known. It is also recommended strongly that further information should be provided about the cemetery - its dating, quality, degree of rarity and extent - as part of the EIA, eg following excavation of trial trenches in the close vicinity of the known discoveries. The Historic Environment DBA should also include an appraisal of the geoarchaeological potential of the site in relation to the proposals.	Detailed summaries of the results of the programmes of archaeological work at these two sites are presented within in Appendix 7.6.1: Historic Environment Baseline Report. The potential for deposits of geoarchaeological and palaeoenvironmental interest to be present within these areas is also discussed in Appendix 7.6.1: Historic Environment Baseline Report.
West Sussex County Council	14 October 2019	In reference to Paragraph 7.1.25 [of the Scoping Report]: Climate change should be included as it is likely to affect the historic environment baseline over the assessment period through increased heat and rainfall undermining foundations and damaging buildings.	The potential effects of climate change on aspects of the historic environment are described in the Future Baseline Conditions within Section 7.6 of Chapter 7: Historic Environment.
West Sussex County Council	14 October 2019	In reference to Paragraph 7.1.31 [of the Scoping Report]: Some of the land within the Project site boundary, where buried archaeological features may still exist, not previously investigated or recorded, is listed. However, the following Project Elements should also be included: ▪ Fire Training Ground and potential Noise Mitigation Bund; ▪ Car parking areas: Crawter's Road Car Park & Purple Parking reprovision area; and Pentagon Field; ▪ Waste Water Treatment Option 1; ▪ Waste Water Treatment Option 2 (known Iron Age cremation burial cemetery on part of the site formerly a construction compound for the Flood Alleviation Reservoir, exact location of cemetery and details of archaeological investigation and recording pending); ▪ Western part of the potential area for flood compensation; ▪ Main construction Compounds north and south of A23 Gatwick Spur Road; and ▪ All of the Potential Environmental Mitigation and Enhancement Areas.	A programme of geophysical survey has been undertaken in order to further inform the understanding of archaeological potential as selected locations within the Project site. This was agreed in advance with the appropriate archaeological advisors to the local planning authorities. Further investigations will be undertaken ahead of the production of the final ES – again all work would be agreed in advance with the appropriate archaeological advisors to the local planning authorities, as would any subsequent investigations carried out ahead of or during construction.
West Sussex County Council	14 October 2019	In reference to Paragraph 7.1.39 [of the Scoping Report]: The proposed scoping out of the potential effects of the Project on the significance of designated heritage assets located within the more urbanised areas of Crawley is acceptable in principle, with the reservation that such assets should be listed in the ES (eg in an Appendix), to facilitate review of excluded assets where desirable; and that it should be made clear there whether or not these	Further information on assets scoped out of the assessment is provided in Appendix 7.6.1: Historic Environment Baseline Report. Section 7.9 of Chapter 7: Historic Environment provides an assessment of impacts and effects on all assets for which such

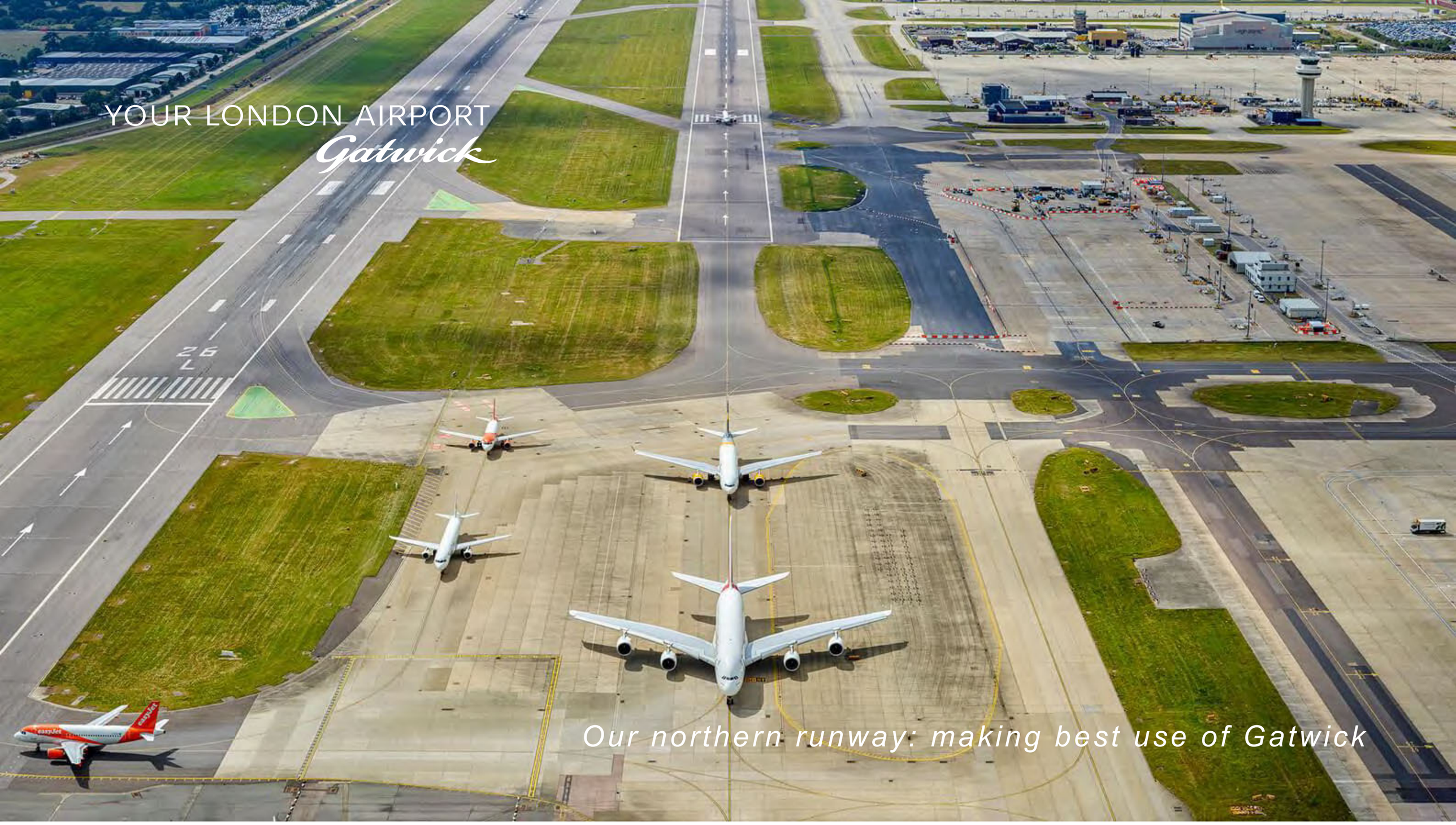
Consultee	Date	Details	How/where addressed in PEIR
		assets are in the ZTV associated with the Project. Further, the potential physical impact of noise insulation on historic buildings should be taken into account. No comments are offered here in respect of similar proposed scoping out for built-up areas of Horley (in Surrey, outside West Surrey County Council's geographical remit).	assessment is considered necessary. Any asset for which no assessment is provided has been scoped out.
Tandridge District Council	14 October 2019	No specific comments are made on the proposed scope of the baseline studies, study area, affects proposed to be assessed, and the approaches to the assessment of effects, and mitigation, enhancement and monitoring in relation to this topic. The scoping out of the potential effects on the importance of designated heritage assets in urbanised areas (Horley and Crawley) is considered acceptable in principle, though the comments made by the Boroughs within which these towns are located (Reigate and Banstead, and Crawley) are deferred to in this instance. The scoping out of effects on buried archaeology during the operational phase of the development is considered acceptable.	Further information on assets scoped out of the assessment is provided in Appendix 7.6.1: Historic Environment Baseline Report. Section 7.9 of Chapter 7: Historic Environment provides an assessment of impacts and effects on all assets for which such assessment is considered necessary. Any asset for which no assessment is provided has been scoped out.

3 Glossary

3.1 Glossary of terms

Table 3.1.1: Glossary of Terms

Term	Description
AHAP	Area of High Archaeological Potential
DBA	Desk Based Assessment
DMP	Development Management Plan
EIA	Environmental Impact Assessment
ES	Environmental Statement
GAL	Gatwick Airport Limited
PEIR	Preliminary Environmental Information Report
ZTV	Zone of Theoretical Visibility



Preliminary Environmental Information Report
Appendix 7.6.1: Historic Environment Baseline Report

September 2021

Table of Contents

Figures

1 Introduction

1.1 General

1.1.1 This document forms Appendix 7.6.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, together with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in Chapter 5: Project Description.

1.1.2 This document provides the Historic Environment Baseline Report for the Project.

1.2 Scope of Study

1.2.1 The report presents the results of combined desk-based assessment and site survey work. The Project site boundary is shown on Figures 1.2.1 and 1.2.2, along with the locations of heritage assets within 1 km of this boundary. Each of the heritage assets has a unique identifying site number, eg Site 1; Site 2 etc; these are taken from the overall historic environment gazetteer which is presented as Annex 1 of this baseline report.

1.2.2 A full description of the proposed elements of the Project is presented within Chapter 5 of the PEIR. Principal components of the Project comprise:

- amendments to the existing northern runway including repositioning its centreline 12 metres further north to enable dual runway operations;
- reconfiguration of taxiways;
- pier and stand alterations (including a proposed new pier);
- reconfiguration of other airfield facilities;
- extensions to the existing airport terminals (north and south);
- provision of additional hotel and office space;
- provision of reconfigured car parking, including new car parks;
- surface access (including highways) improvements;
- reconfiguration of existing utilities, including surface water, foul drainage and power; and
- landscape/ecological planting and environmental mitigation.

1.2.3 This baseline report includes:

- a review of relevant legislation, planning policy and guidance;
- a review of the geology and topography of the land within the Project site boundary;
- a review of the historic landscape character of the land within and adjacent to the Project site boundary;
- the collection and mapping of Historic England Archive data for designated heritage assets within a study area extending 3 km beyond the Project site boundary and within the defined Zone of Theoretical Visibility (ZTV);
- the identification of significance of designated heritage assets that may be affected by the Project, including an assessment of their settings and how these settings contribute to their significance;
- the collection and mapping of Historic England Archive data (with cross referencing to Surrey and West Sussex Historic Environment Records (HERs)), for a study area extending approximately 1 km beyond the Project site boundary;
- a discussion of the known archaeological resources within the area surrounding the Project site, including their significance;
- a discussion of the known archaeological resources within the Project site, including their significance;
- a review of available non-intrusive surveys, including walkovers, aerial photographic assessment, LiDAR assessment and geophysical surveys;
- the predictive modelling of areas of high, medium and low archaeological potential within the land required for the Project; and
- the compilation of a gazetteer of the sites and finds identified (Annex 1).

1.2.4 This report is divided into the following key historic environment topics:

- historic landscape (Section 4);
- designated heritage assets (Section 5); and
- archaeology (Section 6).

1.2.5 A glossary of terms used within this report is provided in Section 8.

1.3 Assumptions and Limitations

1.3.1 There is a degree of uncertainty attached to the baseline data sources used in this report. This uncertainty includes the following, listed below.

- The entries in the Historic England Archive and equivalent county level HERs can be limited because these depend to a great extent on random opportunities for research, fieldwork and discovery.
- There is sometimes a lack of dating evidence for sites recorded in the Historic England Archive and equivalent county level HERs.
- Documentary sources are rare before the medieval period, and many historic documents are inherently biased. Older primary sources often fail to accurately locate sites and interpretation can be subjective.
- The extent of truncation caused by previous development impacts and landscaping works cannot be fully ascertained. In some cases it may be greater than anticipated and in others less than anticipated.

2 Legislation, Policy and Guidance

2.1 Legislation

2.1.1 Statutory protection for archaeological remains is principally enshrined in the Ancient Monuments and Archaeological Areas Act (1979) amended by the National Heritage Acts (1980; 1983; 2002). Nationally important archaeological sites are listed in a Schedule of Monuments and are afforded statutory protection.

2.1.2 The Planning (Listed Buildings and Conservation Areas) Act (1990) and the Town and County Planning Act (1990) provide statutory protection to listed buildings and their settings, and present measures to designate and preserve the character and appearance of Conservation Areas.

2.1.3 Historic Parks and Gardens, and Historic Battlefields, have received recognition under the National Heritage Acts. Such sites are described on Registers maintained by Historic England for the Department for Digital, Culture, Media and Sport (DDCMS), but such designation does not afford statutory protection.

2.2 Planning Policy

National Planning Policy

2.2.1 As a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008, the principal national planning regime for the Project comprises the Airports National Policy Statement (NPS) (Department for Transport, 2018). This NPS sets out the primary policy for decision-making in relation to the proposed new runway at Heathrow Airport, but also states that it *'will be an important and relevant consideration in respect of applications for new runway capacity and other airport infrastructure in London and the South East of England.'*

2.2.2 With regard to the historic environment, the NPS states '*The construction and operation of airports and associated infrastructure has the potential to result in adverse impacts on the historic environment above and below ground. This could be as a result of the scale, form and function of the development, and the wider impacts it can create in terms of associated infrastructure to connect the airport to existing transport networks, changes in aircraft movement on the ground and in the surrounding airspace, additional noise and light levels, and the need for security and space to ensure the airport's operation*' (paragraph 5.187).

2.2.3 The NPS goes on to identify that '*Those elements of the historic environment that hold value to this and future generations because of their historic, archaeological, architectural or artistic interest are called 'heritage assets'. Heritage assets may be buildings, monuments, sites, places, areas or landscapes, or any combination of these. The sum of the heritage interests that a heritage asset holds is referred to as its significance. Significance derives not only from a heritage asset's physical presence, but also from its setting*' (paragraph 5.189).

2.2.4 Footnote 210 (page 77) explains that '*Setting of a heritage asset is the surroundings in which an asset is experienced. Its extent is not fixed, and may change as the asset and its surrounding evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance, or may be neutral*'.

2.2.5 Categories of designated heritage assets are:

- World Heritage Sites;
- Scheduled Monuments;
- Listed Buildings;
- Protected Wreck Sites;
- Protected Military Remains;
- Registered Parks and Gardens;
- Registered Battlefields; and
- Conservation Areas.

2.2.6 Non-designated heritage assets of archaeological interest which are demonstrably of equivalent interest to Scheduled Monuments will be subject to any policies that apply to designated heritage assets. For other non-designated heritage assets, the Secretary of State will consider impacts on such asset on the basis of clear evidence that the assets '*have a significance that merits consideration in that decision*' (paragraph 5.192).

2.2.7 The NPS advises that '*As part of the environmental statement, the applicant should provide a description of the significance of the heritage assets affected by the proposed development, and the contribution of their setting to that significance. The level of detail should be proportionate to the asset's importance, and no more than is sufficient to understand the potential impact of the proposal on the significance of the asset*', before going on to state '*Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, the applicant should include an appropriate desk-based assessment and, where necessary, a field evaluation. The applicant should ensure that the extent of the impact of the proposed development on the significance of any heritage asset can be adequately understood from the application and supporting documents*' (paragraph 5.193).

2.2.8 With regard to decision making, the NPS advises that '*When considering the impact of a proposed development on the significance of a designated heritage asset, the Secretary of State will give great weight to the asset's conservation. The more important the asset, the greater the weight should be*' (paragraph 5.200), also '*Substantial harm to or loss of a Grade II Listed Building or a Grade II Registered Park and Garden should be exceptional. Substantial harm to or loss of designated sites of the highest significance, including World Heritage Sites, Scheduled Monuments, Grade I and II* Listed Buildings, Protected Wreck Sites, Registered Battlefields, and Grade I and II* Registered Parks and Gardens should be wholly exceptional*' (paragraph 5.202).

2.2.9 Importantly, '*Any harmful impact on the significance of a designated heritage asset should be weighed against the public benefit of development, recognising that the greater the harm to the significance of the heritage asset, the greater the justification will be needed for any loss*' (paragraph 5.203).

2.2.10 The Project also requires works to the trunk road network and therefore consideration will need to be given to the NPS for National Networks (Department for Transport, 2015). The policy regarding historic environment issues is presented in paragraphs 5.120 – 5.142 of the National Networks NPS, with the wording being very similar to that used in the Airports NPS.

2.2.11 The National Planning Policy Framework (NPPF) was published in 2012 and last updated in 2021 (Ministry of Housing, Communities and Local Government, 2021). The NPPF sets out the Government's planning policies for England and how these are to be applied. It states that planning law requires applications to be determined in accordance with the Development Plan for the relevant area unless material considerations indicate otherwise. Paragraph 2 states the NPPF '*… is a material consideration in planning decisions*'.

2.2.12 Policies regarding the historic environment are set out in Chapter 16 of the NPPF and include the following: '*In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance'* (paragraph 194).

2.2.13 '*When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amount to substantial harm, total loss or less than substantial harm to its significance*' (paragraph 199).

2.2.14 '*Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of:*

a) *grade II listed buildings, or grade II registered parks or gardens, should be exceptional;*
b) *assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional'* (paragraph 200).

2.2.15 '*Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local*

planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

a) the nature of the heritage asset prevents all reasonable uses of the site; and

b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and

c) conservation by grant-funding or some form or not for profit, charitable or public ownership is demonstrably not possible; and

d) the harm or loss is outweighed by the benefit of bringing the site back into use.

2.2.16 '*Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use*' (paragraph 202).

2.2.17 '*The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset*' (paragraph 203).

Local Planning Policy

2.2.18 The Project is largely located within the county of West Sussex and within the administrative area covered by Crawley Borough Council, but a small part is within the county of Surrey and this includes land within the administrative area of Reigate and Banstead Borough Council and a very small area of land within the administrative area of Mole Valley District Council.

2.2.19 The defined study area for examination of the archaeological baseline situation extends for 1 km from the Project site boundary (Figure 1.2.2). This also takes in land within the administrative areas of Tandridge District (Surrey) and Mid Sussex District (West Sussex).

Crawley Borough Local Plan (2015-2030)

2.2.20 The Crawley Local Plan (2015-2030) was adopted in December 2015. It includes the following historic environment policies which are relevant:

Policy CH12: Heritage Assets

'All development should ensure that Crawley's designated and non-designated heritage assets are treated as a finite resource, and that their key features or significance are not lost as a result of development.

Where a development affects a heritage asset or the setting of a heritage asset, a Heritage Impact Assessment will be required. This should describe the significance of any heritage assets affected and the contribution made by their setting, the impact of the development, and any measures adopted to ensure the heritage asset is respected, preserved or enhanced or, for exceptionally significant development, relocated.

If, in exceptional circumstances, a heritage asset is considered to be suitable for loss or replacement, and it has been demonstrated its site is essential to the development's success, proposals will need to demonstrate how they have recorded the heritage asset:

i. in line with a written scheme of investigation submitted to, and approved by, Crawley Borough Council; or

ii. in the case of standing structures, to a minimum of Historic England recording Level 2, or higher if specified by the council.

Applicants are also required to notify any relevant parties including Historic England and submit their recording to the Historic Environment Record.

Applicants should demonstrate that the benefits of the entire scheme outweigh the loss of the asset and that any replacement scheme is of equal quality in terms of its design.'

Policy CH13: Conservation Areas

'All development within a Conservation Area should individually or cumulatively result in the preservation or enhancement of the character and appearance of the area.

All development within a Conservation Area should demonstrate, as part of the Heritage Impact Assessment, how the proposal conforms to the relevant Conservation Area Statement and Appraisal, and that consideration has been given to all of the following criteria:

i) respect the protected area and recognise the identifiable, and distinctive, character(s);

ii) respect any historic landscape features which affect the character of the place;

iii) maintain and enhance the area's landscape value with regards to mature trees, hedges and public green spaces such as grass verges;

iv) respect and enhance the character of lower density developments with spacious landscaped settings. This includes where the landscape dominates the buildings, the significant gaps between the buildings, the set back from the street, as well as any large gardens, mature trees, hedges and green verges; and

v) preserve the area's architectural quality and scale.

There may be structures within a Conservation Area which are not heritage assets and do not positively contribute to its character or appearance. Therefore, proposals for demolition of these structures will be considered on a case-by-case basis and may not be required to submit a recording to the Historic Environment Record. For such developments early pre-application discussions are encouraged.'

Policy CH15: Listed Buildings and Structures

'To recognise the value of Listed Buildings (including Listed Structures) within Crawley, the council will ensure that any proposed works to them are consistent with the character, appearance and heritage value of any statutory Listed Building/ Structure, in line with national legislation, policy and guidance.

Any changes must preserve or enhance the design and character of the Listed Building and have regard to its historic significance. A Heritage Impact Assessment is required to be submitted demonstrating how proposals will protect the value of the listed building, its setting and its key features.

Listed Buildings should be retained and, therefore, the demolition, or part thereof, of a Listed Building will only be acceptable in exceptional circumstances, where:

i. there are clearly defined reasons why the building cannot be retained in its original or a reasonably modified form; and

ii. a significant benefit that cannot have facilitated the retention of the building can be demonstrated.

If demolition is seen to be acceptable, the council will require the building to have been recorded to Historic England Level 4 and submitted to the Historic Environment Record. Any development on the site of a demolished Listed Building must have regard to the original building.'

Policy CH16: Locally Listed Buildings

'All development will seek to secure the retention of buildings included on the Crawley Borough Local Building List. Development should also maintain features of interest, and respect or preserve the character or setting of the building.

Development proposals affecting Locally Listed Buildings must demonstrate in the Heritage Impact Assessment that proposals take account of the following criteria:

ii) The Historic interest of the building.

iii) The Architectural interest of the building.

iv) The Townscape interest of the building.

v) The Communal value of the building and its surroundings.

Proposals seeking the demolition or partial demolition of a Locally Listed Building may be acceptable if the development proposals:

a) reflect or retain the key features of the original building; and

b) significantly outweigh the merit of retaining the original building with regard to social, economic and environmental benefit to the wider area; and

c) records the building up to Historic England Level 4, unless previously agreed with the Local Planning Authority, and submits that record to the Historic Environment Record in consultation with the Local Authority.

The council will also assess the merit of designating new locally listed buildings in consultation with local residents and will defined the characteristics of the buildings that warrant this level of protection.'

CH17: Historic Parks and Gardens

'*The following sites are designated and shown on the Local Plan Map as Historic Parks and Gardens:*

- *Worth Park*
- *Land South of St Nicholas' Church*
- *Broadfield Park*
- *Tilgate Park*
- *Goffs Park*
- *Memorial Gardens.*

The council will support development, unless it will have a negative impact upon the historic setting and character of the designated Historic Park or Garden.

All development proposals within the boundaries of the Historic Parks and Gardens as identified on the Local Plan Map will be required to demonstrate, through a Heritage Impact Assessment, that the proposals have regard to the designation, its character, key features and the setting of the area and that proposals respect or enhance the area.'

Crawley Borough Local Plan (2021-2037)

2.2.21 The draft Crawley Borough Local Plan 2021-2037 represents the emerging local plan policy. The January 2021 Regulation 19 draft submission document includes the following historic environment policies which are relevant:

Strategic Policy HA1: Heritage Assets

'Crawley's designated and non-designated heritage assets include:

- *Listed Buildings (see also Policy HA4);*
- *Scheduled Monuments (see also Policy HA7);*
- *Non-designated heritage assets of equivalent significance to scheduled monuments (see also Policy HA7);*
- *Conservation Areas (see also Policy HA2);*
- *Locally Listed Buildings (see also Policy HA5);*
- *Areas of Special Local Character (see also Policy HA3);*
- *Historic Parks and Gardens (see also Policy HA6);*
- *Other non-designated assets with archaeological interest (see also Policy HA7).*

All development should respond to these as a finite resource, providing a distinctive combination of social, economic and environmental benefits. Proposals should ensure that heritage assets' key features or significance are conserved and enhanced as a result of development.

Where a designated heritage asset is affected by a proposal, great weight will be given to its conservation, while harm to, or loss of, its significance will require justification according to the importance of the asset and the degree of loss or harm, in line with local and national policy.

Proposals affecting the significance of a non-designated heritage asset will be considered according to the scale of any harm or loss, and the asset's significance, in line with local and national policy.

Where a development affects a heritage asset or the setting of a heritage asset, a Heritage Impact Assessment will be required. This should:

i. for development proposals meeting criteria set out in the council's Local List of Planning Requirements: include, and be informed by, the findings of a search of the Historic Environment Record (HER) and/or an Archaeological Desk-based Assessment.

ii. in all cases: describe, with reference to relevant sources (such as the National Heritage List for England and Conservation Area Appraisals), the significance of any heritage assets affected and the contribution made by their setting, the impact of the development, and any measures adopted to ensure the heritage asset is respected, preserved or enhanced or, for exceptionally significant development, relocated.

The loss or replacement of a heritage asset may be appropriate in exceptional circumstances, where justified in line with local and national policy on loss or harm, and where it has been demonstrated that:

- *the site is essential to the development's success;*
- *the benefits of the entire scheme outweigh the loss of the asset; and*
- *any replacement scheme makes an equal contribution to local character and distinctiveness.'*

In cases where a heritage asset is considered to be suitable for loss or replacement, and it has been demonstrated that its site is essential to the development's success, proposals will be subject to a requirement to record the asset(s) concerned. The scheme of investigation, including the Historic England Recording Level, is to be agreed with the council in advance of its implementation and will reflect the importance and nature of the asset and the impact of the proposal.

Applicants in such cases will also be required to notify any relevant parties including Historic England and submit their recording to the Historic Environment Record.

Regeneration proposals that make sensitive use of heritage assets, particularly where these bring redundant or under used buildings or areas, especially any on Historic England's At Risk Register, into appropriate use will be encouraged.'

Strategic Policy HA2: Conservation Areas

'Development within a Conservation Area should individually and cumulatively result in the preservation or enhancement of the character and appearance of the area.

All development within a Conservation Area should conform to the relevant Conservation Area Statement and Appraisal, and be designed according to the following principles:

i) respect the protected area and recognise the identifiable, and distinctive, character(s);

ii) avoid loss of, or harm to, architectural or decorative features or details making a significant contribution to the Area's significance;

iii) respect any historic landscape features which affect the character of the place;

iv) maintain and enhance the area's landscape value with regards to mature trees, hedges and public green spaces such as grass verges;

v) respect and enhance the character of lower density developments with spacious landscaped settings. This includes areas of landscape dominating the buildings, the significant gaps between the buildings, the set back from the street, as well as any large gardens, mature trees, hedges and green verges; and

vi) preserve and enhance the area's architectural quality and scale.

Conformity with the requirements of this Policy should be demonstrated as part of the Heritage Impact Assessment.

There may be structures within a Conservation Area which are not heritage assets and do not positively contribute to its character or appearance. Therefore, proposals for demolition of these structures will be considered on a case-by-case basis and may not be required to submit a recording to the Historic Environment Record. For such developments, early pre-application discussions are encouraged.'

Strategic Policy HA3: Areas of Special Local Character

'All development within an Area of Special Local Character (ASLC) should respect or preserve the character of the area and be designed with regard to the area's existing character and appearance. Proposals should be of an appropriate scale, design and massing, and should not result in significant adverse impact on the locality, its setting and important or valued views.

All development within an ASLC should demonstrate, as part of the Heritage Impact Assessment, how the proposals have regard to the area's significance as a heritage asset, including its character and appearance.'

Strategic Policy HA4: Listed Buildings and Structures

'To recognise the value of Listed Buildings (including Listed Structures) within Crawley, the council will ensure that any proposed works to them are consistent with the character, appearance and heritage interest of any statutory Listed Building/Structure, in line with national legislation, policy and guidance.

Any changes must preserve or enhance the design and character of the Listed Building and have regard to its historic and architectural significance. A Heritage Impact Assessment is required to be submitted demonstrating how proposals will protect the significance of the listed building, including its setting and its key features.

Harm to, or loss of, the significance of a Listed Building will require clear and convincing justification, taking account of the grading of the building, and the degree of harm or loss, in line with national policy. Substantial harm to, or total loss of, the significance of a Listed Building will require exceptional justification, including benefits that outweigh the harm or loss, and further demonstration of either:

a) the public and substantial nature of the benefits concerned; or,

b) the absence of an alternative use which averts the loss or harm and is consistent with:

i. the nature of the Listed Building; or
ii. medium-term viability; or
iii. the extent of potential opportunities for grant-funding, or not-for-profit ownership.

In cases where substantial loss or harm is justified, the council will require the building to have been recorded according to an agreed scheme of investigation which is proportionate to the importance of the Listed Building and the impact of the proposal. The record shall be submitted to the Historic Environment Record. Any development on the site of a demolished Listed Building must have regard to the character, form and heritage significance of the original building.

Development proposals involving ground works adjacent to or within the curtilage of a Listed Building will also need to respond to the site's archaeological potential in accordance with Policy HA7.'

Strategic Policy HA5: Locally Listed Buildings

'All development will seek to secure the retention of Locally Listed Buildings. Development should also maintain features of interest, and respect or preserve the character or setting of the building.

Development proposals affecting a Locally Listed Building must demonstrate in the Heritage Impact Assessment that the proposals take account of its heritage significance, including its setting and any heritage interest falling within the following categories:

i) Age;

ii) *Authenticity;*

iii) *Aesthetic/Architectural Value;*

iv) *Historic Value;*

v) *Social/Communal Value:*

vi) *Group Value;*

vii) *Landmark/Townscape Value;*

viii) *Archaeological interest.*

Proposals seeking the demolition or partial demolition of a Locally Listed Building may be acceptable in exceptional circumstances if the development proposals:

a) *reflect or retain the key features of the original building; and*

b) *significantly outweigh the merit of retaining the original building with regard to social, economic and environmental benefit to the wider area.*

If demolition is seen to be acceptable, the building must first be recorded according to an agreed scheme of investigation which is proportionate to the importance of the Locally Listed Building and the impact of the proposal. The record must be submitted to the Historic Environment Record in consultation with the Local Authority.'

Strategic Policy HA6: Historic Parks and Gardens

'The council will support development, unless it will have a negative impact upon the historic setting and character of a designated Historic Park or Garden.

All development proposals within the boundaries of a Historic Parks and Gardens as identified on the Local Plan Map and Local Heritage List will be required to demonstrate through a Heritage Impact Assessment:

a. *that the proposals have regard to the asset, its character, heritage significance, key features and setting; and*
b. *that proposals respect or enhance the area.'*

In addressing this policy, developers should also respond to the value these sites have as structural landscaping (Policy CL6); open space (Policy OS1; green infrastructure (Policy GI1); and biodiversity sites (Policy GI3).'

Strategic Policy HA7: Heritage Assets of Archaeological Interest

'Development proposals in the vicinity of a Scheduled Monument, or any heritage asset with archaeological interest which is demonstrably of equivalent significance (i.e. 'designated' archaeological assets), will be expected to preserve or enhance the asset and its setting, including through protection of the asset from disturbance associated with development activity, and through the avoidance of patterns of movement or land use which may cause harm to, or loss of, the significance of an asset over time. Development should identify and pursue opportunities to better reveal the significance of such assets.

Development proposals affecting designated archaeological assets should be supported by a Heritage Impact Assessment demonstrating an understanding of the asset's significance, and how this has informed compliance with the requirements identified above.

Any harm to, or loss of, the significance of any designated or non-designated heritage asset involved in a development proposal will be considered in line with national and local policy, according to the significance of the asset and the degree of loss or harm.

This consideration will be extended to cover heritage assets which are identified, or whose significance is re-evaluated, during the planning and development processes. In order to facilitate this, applications meeting the following thresholds should be supported by an Archaeological Desk-Based Assessment:

- *ground works adjacent to or in the curtilage of a Listed Building;*
- *any activity within a Scheduled Monument;*
- *ground works within a Red Archaeological Notification Area;*
- *five or more residential units OR non-residential/mixed use development of over 0.2 ha within an Amber Archaeological Notification Area;*
- *development outside an Archaeological Notification Area comprising 10 or more new units OR over 0.5 ha of non-residential/mixed use development.*

Subject to the findings of a Desk-Based Assessment, the council may require field evaluation and the recording and publication of results. In some cases, the council may require assets to be preserved in situ or excavated.'

Reigate and Banstead Core Strategy 2014

2.2.22 The Reigate and Banstead Borough Core Strategy 2014 was adopted in July 2014. The following policy is relevant:

Policy CS4: Valued Townscapes and the Historic Environment

1. *'Development will be designed sensitively to respect, conserve, and enhance the historic environment, including heritage assets and their settings. Development proposals that would provide sensitive restoration and re-use for heritage assets at risk will be particularly encouraged.*

2. *Development will respect, maintain and protect the character of the valued townscapes in the borough, showing consideration for any detailed design guidance that has been produced by the council for specific built-up areas of the borough. Proposals will:*

   a. *Reflect high standards of sustainable construction in line with policy CS11.*

   b. *Be of a high quality design which takes direction from the existing character of the site and reflects local distinctiveness.*

   c. *Be laid out and designed to make the best use of the site and its physical characteristics, whilst minimising the impact on surrounding properties and the environment.*

   d. *Protect and where appropriate enhance existing areas of biodiversity value and the links between them.*

Reigate and Banstead Development Management Plan 2018-2027

2.2.23 The Reigate and Banstead Borough Council Development Management Plan 2018-2027 was adopted in September 2019. The following policy is relevant:

Policy NHE9: Heritage Assets

1. *'Development will be required to protect, preserve, and where possible enhance, the Borough's designated and non-designated heritage assets and historic environment including special features, area character or settings of statutory and locally listed buildings.*

2. *All planning applications that directly or indirectly affect designated or non-designated heritage assets must be supported by a clear understanding of the significance, character and setting of the heritage asset and demonstrate:*

   a. *how this understanding has informed the proposed development*

b. how the proposal would affect the asset's significance; and

c. any necessary justification proportionate to the importance of the heritage asset and the potential effect of the proposal.

1. In considering planning applications that directly or indirectly affect designated heritage assets, the Council will give great weight to the conservation of the asset, irrespective of the level of harm. Any proposal which would result in harm to or total loss of a designated heritage asset will not be supported unless a clear and convincing justification is provided. In this regard:

a. Substantial harm to, or loss of, Grade II assets will be treated as exceptional and substantial harm to, or loss of, Grade I and II* assets and scheduled monuments will be treated as wholly exceptional.

b. Where substantial harm to, or loss of designated heritage assets would occur as a result of a development proposal, planning permission will be refused unless there are substantial public benefits which would outweigh the harm or loss; or

i. it can be robustly proven that there are no other reasonable and viable uses for the asset in the short or medium term nor any other realistic prospect of conservation; and

ii. the harm or loss would be outweighed by the benefits of redevelopment.

c. Where less than substantial harm to a designated heritage asset would occur as a result of a development proposed, the harm will be weighed against the public benefits of the proposal.

2. Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments will be subjected to the tests in (3) above.

3. In considering proposals that directly or indirectly affect other non-designated heritage assets, the council will give weight to the conservation of the asset and will take a balanced judgement having regard to the extent of harm or loss and the significance of the asset.

4. All development proposals must be sympathetic to a heritage asset and/or its setting by ensuring the use of appropriate high quality materials, design and detailing (form, scale, layout and massing).

5. Development that would help secure the long term viable use and sustainable future for heritage assets, especially those identified as being at risk of loss and decay, in a manner consistent with its conservation will be supported. Any associated or enabling development should have an acceptable relationship to the heritage asset, and character of the surrounding area.

6. Proposals which retain or, if possible, enhance the setting of heritage assets, including views, public rights of way, trees, and landscape features, including historic public realm features in a manner consistent with its conservation, will be supported.

7. Proposals affecting a Conservation Area must preserve and, where possible enhance the Conservation Area. The quality of the proposal must have particular regard to those elements that make a contribution to the character of the Conservation Area and its setting, and the special architectural or historic interest of the area.

8. Demolition (full or partial) of a building or removal of trees, structures or other landscape features in a Conservation Area, will be permitted only where:

a. A replacement development has been approved; and

b. The loss of the existing building, structure, tree or landscape feature will not detract, or where appropriate enhances, the character or appearance of the Conservation Area. Assessment of the contribution of an existing building must have regard to its character, design and construction, but not its condition.

9. Development within or affecting the setting of a historic park or garden will be required to:

a. Avoid subdivision.

b. Retain or restore features of historic or architectural interest, including trees, other distinctive planting and hard landscaping, and garden features.

c. Where relevant, be accompanied by an appropriate management plan.

10. An archaeological assessment including where appropriate a field evaluation, will be required to inform the determination of planning applications for:

a. Sites which affect, or have the potential to affect, Scheduled Monuments.

b. Sites which affect, or have the potential to affect, areas of Archaeological Importance or High Archaeological Potential.

c. All other development sites exceeding 0.4 ha.

13. Where the policies map, or other research, indicates that remains of archaeological significance are likely to be encountered on a site, the Council will require schemes for the proper investigation of the site to be submitted and agreed. These must incorporate the recording of any evidence, archiving of recovered material and publication of the results of the archaeological works as appropriate, in line with accepted national professional standards.'

2.2.24 There is also a Supplementary Planning Guidance document entitled 'Planning and Archaeology in the Borough of Reigate and Banstead including a list of archaeological sites' which was published in November 1993.

Mole Valley Core Strategy

2.2.25 The Mole Valley Core Strategy was adopted in 2009 and contains the following policy that is relevant:

Policy CS 14: Townscape, Urban Design and the Historic Environment

1. 'All new development must respect and enhance the character of the area in which it is proposed whilst making the best possible use of the land available. This will be assisted through the work on Built-Up Area Character Appraisals.

2. *The Council will resist development of a poor quality of design and will expect to see sufficient detail set out in the Design and Access Statements, where required, to enable planning applications to be properly determined.*

3. *Development must incorporate appropriate landscaping with particular attention to the use of trees and hedges native to the locality.*

4. *Areas and sites of historical or architectural importance will be protected and, where appropriate enhanced in accordance with the legislation, national and regional guidance.'*

Mole Valley Local Plan 2000

2.2.26 Some of the policies in the Mole Valley Local Plan 2000 (Mole Valley District Council, 2000) have been 'saved' and the following are relevant:

Policy ENV23: Respect for Setting

'Development will normally be permitted where it respects its setting taking into account of the following:

1. *the scale, character, bulk, proportions and materials of the surrounding built environment. Developments will not be permitted where it is considered they would constitute over-development of the site by reason of scale, height or bulk or in relation to the boundaries of the site and/or surrounding developments;*

2. *public views warranting protection. Opportunities will be sought to create attractive new views or vistas;*

3. *townscape features such as street patterns, familiar landmark buildings, and the space about buildings;*

4. *the roofscape. Pitched roofs will normally be expected and any plant, machinery or lifts being incorporated within the roof structure;*

5. *the impact of the development within or conspicuous from the Green Belt on the rural amenities of the Green Belt by reason of its siting, materials or design;*

6. *the impact on the landscape of the proposed siting and appearance of new agricultural buildings or works or any other appropriate/exceptional development in the countryside.'*

Policy ENV39: Development in Conservation Areas

'Development in Conservation Areas, or adjacent to and affecting their setting, shall preserve or enhance the character and appearance of the Area. Within this context:

1. *developments, including extensions, shall be of a high standard of design and well detailed such as to reflect the local historic character, scale, quality of buildings, settlement form, and materials;*

2. *features which contribute to local character, including significant spaces, trees, walls and traditional architectural details, shall be retained;*

3. *the design of spaces between buildings, and their surfacing shall be sensitively treated;*

4. *significant views into and out of Conservation Areas will be safeguarded. To demonstrate that the above requirements have been satisfied, detailed rather than outline planning applications will normally be expected. The rigorous application of general planning and highway policies may be relaxed where they would be in conflict with the preservation or enhancement of the Area's character or appearance.'*

Policy ENV47: Historic Parks and Gardens

'The Council will seek to ensure that any proposed development within or adjoining a garden included in English Heritage's "Register of Parks and Gardens of Special Historic Interest" and identified on the Proposals Map does not detract from its setting, character, appearance or spatial composition, that unsympathetic subdivision is prevented and that any particular features of architectural or historic interest are protected.

The Council will seek to ensure that wherever possible existing views into and from historic gardens are protected. Where appropriate, opportunities will be sought through conditions or planning agreements to achieve the repair, restoration and management of Parks and Gardens of Special Historic Interest on the Register compiled by English Heritage.'

Policy ENV49: Areas of High Archaeological Potential

'Where significant development proposals fall within an Area of High Archaeological Potential the developer will be required to provide an initial assessment of the archaeological value of the site preferably before, or otherwise as part of and planning application.

If as a result of that assessment important archaeological remains are considered to exist:

1. *the developer may be required to arrange for an archaeological field survey to be carried out before the determination of the planning application; and*

2. *where important archaeological remains are found to exist and can justifiably be left in situ, provision will be made by planning condition or agreement to minimise or avoid damage to the remains. Alternatively, where there is good reason to believe archaeological remains exist but preservation of known remains in situ is not justified, a planning condition will normally be imposed requiring a programme of archaeological work in accordance with a scheme agreed by the Council to take place before any development commences and the results and any finds should be published and made available for public display.'*

Policy ENV50: Unidentified Archaeological Sites

'Outside Areas of High Archaeological Potential the Council will require that the results of desk-based archaeological assessment are submitted with any development proposals for a site larger than 0.4 ha. If the results of any desk-based assessment are inconclusive, or if they produce evidence of significant archaeological remains, then the numbered paragraphs in Policy ENV49 will be applicable.'

Policy ENV51: Archaeological Discoveries during Development

'Where archaeological remains are discovered on unidentified archaeological sites and development has already commenced, the co-operation of the developer will be sought to permit access to an investigation of the area.'

Future Mole Valley 2018-2033

2.2.27 The draft Future Mole Valley Local Plan 2018-2033 represents the emerging local plan policy. The Regulation 18 consultation draft document includes the following historic environment policy:

Policy EN6: Conservation and Enhancement of Heritage Assets

1 *'There will be a strong presumption in favour of retaining and enhancing heritage assets, both designated and undesignated. Proposals resulting in the alteration, partial or complete loss of a heritage asset or impact on its setting will need to be justified fully and assessed against its significance and the scale of any loss or harm. The weight given to the conservation of heritage assets will be proportional to their significance, the degree of harm caused and any public benefit.*

2 *Where alteration or loss of a heritage asset in whole or in part is approved, consent will be granted subject to a condition that requires changes to be recorded and those records submitted to the Surrey History Centre as part of the Historic Environment Record for Surrey.'*

Tandridge Local Plan 2014-2029

2.2.28 The Tandridge Local Plan Part 2: Detailed Policies 2014-2029 was adopted in 2014 and the following policies may be relevant:

Policy DP20: Heritage Assets

A. *'There will be a presumption in favour of development proposals which seek to enhance the historic interest, cultural value, architectural character, visual appearance and setting of the District's heritage assets and historic environment. Accordingly:*

   1. *Only where the public benefits of a proposal significantly outweigh the harm to, or loss of a designated heritage assets or its setting, will exceptional planning consent be granted. These benefits will be proportionate to the significance of the asset and to the level of harm or loss proposed.*

   2. *Where a proposal is likely to result in substantial harm to, or loss of, a designated heritage asset of the highest significance (ie scheduled monuments, grade I and II* listed buildings, and grade I and II* registered parks and gardens), granting of permission or consent will be wholly exceptional.*

B. *In all cases the applicant will be expected to demonstrate that:*

   1. *All reasonable efforts have been made to either sustain the existing use, find viable alternative uses, or mitigate the extent of the harm to the asset; and*

   2. *Where relevant the works are the minimum necessary to meet other legislative requirements.*

C. *With the granting of permission of consent the Council will require that:*

   1. *The works are sympathetic to the heritage asset and/or its setting in terms of quality of design and layout (scale, form, bulk, height, character and features) and materials (colour and texture); and*

   2. *In the case of a Conservation Area, the development conserves or enhances the character of the area and its setting, including protecting any existing views into or out of the area where appropriate.*

D. *Any proposal which is considered likely to affect a County Site of Archaeological Importance, or an Area of High Potential (AHAP), or is for a site larger than 0.4 hectares located outside of these areas, must be accompanied by an archaeological desk-based assessment. Where the assessment indicates the possibility of significant archaeological remains on the site, or where archaeological deposits are evident below ground or on the surface, further archaeological work will be required. Evidence should be recorded to enhance understanding and where possible material should be preserved in-situ. In cases where the preservation of remains in-situ is not possible, a full archaeological investigation in accordance with a council approved scheme of work will be required; the results of which should be made available for display at the East Surrey Museum or other suitable agreed location.'*

Tandridge Emerging Our Local Plan 2033

2.2.29 Emerging local planning policy for Tandridge District is presented in Our Local Plan: 2033, which was submitted for examination in January 2019. The following policy is relevant:

Policy TLP43: Historic Environment

'To respect the varied historical character and appearance of the District, development proposals will conserve and enhance the character and appearance of designated and non-designated heritage assets, through high-quality sensitive design. These include important archaeology, historic buildings, conservation areas, monuments, street patterns, streetscapes, landscapes, commons, and their settings.

Applicants should make every effort to liaise with the Surrey County Council Conservation Team and Historic England when drawing up proposals at the earliest opportunity to limit the prospect of any objection, in accordance with policies of the wider development plan including DP20 and any updates.

The Council will carry out a review of all conservation areas to ensure the boundaries and consideration remain relevant and up to date. This will be prepared and published as Conservation Area Appraisal documents and Management Plans. Where Neighbourhood Plans undertake reviews as part of their plan-making, the Council will support this.

The Council will support the inclusion of historic environment policies in Neighbourhood Plans, where they are justified.'

Mid Sussex District Plan 2014-2031

2.2.30 The Mid Sussex District Plan 2014-2031 was adopted in 2018 and contains the following policies that are relevant:

DP34: Listed Buildings and Other Heritage Assets

'…Listed Buildings

Development will be required to protect listed buildings and their settings. This will be achieved by ensuring that:

- *A thorough understanding of the listed building and its setting has been demonstrated. This will be proportionate to the importance of the building and potential impact of the proposal;*

- *Alterations or extensions to a listed building respect its historic form, scale, setting, significance and fabric. Proposals for the conversion or change of use of a listed building retain its significance and character whilst ensuring that the building remains in a viable use;*
- *Traditional building materials and construction techniques are normally used. The installation of uPVC windows and doors will not be acceptable;*
- *Satellite antennae, solar panels or other renewable energy installations are not sited in a prominent location, and where possible within the curtilage rather than on the building itself;*
- *Special regard is given to protecting the setting of a listed building;*
- *Where the historic fabric of a building may be affected by alterations or other proposals, the applicant is expected to fund the recording or exploratory opening up of historic fabric.*

Other Heritage Assets

Development that retains buildings which are not listed but are of architectural or historic merit, or which make a significant and positive contribution to the street scene will be permitted in reference to their demolition and redevelopment.

The Council will seek to conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the character and quality of life of the District. Significance can be defined as the special interest of a heritage asset, which may be archaeological, architectural, artistic or historic.

Proposals affecting such heritage assets will be considered in accordance with the policies in the National Planning Policy Framework (NPPF) and current Government guidance.'

DP35: Conservation Areas

'Development in a conservation area will be required to conserve or enhance its special character, appearance and the range of activities which contribute to it. This will be achieved by ensuring that:

- *New buildings and extensions are sensitively designed to reflect the special characteristics of the area in terms of their scale, density, design and through the use of complementary materials;*
- *Open spaces, gardens, landscaping and boundary features that contribute to the special character of the area are protected. Any new landscaping or boundary features are designed to reflect that character;*
- *Traditional shop fronts that are a key feature of the conservation area are protected. Any alterations to shopfronts in a conservation area will only be permitted where they do not result in the loss of a traditional shopfront and the new design is sympathetic to the character of the existing building and street scene in which it is located;*
- *Existing buildings that contribute to the character of the conservation area are protected. Where demolition is permitted, the replacement buildings are of a design that reflect the special characteristicsof the area;*
- *Activities such as markets, crafts or other activities which contribute to the special character and appearance of the conservation area are supported;*
- *New pavements, roads and other surfaces reflect the materials and scale of the existing streets and surfaces in the conservation area.'*

DP36: Historic Parks and Gardens

'The character, appearance and setting of a registered park, or park or garden of special local historic interest will be protected. This will be achieved by ensuring that any development within or adjacent to a registered park, or park or garden of local historic interest will only be permitted where it protects and enhances its special features, setting and views into and out of the park or garden.'

Horsham District Planning Framework

2.2.31 The Horsham District Planning Framework was adopted in 2015. The following policy is relevant:

Policy 34: Cultural and Heritage Assets

'The Council recognises that heritage assets are an irreplaceable resource, and as such the Council will sustain and enhance its historic environment through positive management of development affecting heritage assets. Applications for such development will be required to:

1. *Make reference to the significance of the asset, including drawing from research and documentation such as the West Sussex Historic Environment Record;*
2. *Reflect the current best practice guidance produced by English Heritage and Conservation Area Character Statements;*
3. *Reinforce the special character of the district's historic environment through appropriate siting, scale, form and design; including the use of traditional materials and techniques;*
4. *Make a positive contribution to the character and distinctiveness of the area, and ensuring that development in conservation areas is consistent with the special character of those areas;*
5. *Preserve, and ensure clear legibility of, locally distinctive vernacular building forms and their settings, features, fabric and materials;*
6. *Secure the viable and sustainable future of heritage assets through continued preservation by uses that are consistent with the significance of the heritage asset;*
7. *Retain and improves the setting of heritage assets, including views, public rights of way, trees and landscape features, including historic public realm features; and*
8. *Ensure appropriate archaeological research, investigation, recording and reporting of both above and below-ground archaeology, and retention where required, with any assessment provided as appropriate.'*

Draft Horsham District Local Plan 2019-2036

2.2.32 The Draft Horsham District Local Plan 2019-2036 was published for public consultation February – March 2020. The following policy is relevant:

Policy 35 – Heritage Assets and Managing change in the Historic Environment

'The council recognises thatbheritage assets, both designated and non-designated, and their settings are an irreplaceable resource, and as such the council will preserve and enhance its historic environment through positive management of development affecting heritage assets. Applications for such development will be required to:

1. *Make reference to, and show an understanding of, the significance of the asset, includng drawing from research and documentation such as the West Sussex Historic Environment Record. Proposals to alter or extend Listed Buildings, including curtilage land listed buildings, must be accompanied by a Heritage Statement;*
2. *Reflect the current best practice guidance produced by Historic England and Conservation Area Characyer Statements;*
3. *Make a positive contribution to the character and distinctiveness of the area, and ensuring that development in conservation areas is consistent with the special character of those areas;*
4. *Preserve, and ensure clear legibility of, locally distinctive vernacular building forms and their setting and features including trees, fabrics and materials;*
5. *Secure the viable and sustainable future of heritage assets through continued preservation by users that are consistent with the significance of the heritage asset. Change of use must be compatible with, and respect, the special architectural or historic interest of the asset and setting; and*
6. *Ensure appropriate archaeological research, investigation, recording and reporting of both above and below-ground archaeology, and retention where required, and provide assessments as appropriate.*

Proposals which would cause substantial harm to, or loss of a heritage asset will not be supported unless it can be demonstrated that the substantial public benefits gained would outweigh the loss of the asset and that any replacement scheme makes an equal contribution to local character and distinctiveness. Applicants must show an understanding of the significance of the heritage asset to be lost, either wholly or in part, and demonstrate how the heritage asset has been recorded'.

2.3 Guidance

2.3.1 The NPPF is supported by the National Planning Practice Guidance (NPPG) (Department of Communities and Local Government, 2014), which was published online on 06 March 2014 and last updated in 2021. The NPPG provides advice on specific issues such as 'What is 'significance'' and 'What is the setting of a heritage asset and how should it be taken into account?'

2.3.2 The NPPG reiterates that the conservation of heritage assets in a manner appropriate to their significance is a core planning principle, requiring a flexible and thoughtful approach. Furthermore, it highlights that neglect and decay of heritage assets is best addressed through ensuring they remain in active use that is consistent with their conservation. Importantly, the guidance states that if complete, or partial loss of a heritage asset is justified, the aim should then be to capture and record the evidence of the asset's significance and make the interpretation publicly available.

2.3.3 Key elements of the NPPG relate to assessing harm to the significance of heritage assets. An important consideration should be whether the proposed works adversely affect a key element of the heritage asset's special architectural or historic interest. Additionally, it is the degree of harm, rather than the scale of development, that is to be assessed.

2.3.4 The level of 'substantial harm' is considered to be a high bar that may not arise in many cases. Essentially, whether a proposal causes substantial harm will be a judgment for the decision taker, having regard to the circumstances of the case. Importantly, harm may arise from works to the asset or from development within its setting.

2.3.5 In considering any planning application for development, the planning authority will be mindful of the framework set by government policy, in this instance the two NPSs and the NPPF, by current Development Plan Policy and by other material considerations.

2.3.6 The NPPF and NPPG are additionally supported by four Good Practice Advice (GPA) documents published by Historic England: *GPA1: The Historic Environment in Local Plans*; *GPA 2: Managing Significance in Decision-Taking in the Historic Environment* (both published March 2015), *GPA3: The Setting of Heritage Assets* (2nd edition published December 2017) and *GPA4: Enabling Development and Heritage Assets* (published June 2020).

2.3.7 *GPA2: Managing Significance in Decision-Taking in the Historic Environment* provides detailed guidance on how the significance of heritage assets can be determined, and how decision-takers should assess proposals for developments which would affect this significance.

2.3.8 In accordance with the NPPF, GPA2 advises that '*the information required in support of applications for planning permission and listed building consent should be no more than is necessary to reach an informed decision, and that activities to conserve of investigate the asset needs to be proportionate to the significance of the heritage assets affected and the impact on that significance*' (paragraph 3).

2.3.9 It is explained that '*The first step for all applicants is to understand the significance of any affected heritage asset and, if relevant, the contribution of its setting to its significance. The significance of a heritage assets is defined as 'the sum of its archaeological, architectural, historic and artistic interest*' (paragraph 4).

2.3.10 The document goes on to explain (paragraph 6) that a staged approach to assessment and decision-taking would be to:

- *'Understand the significance of the affected assets*
- *Understand the impact of the proposal on that significance*
- *Avoid, minimise and mitigate impact in a way that meets the objectives of the NPPF*
- *Look for opportunities to better reveal or enhance significance*
- *Justify any harmful impacts in terms of the sustainable development objective of conserving significance and the need for change*
- *Offset negative impacts on aspects of significance by enhancing others through recording, disseminating and archiving archaeological and historical interest of the important elements of the heritage assets affected'.*

2.3.11 Specifically with regard to the significance of a heritage asset, GPA2 advises that it is important to understand not just the nature of the significance but also the extent and level of significance (paragraphs 8-10).

2.3.12 Further advice on assessing the significance of heritage assets has been recently published by Historic England in their Advice Note 12 *Statements of Heritage Significance: Analysing Significance in Heritage Assets* (October 2019). This explains how significance should be assessed as part of a staged approach to decision-making.

2.3.13 *GPA3: The Setting of Heritage Assets* provides detailed guidance on understanding the concept of setting and how it may

contribute the significance of heritage assets. The document repeats the NPPF definition of setting and goes on to explain that '*Setting itself is not a heritage designation, although land comprising a setting may itself be designated. Its importance lies on what it contributes to the significance of a heritage asset or to the ability to appreciate that significance*' (paragraph 9).

2.3.14 The Historic England guidance document (GPA3) makes the following points:

- a setting does not have a fixed boundary as it may change;
- extensive heritage assets such as landscapes or townscapes can include many heritage assets and their nested and overlapping settings, as well as having a setting of their own;
- the setting of a heritage asset may reflect the character of the wider townscape or landscape in which it is situated, whether fortuitously or by design;
- the importance of a setting of a heritage asset is what it contributes to the significance of the asset;
- where the significance of a heritage asset has been compromised in the past by unsympathetic development within its setting, consideration still needs to be given as to whether additional change would further detract from (or possibly enhance) the significance of the asset; and
- the contribution made by its setting to the significance of a heritage asset does not depend on public access.

2.3.15 The document deals with the issue of setting and proportionate decision taking. It advises a five-stage approach:

1. identify which heritage assets and their settings are affected;
2. assess to what degree these settings make a contribution to the significance of the heritage asset(s) or allow significance to be appreciated;
3. assess the effects of the proposed development, whether beneficial or harmful, on that significance or on the ability to appreciate it;
4. explore the way to maximise enhancement and avoid or minimise harm; and
5. make and document the decision and monitor outcomes.

2.3.16 Although assessments of changes within the settings of heritage assets can involve non-visual issues such as noise, it is more usually the visual aspects of a development that form the major part of the assessment.

2.3.17 The existence of direct lines of sight between the heritage asset and the proposed development is an important factor in judging the visual impact of the development. However, it is possible for changes within the setting to occur even when such a relationship does not exist. For example, views towards a listed building from a frequently visited location, such as a park or a public footpath, may be affected by the presence of a larger development, even if the development is not directly visible from the building itself.

2.3.18 A checklist provided in GPA3 (page 11) identifies several factors that may be relevant with regard to understanding the significance of a heritage asset and the contribution made by its setting. A second checklist (page 13) identifies a number of potential aspects of a proposed development which may be relevant in understanding the implications for the significance of heritage assets.

2.3.19 One aspect of the Project which has the potential to cause harm to the significance of heritage assets as a result of change within their setting is that of increased air noise arising from additional aircraft movements and/or changes in airspace use. This is acknowledged in the *Airports National Policy Statement* (NPS) (Department for Transport, 2018), where potential adverse impacts on the historic environment include those resulting from '*changes in aircraft movement on the ground and in the surrounding airspace, ….*' (paragraph 5.187).

2.3.20 The Airports NPS goes on to advise that '*Detailed studies will be required on those heritage assets affected by noise, light and indirect impacts based on the guidance provided in The Setting of Heritage Assets and the Aviation Noise Metric*' (paragraph 5.194).

2.3.21 The first of the two guidance documents referenced in paragraph 5.194 of the Airports NPS is GPA3, which is discussed above in paragraphs 2.3.13 – 2.3.18. The second one is a research report produced for English Heritage that examined the potential for air noise impacts on heritage assets, with regard to both physical effects on the fabric of assets and changes to the settings of assets, and also the potential for air noise impacts on people using the heritage asset. The report concluded that air noise impacts on the physical fabric were unlikely, and went on to propose a methodology for assessing impacts on the significance of heritage assets resulting from changes in air noise (Temple Group and Cotswold Archaeology, 2014).

2.3.22 Some further guidance in this issue is presented within a document published by the Civil Aviation Authority which addresses the regulatory process for changing airspace design (CAP 1616, Civil Aviation Authority, 2021).

2.3.23 Appendix B of CAP 1616 provides information regarding the environmental metrics and assessment requirements with regard to proposals for airspace change. It advises (paragraph B29) that the altitude-based Government priorities mean that above 7,000 ft (feet) the key priority is the reduction of carbon dioxide (CO_2) emissions rather than air noise. Although heritage assets are not mentioned specifically, one part of Appendix B deals with 'tranquillity impacts' (paragraphs B76-78).

2.3.24 In this baseline report, the contribution that setting makes to the significance of a heritage asset is often described using a five-point scale: Nil; Limited; Reasonable; Strong; Very Strong. The contribution should be taken as positive unless stated otherwise. The terms used in the five-point scale are not taken from any specific guidance and are not further defined within this report; the nature of the contribution is described within the accompanying narrative text.

2.3.25 GPA4 provides advice regarding enabling development, which is defined as development that would not be in compliance with local and/or national policies, and not normally given planning permission, except for the fact that it would secure the future conservation of a heritage asset.

2.3.26 Additional, more detailed guidance on specific aspects of the historic environment is provided in a series of Historic England Advice Notes (HEANs).

2.3.27 If any archaeological fieldwork is undertaken in connection with the Project, all work would be in line with the guidance document *Sussex Archaeological Standards 2019*, prepared by Chichester District Council, East Sussex County Council and West Sussex County Council, also any appropriate guidance prepared by or on behalf of Surrey County Council.

3 Geology and Topography

3.1.1 The geological and topographical setting of the Project site would have been a key driver in the choices made by settlers within the landscape and the subsequent longevity of those settlements.

3.1.2 The Project site is low-lying and generally flat at approximately 57 metres to 61 metres above ordnance datum (AOD) (Figure 3.1.1). The wider topographical situation of the Gatwick area can be considered as both part of the north western Low Weald (to the north west of the High Weald) between the South and North Downs, and also as the southern extent of the Thames Valley,

since its watercourses drain north to the River Thames rather than south to the coast.

3.1.3 The British Geological Survey (BGS Sheet 302, 1972; BGS online 2012) shows the dominant basal geology to be mudstone Weald Clay Formation, laid down in the Cretaceous period (Figure 3.1.2). This varies in thickness from 120 metres to 450 metres and contains bands of ironstone and clay, including a seam to the west of Gatwick and another that runs south from Gatwick in the region of Crawter's Bridge (Framework Archaeology 2001a, page 5).

3.1.4 The Weald Clay Formation is overlain in places by much later superficial deposits, initially River Terrace Deposits of Quaternary date associated with the precursor(s) of the River Thames and its tributaries. The two recorded terraces reflect different depositional events (subsequently eroded) with the earlier furthest from the present course of the rivers.

3.1.5 A north/south aligned band of Head Deposits is present within the central part of the airport. These deposits are formed through periglacial frost action and/or post-glacial outwash.

3.1.6 The location and extent of the more recent natural drainage system is shown by the linear bands of Holocene alluvium (Figure 3.1.2). In the western part of the Project site, the generally east/west aligned Man's Brook feeds into the River Mole which flows to the north east. This watercourse is then joined by the north/south aligned Crawter's Brook and the similarly aligned Gatwick Stream. East of the airport is the Burstow Stream, also aligned north/south.

3.1.7 A wider area of alluvium is recorded within the western area of Gatwick at the confluences of Man's Brook and the River Mole and it has been suggested that this deposit may have formed as a large lagoon or area of marshland (Framework Archaeology 2001a, pages 5-6). A significant thickness of up 2.6 metres of alluvium (presumably deepest within palaeochannels) was recorded in the North West Zone car parking zone development. Peat deposits (with high potential to contain preserved wood and ecofacts) were found in 1998 within two geotechnical test pits associated with the Gatwick North West Zone (ibid, page 6). The two locations corresponded approximately with the former route of the River Mole and indicated thin accumulations (0.1 to 0.2 metres thick) at depths of between 2.6 metres to 2.9 metres below ground level (TPS Consult, 1998, cited by Framework Archaeology, 2001a). The peat has similarly been interpreted as either part of the channel or the marsh/lagoon.

3.1.8 A thin depth of topsoil and an absence of subsoil may be common to much of the pastoral land within the Project site. A topsoil depth of 250-300 mm was recorded by the extensive fieldwork projects in the Gatwick North West Zone and also by small-scale work in the south western area of Gatwick (Framework Archaeology 2001b; 2002a; 2007a). For the North West Zone it was noted that *'the fact that it [the topsoil] was fairly thin and that there was no subsoil below it tends to suggest that the area had not been ploughed continuously over a long period of time*' (Framework Archaeology 2001a, page 6).

Table 3.1.1: Summary of 1998 Trial Pits at Gatwick North West Zone (after Framework Archaeology 2001a)

Deposit type	Depth below ground level of upper surface (metres)	Thickness (metres)	Description
Topsoil	0	0.25 to 0.35	Turf and topsoil (firm brown silty-clay) – found in all trial pits.
Made ground (local)	- 0.3	0.9	Firm brown silty-clay with sand, gravel, clay, cobbles, flint, asphalt and brick/felt, seen in trial pit 6.
Head Deposits	- 0.2 to - 0.35	0.85 to 1.2	A firm mottled grey and orange silty-clay seen in trial pits 2 to 6.
Alluvium	- 0.2 to -0.35	1.65 to 2.6	A firm, grey-brown and orange brown silty-clay with black organic staining and woody fragments – seen in trial pits 7 to 9.
Peat	- 2.6 to - 2.9	0.1 to 0.2	Black fibrous peat – seen in trial pits 7 and 8.
Weald Clay	- 0.25 to - 3.5		A thinly bedded orange-brown, blue, and grey clay – seen in all trial pits.

3.1.9 A summary of the potential for organic preservation for this floodplain zone (ibid), which may be applicable elsewhere within the Project site floodplains, concluded:

'Based on the recorded observations of the evaluation, the stratigraphy [of the flood plain and palaeochannels] can be divided into 3 zones of potential for organic preservation:

- *Upper zone (up to approximately1 metre below ground level): very low potential*
- *Middle zone (approximately1-2 metres below ground level): low to moderate potential*
- *Lower zone (approximately 2 metres plus, below ground level): high potential*'.

4 Historic Landscape

4.1.1 Prior to the reorganisation of local government boundaries in 1974, the land occupied by the airport was wholly within the county of Surrey, predominantly within the parish of Charlwood but with a small part in the eastern area being in the historic parish of Horley. Both of these parishes were due to be transferred into West Sussex as part of the local government reorganisation, but this was opposed locally, and the outcome was that the parish boundaries were redrawn within a specific Act (the *Charlwood and Horley Act* 1974) allowing the parishes to remain within Surrey whilst the airport was transferred to West Sussex.

4.1.2 The land within the Project site boundary therefore was historically part of the parishes of Charlwood and Horley (both Surrey). A small area of land adjacent to Junction 9 of the M23 motorway is within the parish of Burstow (also Surrey).

4.1.3 The Project site is located in an area which is part of the Weald – an area of south eastern England located between the parallel chalk escarpments of the North and South Downs. The name Weald is of Old English derivation and means 'forest', as this was formerly an extensive area of woodland. In the Anglo-Saxon period the area was known as *Andredes weald*, after *Anderida* which was the Roman name for Pevensey.

4.1.4 The central part of the Weald is known as the High Weald. The Gatwick area is within the Low Weald, which surrounds the High Weald on its western, northern and southern boundaries. In general the Low Weald is characterised by wide, low-lying clay vales with small woodlands and fields, also a large number of streams and ponds. The historic settlement pattern is one of villages and small towns located on outcrops of harder rocks.

4.1.5 Although archaeological evidence indicates activity, including settlement, in this part of the Low Weald during the prehistoric and Roman periods (see section below regarding archaeology), the documentary evidence indicates that areas were cleared and used as common pasture which began to lead to permanent occupation from the 10th century AD onwards. By the end of the 13th century there was a mass of smaller holdings (for peasants) along with a few larger cleared areas occupied by local gentry. In the 14th century falling population levels resulted in some abandonment, but other clearances were merged. Any distinct rise in population numbers did not occur until the 16th century.

4.1.6 The resulting historic landscape is one of dispersed farmsteads with small, irregular fields bounded by hedges that are often heavily wooded. Land use has historically fluctuated between arable and pastoral according to the available methods and the needs of society. Newly cleared land was usually set to arable, but depopulation often resulted in a reversion to pasture or rough grazing. Livestock were mainly cattle, although certain areas specialised in sheep farming.

4.1.7 Other activities that helped to create the historic landscape which is still visible today are linked to the exploitation of the woodland for timber and firewood; much of the latter was used in the ironworking industry.

4.1.8 Documentary sources refer to the rights to dig for iron in Charlwood from as early as 1396, but the industry of ironworking in the Weald commenced much earlier than this and reached a peak during the 17th and 18th centuries. With regard to the historic landscape, the need for fuel resulted in the loss of long-standing woodland and the development of coppiced plantations.

4.1.9 One substantial forge was located at Tinsley Green, to the south east of the Project site boundary. At one point in the 17th century the owner of this forge lived at Oldlands Cottage, on the northern side of Radford Road. Close by to here are Forge Wood, Blackcorner Wood and Black Corner at the junction of Radford Road and the B2036 Balcombe Road. This latter place name (Black Corner) may be the result of the use of cinder from the furnaces as consolidation of the road – this was quite common and was necessary because the transport of heavy loads of iron ore and iron was very detrimental to the road surface.

4.1.10 Closer to Charlwood village there are several historic place names that reflect the former extraction of iron ore – these include Mine Croft, Pit Four Acres, Pit Meadow and Pit Croft. Visual inspection here during the walkover for the Gatwick R2 scheme recorded a number of slight depressions that suggest the location of former extraction pits. Historically, the ore was extracted from a fairly shallow vein in this area, after which the land was returned to cultivation.

4.1.11 The 1810 Ordnance Survey Drawing (OSD) shows the pattern of fields, watercourses and settlements in the area around Gatwick in the early 19th century (Figure 4.1.1). In the northern part is the small village of Horley, with the extensive Horley Common to the east and Gatwick Farm to the south west of the village, just within the Project site boundary.

4.1.12 A road extends west from Horley to Povey Cross and meets a north/south aligned route which crosses the River Mole at Kimberham Bridge and extends across the Project area to Lowfield Heath, with Westfield Common further to the west. To the south east of the Project site is Blackcorner (as mentioned above with regard to ironworking), with Pricket's Wood just to the north.

4.1.13 In the eastern part of the Project site are Rowels Farm and Horley Land Farm, also Horley Land Wood.

4.1.14 Overall the 1810 map shows a landscape of small square or rectangular fields and dispersed farmsteads, with small blocks of woodland and larger areas of common land or heath.

4.1.15 A major change within the historic landscape arrived with the construction of the Brighton-London mainline railway, which opened in 1841 as the London and Brighton Railway and was subsequently incorporated into the London, Brighton and South Coast Railway. This cut through the historic landscape on a north/south alignment and a station was provided at Horley. The 1st edition Ordnance Survey 6'' (to the mile) map of 1874 shows the railway within the eastern part of the Project site (Figure 4.1.2).

4.1.16 The manor of Gatwick developed around a land holding just to the north west of where the airport's North Terminal currently stands. Figure 4.1.2 shows that the former Gatwick Farm had been replaced by a large house known as Gatwick, with formal gardens to the south along with a flag tower, engine house and gasometer. To the north is a fish pond adjacent to a drive that leads to a lodge – this building survives and faces onto Povey Cross Road (Site 429).

4.1.17 The 1874 map also shows that a pattern of fields which are mostly not as regular in shape and size as those shown on the map of 1810, although this may in part be the result of the greater accuracy of mapping in 1874 (compared to the stylised field patterns on the earlier map). The 1874 map shows some areas of Parliamentary-style enclosure, where field boundaries and roads/tracks are very straight, especially in the land west of the railway and within the Project site boundary, also the enclosure of the former Lowfield Heath just to the south of the Project site and the former Westfield Common in the south western corner of the Project site.

4.1.18 One other notable change within the Project site boundary is in the north west part, where the former Whites Common has largely become an area of parkland surrounding a large house, named here as Charlwood Park. At the western edge of the park is the home farm of the estate.

4.1.19 Land to the south east of Gatwick was purchased in 1890 by the Gatwick Race Course Company, who opened a race course in 1891 along with a new station on the adjacent railway. A grandstand was located at the south eastern end of the racecourse (which was aligned north west/south east) and was linked to the railway station by three covered walkways (Figure 4.1.3). During World War One, the Aintree Grand National was postponed and a substitute race was run at Gatwick in 1916, 1917 and 1918.

4.1.20 The 2nd edition of the OS 6'' (to the mile) map was published in 1897 (Figure 4.1.3). It shows that the parkland at Charlwood Park had been extended south as far as Man's Brook, with a similar park now surrounding the house at Gatwick.

4.1.21 An airfield was licensed at Gatwick in 1930, although a company called Dominion Aircraft Ltd had based a plane there from November 1928, and there had been a few emergency landings on land adjacent to the racecourse during World War One. The new (grass) runway was adjacent to the racecourse and a small hangar was constructed. Wealthier racegoers could now travel by air to attend race meetings, and the runway was also used by the planes of Imperial Airways when the airfield at Croydon was fogbound, with passengers transferring to the railway at the racecourse station.

4.1.22 Morris Jackaman purchased the airfield in 1933 and acquired a licence for commercial flights in the following year. In 1935 a new railway station (known initially as Tinsley Green Station, then as Gatwick Airport Station) was opened further to the south and the following year the world's first circular passenger terminal was opened, linked to the new station by a subway approximately 130 yards in length. The terminal had covered walkways that could

be extended out on small tracks to the parked aircraft in wet weather for enhanced passenger comfort.

4.1.23 British Airways moved to Gatwick in 1936 and operated flights to Paris, Malmo via Amsterdam, Hamburg and Copenhagen, with a route to the Isle of Wight added later the same year. However, the company returned to Croydon in 1937 as a result of problems with the drainage in the landing area and also flooding of the passenger subway.

4.1.24 A flight training school for the Royal Air Force (RAF) was established at the airport in 1937, one of several Elementary and Reserve Flight Training Schools run by civilian operators.

4.1.25 Horse racing ceased at the outbreak of World War Two, and the airfield was requisitioned by the Air Ministry and used by the RAF, with further requisitioning that included part of the racecourse. A new north east/south west aligned runway was established which cut across the southern end of the racecourse.

4.1.26 After the War the airfield was retained under requisition and operated for civilian use. The last meeting at the racecourse was held in 1948, using a shortened course.

4.1.27 In the 1950s Gatwick was substantially expanded to become the newest airport for London and was further enlarged in 1962. The country house known as Gatwick was demolished in 1950. The main runway was probably established as part of a major renovation undertaken in 1956-58 and was progressively extended in 1964, 1970, 1973 and 1998. The northern runway was established in 1985 through conversion of the northern parallel taxiway.

4.1.28 The 1936 airport terminal and subway are still present but are outside the current operational airport – the former is a Grade II* listed building known as The Beehive (see below for more details).

4.1.29 The land within the Project site boundary is predominantly occupied by the operational airport within which very little remains of the preceding historic landscape. However, there are some areas outside the airport which retain elements of their historic character and to some extent that can be shown through examination of the Historic Landscape Characterisation (HLC) that has been undertaken for Sussex and also for Surrey.

4.1.30 HLC is an aspect of more general landscape characterisation that seeks to provide an additional element of 'time-depth', allowing the historic evolution of the landscape to be perceived and understood. For this process, a number of Broad Character Types are identified and then subsequently subdivided into more detailed HLC Types.

4.1.31 Identified HLC Types within Sussex are indicated on Figure 4.1.4. The current airport stands out very clearly, as do the industrial estates and business parks on the northern side of Crawley.

4.1.32 Within the Project site boundary there are small blocks of woodland (east of the railway), most of which are identified as '*Ancient Semi-natural*' and one as '*Plantations*'. Also to the east of the railway are areas marked as '*Assart*' (land informally cleared from the woodland) and similar areas are identified within the western edge of the Project site boundary. One other HLC Type found within the land east of the railway is '*Informal fieldscapes*', although it should be noted that most of the land within this defined HLC Type has subsequently been amended, either for flood relief purposes or used as surface car parks for the airport.

4.1.33 There are areas of '*Informal fieldscapes*' to the west of Bonnets Lane, on either side of the River Mole and around Rowley Farm. More areas of this HLC Type are shown to the east of the railway but these have subsequently all been amended through recent development including the extended Crawley Sewage Treatment Works (STW). The areas of '*Informal fieldscapes*' shown to the east of Balcombe Road are still intact.

4.1.34 Beyond the Project site boundary are additional woodland blocks, mostly '*Ancient Semi-natural*' and '*Replanted Ancient Semi-natural*' along with a few '*Plantations*'. Larger areas of '*Informal fieldscapes*' and '*Assarts*' are also present. Areas of '*Formal Enclosure (Planned/Private)*' stand out very clearly, with regular field patterns and straight boundaries. This can be seen at Lowfield Heath, where the former heath was inclosed in 1846, also around Fernhill and with land either side of Bonnets Lane. There are also areas of *'Informal Parkland*' in the vicinity of Charlwood House, Gatwick Manor Inn (Hyders Hall) and Burstow Hall, along with '*Market Garden/Allotments*'.

4.1.35 Overall, this is the pattern typical of the Surrey Weald, with assarts coalescing to form informal fieldscapes and then some areas being formally inclosed. These former assarts can be identified by sinuous field boundaries (due to land take into woodland), wide hedges and their probable association with medieval farms (J. Mills, pers. comm.). The dispersed settlements are gradually encroached upon by ribbon development along the transport routes whilst some ancient woodland has survived along with more recent plantations.

4.1.36 A small part of the land within the Project site boundary falls within Surrey, for which a separate HLC has been undertaken (Figure 4.1.5). The Surrey land within this area mainly comprises an HLC Subtype described as '*Medium to large regular fields with wavy boundaries (late medieval to 17th/18th Century enclosure)*'. This is informal enclosure of former assarts. There is also a very small part of an area of HLC Subtype '*Post 1811 and pre-1940 settlement (small-scale*)' close to Povey Cross.

4.1.37 Natural England has subdivided the country into a total of 159 areas and produced character profiles of each area, including their landscape and townscape settings and heritage assets. The National Character Area (NCA) Profile 121 describes the Low Weald as *'a broad low-lying clay vale which largely wraps around the northern, western and southern edges of the High Weald. It is predominantly rural, supporting mainly pastoral farming owing to its heavy clay soils...and has many wooded areas with a high proportion of ancient woodland*' (Natural England, 2013).

4.1.38 The document notes the presence of important sites *'many associated with the Wealden iron industry*' *(ibid*, page 3). In the section 'Statements of Environmental Opportunity', SEO 2 is to *'conserve and enhance the distinctive historical aspects of the Low Weald landscape, including its important geological features and sites of heritage interest, particularly those associated with Wealden iron industry, enabling access, continued research, interpretation, understanding and enjoyment of the extensive and nationally significant resources*' (*ibid*, page 4).

4.1.39 The document also notes the occupation from at least the Mesolithic, including use of rock shelters - noting woodland clearance of large areas in some areas in the Bronze Age and Iron Age.

'There is evidence of iron working in the Weald for over 2,000 years. For two periods, during the Roman occupation and in the Tudor and early Stuart era, the Weald was the main iron producing region in Britain. The geology of sands and clays yielded iron ore and the stone and brick to build furnaces. The woodland provided the necessary charcoal fuel for smelting and numerous small streams supplied water power for the bellows and hammers of the forges and furnaces. Many ponds were created in the impervious clay in order to store additional water to supplement natural watercourses. At its peak at the end of the 16th century, the Weald supported around 100 forges and

furnaces and the iron industry impacted on every aspect of life and the landscape. Large numbers of people were employed in digging ore, cutting wood, charcoal making and transporting raw materials and products. The legacy is still evident in the landscape of surviving hammer and furnace ponds. Grand houses built by wealthy foundry owners and the remains of coppiced woodland which was managed for the production of charcoal...' (*ibid*, page 10).

4.1.40 In section 9 'Key historic sites and features', in addition to noting the common activity of charcoal burning for iron and glass production, the *'high concentration of pre-1750 farmstead buildings and in the north part of the character area a major concentration of pre 1550 barns*' is noted (*ibid*, page 26).

4.1.41 Natural England also note that in 2010 there were no Registered Battlefields, 21 Registered Parks and Gardens, 85 Scheduled Monuments and 6,066 listed buildings in the Low Weald.

4.1.42 Crawley Borough Council has produced the Crawley Baseline Character Assessment (Crawley Borough Council, 2009). This describes the strategic character areas of the developed sectors of the town and includes the industrial estate of Manor Royal in the town-wide analysis (but not in the detailed review section). The more rural parts of the Borough were excluded from the survey, as was Gatwick Airport.

4.1.43 The Crawley Historic Character Assessment was published in 2008 (Harris, 2008) and forms part of the Sussex Extensive Urban Survey. It identifies the historic urban character of the town through the establishment of Historic Urban Character Areas (HUCAs) and assigns a Historic Environment Value (HEV) to each of these HUCAs. It does not address the rural areas within the Borough, or the airport.

4.1.44 A number of existing farmhouses have been entered on the HER following a '*Historic Farmlands and Landscape Character in West Sussex*' survey (Forum Heritage Services, 2006). The project represents all farmsteads shown on the 2nd edition OS 25" (to the mile) mapping of 1885 (these can also be seen on the 6'' mapping presented as Figure 4.1.3).

5 Designated Heritage Assets

5.1 Designated Heritage Assets within the Project Site

5.1.1 There are three designated heritage assets wholly within the Project site (Figure 1.2.1). These comprise the Grade II* listed Charlwood Park Farmhouse (Site 27) in the north western part of the Project area, along with Edgeworth House (Site 133) and Wing House (Site 134) (both listed at Grade II) in the eastern part of the Project site.

5.1.2 Charlwood Park Farmhouse (Site 27) is described as follows in the listing description: *'Late 15th century open hall house, refaced and re-roofed in the early 17th century when a jettied wing was added to the west and the building adapted into a continuous jetty house. Two storeys and attics. Base of Charlwood stone. Ground floor timber-framed with painted brick infilling and retaining some early 17th century close-studding to the parlour wing at the south end of the ground floor. The first floor is hung with plain and painted tiles and over-sailing on a moulded bressummer. Tiled roof with 17th century brick chimney stack. Four gables, the southernmost are oversailing on moulded brackets, the next, which is modern, surmounting the porch which is jettied on the first floor like the remainder of the front. Original doorcase in porch with chamfered architraves. Interior contains crown post in jettied parlour wing and moulded beams with stop chamfers*'.

5.1.3 Charlwood Park Farmhouse lies just outside the current airport perimeter fence and is in use as a nursery school (Bear and Bunny Nursery and Pre-School). All associated farm buildings have been demolished, and the farmhouse has lost its former relationship with the main house of Charlwood Park and the surrounding parkland landscape, which lay within the operational airport and have been wholly lost to later development.

5.1.4 The farmhouse is situated within a garden extending around the western, northern and eastern sides, beyond which is modern surface car-parking for the airport. To the south is an area of landscape planting adjacent to the realigned River Mole, with the Sussex Border Path running alongside the river and passing to the south and east of the farmhouse. There is some air noise from planes taking off and landing, but this is not particularly obtrusive.

5.1.5 The setting of the farmhouse therefore includes some highly detracting elements, notably the operational airport and the associated surface car park. The adjacent setting to the south is far less visually detracting, but is relatively recent and does not include any elements that are associated with the farmhouse.

5.1.6 Wing House (Site 134) and Edgeworth House (Site 133) are separately listed at Grade II but are conjoined. The listing description for Wing House describes it as a '*Good quality four-bay, timber-framed former smoke bay hall house now within Gatwick Airport, later restaurant and bar of airport staff social club (to 2006). Attached to north and east of Edgeworth House. Probably mid-16th century. Two storeys. Tiled roof with 2 modern dormers. The rear of the roof has Horsham slabs to lower part. External chimneys to either end, one now enclosed within Edgeworth House. Curved tension braces all round. Front (east) elevation, four bays, timber-framed with brick nogging (some herringbone), on base of Charlwood Stone. One original mullioned window. Three sides of the solar bay at the north end are close studded. Projecting pitched-roofed extension to rear, now largely enclosed, had lagged, formerly external stack. Roof of side purlin and wind brace construction, with some smoke blackening, indicating former smoke bay*'.

5.1.7 Edgeworth House (Site 133) is similarly described as an '*L-plan, four-bay, timber-framed hall house, later restaurant and bar of airport staff social club (to 2006). Attached to south and west of Wing House. Said to date from either the 15th century or c. 1520. Gabled 20th century wing with bay windows to south. Ground floor painted brick. First floor tile hung. Square framing with plaster infill to north gable. Old tiled roof with Horsham Slabs to lower parts, with off-centre stack through ridge. The interior is said to be well-preserved, with exposed beams and open fireplaces. A house is shown on this site on a Christ's Hospital map of Horley of 1602*'.

5.1.8 Edgeworth House and Wing House formerly represented two separate elements of a property known as Edgeworth (Figures 4.1.2 and 4.1.3), accessed via a driveway leading east to the B2036 Balcombe Road. This relationship no longer exists, and the two listed buildings are located within an area of surface car parks and modern buildings associated with the operational use of the airport, including the adjacent Marriot Hotel of which the historic buildings now form a part. The setting of the listed buildings makes no contribution to their significance.

5.1.9 One Conservation Area is partially within the Project site boundary. This is the Church Road Conservation Area on the south western edge of Horley (Figure 1.2.1, Site 406). A draft Conservation Area Character Appraisal and Management Proposals (CAMP) document was produced in February 2014 but

does not appear to have been adopted yet by Reigate and Banstead Borough Council (2014a).

5.1.10 The 2014 CAMP document describes the historical development with the Conservation Area, which is centred on the Grade I listed church (Site 16) and the Grade II listed public house (Ye Olde Six Bells – Site 370), although '*the river and open setting*' are also described as '*principal landmarks*'. Views towards the church and the public house are identified as '*key views*'.

5.1.11 Pre-Victorian buildings are characterised by peg tile roofs, tile hung elevations, timber frames with painted brick infill and sash or casement windows. A late Victorian phase of development has houses of multistock brief with low pitched roofs in slate.

5.1.12 The Conservation Area extends to the west of the River Mole to take in an area of more open pasture and also a small moated site (Figure 1.2.2, Site 491). However, the western boundary of the Conservation Area does not correspond with any physical boundary on the land, increasing the openness in this direction. The views across this open area include the tower of the Gatwick Holiday Inn, but no elements of the operational airport are visible in views from or across this area.

5.1.13 To the east of the Conservation Area are areas of more recent housing along with the A23 London Road and the busy Longbridge Roundabout at the junction of the A23 and A217 roads. There is some traffic noise from the nearby main roads, but very little noise associated with the airport.

5.2 Designated Heritage Assets within 1 km of the Project Site Boundary

5.2.1 There is a considerable number of designated heritage assets within 1 km of the Project site boundary (Figure 1.2.1). These include two Scheduled Monuments, three Grade I listed buildings, seven Grade II* listed buildings, three Conservation Areas and approximately 77 Grade II listed buildings. Figure 5.2.1 shows these designated heritage assets (and others within 3 km of the Project site boundary) in relation to the ZTV established for the Project.

Scheduled Monuments

5.2.2 One of the Scheduled Monuments is just outside the Project site at Tinsley Green, just to the south of Radford Road and east of the railway line (Site 9). The Scheduled Monument comprises two areas of protection that are separated by a narrow strip of land to the rear of outbuildings associated with a residential property known as Little Radfords. This monument contains former elements of the dispersed medieval settlement of Tinsley Green, known then as *Tyntesle*.

5.2.3 Archaeological examination of these remains has included geophysical survey, topographic (earthwork) survey and trial trenches. The work has concluded that this part of the former settlement was occupied from at least the 12th century through into the 18th century. Some of the material recovered was associated with ironworking; the known Tinsley Forge was located approximately 150 metres south east of the Scheduled Monument.

5.2.4 Within the protected area of the Scheduled Monument are earthworks representing a hollow-way aligned roughly north east/south west and flanked by at least three homesteads. Additional rectangular building plots have been recorded from aerial photographs.

5.2.5 The significance of this Scheduled Monument derives from the rarity of partly deserted medieval settlements with associated earthwork remains in this area of the Weald, also from its relationship with the nearby forge.

5.2.6 The current setting of the Scheduled Monument includes the open and fairly rural landscape of pasture and scrub to the south and also the quiet lane of Tinsley Green which has historic buildings on either side, including the Grade II listed Cherry Tree Cottage which is just outside the western boundary of the protected area. At the end of the short lane is the railway, beyond which are industrial units and warehouses within the Manor Royal Business District. To the north is the busy Radford Road, with The Greyhound public house on the southern side of this road. To the north of Radford Road, immediately behind Oldlands Farmhouse, is the Crawley STW. There is noise pollution from the road, and the railway and, to a lesser extent, from the operational airport.

5.2.7 The setting makes a reasonable contribution towards the significance of the Scheduled Monument, particularly its relationship with the historic dwellings on either side of the lane. However, new residential development (Crawley North East Sector) extends almost to the southern edge of the protected area. This development has severed any visual connection between the Scheduled Monument and the site of the former forge and greatly reduced the size of the rural area to the south. The key element of the setting is now firmly represented in the relationships with the buildings on either side of the monument.

5.2.8 The second Scheduled Monument is Thunderfield Castle (Site 7), located approximately 1.7 km north east of the airport. It is the site of a medieval moated manor house to which the name 'Thunderfield Castle' has been applied since the 17th century. Earlier sources suggest that the manor here was named as *Herewoldsle* or *Harrowsley*. A moat surrounds a central rectangular island; there is a semi-circular extension on the northern side of this inner moat and also an outer moat. Archaeological investigations here confirmed that the site was occupied during the 13th – 15th centuries.

5.2.9 The significance of this protected area derives from the survival of a large extent of apparently undisturbed land within a complex moated site; there is also a considerable amount of documentary material associated with the occupation of the site. The current setting of the Scheduled Monument makes a strong contribution towards its significance; the land in the immediate vicinity is mainly occupied by dispersed houses within small fields and with considerable vegetation in the form of mature trees. There is little noise associated with the existing airport, and no view of any part of the operational airport (other than planes in the air). The ZTV established for the Project indicates that there would be no visibility between this Scheduled Monument and any element of the Project (Figure 5.2.1).

Grade I Listed Buildings

5.2.10 The three Grade I listed buildings within 1 km of the Project site boundary (Figure 1.2.1) are all churches.

5.2.11 The Church of St Bartholomew on Church Road at Horley (Site 16) is of 14th century date, although restored in 1881 and with a south aisle added in 1901. It has a wood-shingled bell turret and spire at the south western end of the north aisle.

5.2.12 The church is experienced as part of the Conservation Area, with important adjacent buildings including Ye Olde Six Bells public house and High House, both of which are adjacent to the church. The immediate setting of the church comprises the churchyard, with the busy A23 road immediately to the east. However, the open land to the west of the churchyard is important as it allows views back towards the church in which the spire is visible above the trees. There is some noise from the adjacent road network, but not much from the airport in terms of ground or airborne noise. No part of the operational airport is visible in views from or across the church.

5.2.13 The Church of St Nicholas in the western part of Charlwood (Site 14) is approximately 1 km west of the Project site boundary. This

is of Norman origin with surviving elements of late 13th, 14th and 15th century date in the northern part of the current structure, including the central tower which is likely to be of late 13th or 14th century date.

5.2.14 The ZTV established for the Project indicates that there would be no visibility between the church and any element of the Project (Figures 5.2.1 and 5.2.2), and this has been confirmed through site visits. However, there is some airborne noise relating to planes taking off and landing. The principal setting of the church comprises the well-vegetated churchyard, and the adjacent historic buildings are also important.

5.2.15 The Church of St Bartholomew at Burstow (Site 13) is of 12th century date, enlarged and remodelled in the 15th century and restored in 1884-95. There is a tower at the western end of the south aisle which has a weatherboarded lower stage.

5.2.16 The church sits to the east of the airport (and east of the M23 motorway) within a small and well-enclosed churchyard, with extensive vegetation blocking views out in all directions other than to the east. No part of the operational airport is visible in views from or across the church. There is constant traffic noise from the M23 motorway (just 730 metres to the west), but this is overshadowed by the noise of incoming or outgoing planes which pass almost directly over the church.

Grade II* Listed Buildings

5.2.17 Five of the seven Grade II* listed buildings within 1 km of the Project site boundary are to the south of the airport (Figure 1.2.1).

5.2.18 Charlwood House (Site 23) is located on the south side of Charlwood road at Lowfield Heath, immediately south of the operational airport. This is a high-status house of early 17th century date, timber-framed with a close-studded frame, and was formerly called 'Ticcaradges' (Harding 1976, page 34). It is situated within a moat that extends around the eastern and northern sides of the house, which was substantially enlarged in the early 20th century with a close-studded extension and is currently in use as a nursery school.

5.2.19 Despite the presence of the airport to the immediate north, Charlwood House retains much of its early 20th century and earlier setting, the main buildings lying at the centre of an Edwardian 'pocket park', with mature trees, ranges of farm buildings to the south and a lodge house and driveway to the south east, on Poles Lane. One of the farm buildings (a former barn) is now a separate residential dwelling listed at Grade II (Site 388). Car parking for the nursery school has caused limited impacts. Prior to the inclosure of Lowfield Heath and the creation of Poles Lane to the east of the house, Charlwood House would have more directly addressed the (now-inclosed) heath.

5.2.20 Gatwick Manor Inn (formerly Hyders Hall and Hydehurst) is located on the eastern side of the A23 London Road (Site 29). This is a high-status open hall house of 15th century date, which now houses a restaurant, bar and conference facilities. The earliest portion comprises the one remaining bay of a timber-framed, two bay open hall house, re-fronted in the 19th century. The remaining part of the hall house was greatly extended *c.* 1600 with a parallel high-status, two-storey brick range, with stone mullioned windows. Good interior details are known to survive throughout. In the mid-20th century the building was greatly extended with pastiche 'half-timbered' extensions, for hotel use. It was formerly moated, and part of the moat still exists on the west side. Just to the north (and forming part of the hotel complex) is a Grade II listed barn (Hyders Barn - Site 333).

5.2.21 The historic buildings that form part of the Gatwick Manor Inn complex retain some elements of their historic setting, principally a section of a historic moat. Their former relationship to the edge of Lowfield Heath (to the west) has been severed by the transformation of the former rural road into the A23 dual carriageway. Their relationship to the still open countryside to the north, east and south has been severed by the complex of more or less pastiche buildings and car parks that have grown up within the hotel complex since the 1950s. A feature of interest within the complex is the crudely reconstructed base of the Jolesfield windmill (1790), re-erected here in 1959. The cap, sweeps and machinery were never reinstated and the mechanical parts are now on display at the relocated Lowfield Heath windmill, near Charlwood.

5.2.22 The ZTV established for the Project indicates that there would be no intervisibility between this Grade II* listed building and any element of the Project (Figure 5.2.1).

5.2.23 The Church of St Michael and All Angels on Church Road at Lowfield Heath (Site 24) was built in 1867 in an early 13th century French Gothic style by the architect William Burgess. It is in undressed local stone with Bath stone dressings, and the fish-scale tiles mentioned in the statutory description have been replaced with a modern tile roof. There is an open-fronted timber narthex with lean-to roof at the west end, and a south west tower with timber spire clad in oak shingles. The west window is a large wheel window with sculptures representing the Four Ages of Man, St Michael and the Dragon carved over the west doorway. The building is now used by a Seventh Day Adventist congregation.

5.2.24 Whilst it retains its churchyard and relationship to Church Road, the church has otherwise been wholly subsumed into the Gatwick Gate Industrial estate, which itself abuts the perimeter of the operational airport. The remainder of the hamlet of Lowfield Heath, which the church was built to serve, has been entirely removed to make way for modern commercial development.

5.2.25 Rowley Farmhouse is located to the south of the A23 London Road (Site 22). It is a late 16th century central smoke-bay house, with a cross passage behind the smoke bay and a back detached kitchen, greatly enlarged and extended to the west in early 20th century. The house is of historical note as it was once owned by the Culpeper family.

5.2.26 The farmhouse has a commanding position on the top of a small gravel hill. Nearby is a Grade II listed crown post barn (Site 167). Distantly Rowley Farm is surrounded to the north by Gatwick Airport and to the south and east by industrial estates. The house and barn are nevertheless still surrounded by more or less historic farm buildings and a historic farmland estate that separates them from the surrounding modern development. The listed farmhouse still has a well-treed garden to the west. To the east, the listed barn forms part of a wider complex of 18th, 19th and 20th century farm buildings. To the north, close to the A23 London Road, are an Edwardian lodge house and an open-fronted timber byre.

5.2.27 The Beehive (Site 35) is located within a complex of more modern industrial buildings just to the south of the airport. It is a unique historic former combined airport terminal and control tower, now used as offices. The building was constructed in 1934-36, by Hoar, Marlow and Lovett, for Morris Jackaman. It is in reinforced concrete with a steel frame and brick infill. Three storeys in total and circular in plan with concentric circles of rooms and corridors, rising in height to the former control tower at the centre.

5.2.28 From the central corridor passengers arrived and left through six telescopic corridors (no longer surviving) which were extended on rails to the aircraft steps. There is a subterranean tunnel (no longer in use) connecting The Beehive to the site of the previous Gatwick railway station. The Beehive is important not only in the history of British aviation but also in terms of world airport design. It is a rare example of how airport owners and architects

collaborated to put passenger comfort as a top consideration when designing a terminal building.

5.2.29 As originally built and conceived, The Beehive was an isolated building, surrounded on all sides by open taxiways and hardstandings for docking aircraft. It currently lies outside of the airport perimeter fence, surrounded on all sides by modern built development and roads. The railway station that served it has been demolished and the tunnel that connected the terminal to the station is disused. The Beehive is visually and physically divorced from the airport it once served.

5.2.30 The ZTV established for the Project indicates that there would be no visibility between this Grade II* listed building and any element of the Project (Figure 5.2.1).

5.2.31 The two remaining Grade II* listed buildings within 1 km of the Project site boundary are at Charlwood, to the west of the airport. The Providence Chapel on Chapel Road (Site 36) was erected in 1816 as the 'Charlwood Union Chapel' (Non-conformist). It was brought from Horsham where it had been initially built in 1797 as the Guard Room of a military camp used for training of troops to fight in the French Revolutionary War. Following the Battle of Waterloo in 1815 the camp was dismantled and the buildings were sold off. The chapel is single-storey and is in weatherboarded timber on a brick base. The hipped roof is tiled with slate and forms a veranda to the south east elevation which is supported on wooden columns.

5.2.32 The chapel is located on the west side of a narrow unsurfaced lane, with open farmland to the east. No part of the operational airport is visible in views from or across the chapel, and the ZTV established for the Project indicates that this will not change (Figure 5.2.1). There is some noise from planes arriving and departing the airport, but this is not obtrusive.

5.2.33 The Manor House on Norwood Hill Road at Charlwood (Site 33) is a large hall house of 15th or 16th century date. In two storeys it is timber-framed with plaster and red brick infilling, and the parlour wing is close-studded. The kitchen is partly open to the roof and has smoke-blackened crown posts and rafters above (Harding, 1976, page 60).

5.2.34 The house is located within well-vegetated grounds; no part of the operational airport is visible in views from or across the house, and the ZTV established for the Project indicates that this will not change (Figure 5.2.1). There is some noise from planes arriving and departing the airport, but this is not obtrusive.

Conservation Areas

5.2.35 One of the three Conservation Areas within the defined 1 km study area is located close to the Church Road Horley Conservation Area which is described above (Figure 1.2.1). This is the Massets Road Conservation Area to the west of the railway station at Horley (Site 398).

5.2.36 A draft Conservation Area Appraisal (CAA) (Reigate and Banstead Borough Council, 2014b) document was produced in December 2014 but does not appear to have been adopted yet by Reigate and Banstead Borough Council. The document identifies that '*The special interest of Massets Road Conservation Area is derived from the cohesive groups of Victorian and Edwardian villas. The prominent character of the buildings is Victorian and Edwardian, with some earlier structures*'.

5.2.37 The Conservation Area is surrounded on all sides by multi-period development. There is some noise from planes arriving and leaving the airport, but this is not obtrusive. Overall, the setting of the Conservation Area does not make much of a contribution to its significance.

5.2.38 The ZTV for the Project shows that the potential for elements of the Project to be visible from the Conservation Area is limited to a small area at the very western end of the designated area (Figure 5.2.1). Site visits have identified that no part of the operational airport is visible in views from or across this Conservation Area.

5.2.39 A second Conservation Area is located at Burstow, to the east of the airport and east of the M23 motorway (Site 400). This was designated by Tandridge District Council and is quite small, covering the historic core of the settlement including the Grade I listed Church of St Bartholomew (see above), a Grade II listed tomb in the churchyard, and the Grade II listed Burstow Court.

5.2.40 There is a considerable amount of mature vegetation within the Conservation Area, including large trees along the boundaries on all sides. Consequently, there are no views from or across the Conservation Area in which any part of the operational airport is visible.

5.2.41 The surrounding landscape is quite rural, but there is considerable constant traffic noise from the M23 motorway. This is overshadowed at regular intervals by the noise of incoming or outgoing planes which pass directly over the Conservation Area.

5.2.42 Overall, the setting of the Conservation Area makes a reasonable contribution to its significance, due mainly to the rural character of the surrounding area. However, the noise from motorway traffic and particularly from aircraft are key detracting elements.

5.2.43 The third Conservation Area within 1 km of the Project site boundary is at Charlwood, to the west of the airport (Site 397). This was initially designated by Surrey County Council and subsequently extended by Mole Valley District Council. It includes the area around the Grade I listed Church of St Nicholas (see above) and several other listed buildings within the western part of the settlement, along with areas of open space in the central and northern parts of the village.

5.2.44 A description of the Conservation Area was provided in Appendix 6 of the Mole Valley Local Plan 2000. It identifies the Conservation Area as '*a large area covering the historic core of the village and peripheral medieval buildings*' before going on to say that '*The village setting of hedged fields, winding country lanes, field oaks and woodland is important because of the views out from the Conservation Area and the background formed for important buildings such as the Parish Church*'.

5.2.45 The description identifies the importance of the approach to the church along The Street (ie from the east) and also the views from the footpaths to the south of the church. Open spaces are also identified as important, with the open land in the northern area described as '*fields which separate the medieval farmhouses, a reminder of a past settlement form that was more dispersed*'.

5.2.46 The Conservation Area is surrounded to the north, west and south by farmland which allows views in towards the designated area. To the east are further developed areas of the village that are not included within the Conservation Area boundary, but which do contain a number of historic buildings. Overall, the setting of the Conservation Area makes a reasonable contribution to its significance.

5.2.47 The ZTV for the Project shows that the potential for elements of the Project to be visible from the Conservation Area is limited to the open areas to the north of the village (Figure 5.2.1). However, the mature vegetation within and around the Conservation Area means that there are actually no locations from which any part of the operational airport is visible in views to and across the Conservation Area. There is some noise from planes landing or departing, but this is not particularly intrusive with regard to the ability to appreciate the character and appearance of the Conservation Area.

Grade II Listed Buildings

5.2.48 As described above, there are approximately 77 Grade II listed buildings or structures within 1 km of the Project site boundary (Figure 1.2.1). Examination of the ZTV established for the Project indicates than many of these listed buildings have no intervisibility with any built element of the Project (Figure 5.2.1). These examples are not described further within this baseline report unless it is considered that the construction and/or operation of the Project could harm the significance of the listed building though non-visual changes in their settings, eg noise.

5.2.49 The same applies to those Grade II listed buildings which are located wholly within the urban parts of Horley. It has been assumed that for these buildings, their settings are dominated by the surrounding buildings and urban landscape. Any changes in views towards the operational airport are considered unlikely to result in harm to the significance of these listed buildings.

5.2.50 Several Grade II listed buildings within 1 km of the Project site boundary are located to the south of the airport (Figures 1.2.1 and 5.2.1). These include Old Bonnetts Cottage on Bonnetts Lane (Site 341), Knights Acre (formerly St Barbe Cottage – Site 334), Poles Acre Barn (Site 296), Spikemead Farmhouse (Site 156) and Lowfield Hall (Site 388) – all on Poles Lane, along with County Oak Cottage (Site 299).

5.2.51 Close to the southern boundary of the airport is the Lowfield Heath War Memorial (Site 389) which is adjacent to the Grade II* listed Church of St Michael and All Angels (Site 24). The Grade II listed crown post barn at Rowley Farm (Site 167) is located close to the Grade II* listed Rowley Farmhouse (Site 22).

5.2.52 Just outside the Project site boundary in the Tinsley Green area are Oldlands Farmhouse (Site 161), Brookside (Site 157) and Radford Farmhouse (Site 192), all on the north side of Radford Road, and Cherry Tree Cottage on the south side of Tinsley Lane (Site 162).

5.2.53 To the east of the Project site boundary are Teizers Farm House on Antlands Lane (Site 103), and Old Cottage (Site 140) and Lilac Cottage (Site 325), both on Donkey Lane. Burstow Court, just to the north of the Church of St Bartholomew at Burstow, is listed at Grade II (Site 175), as is Broadbridge Farmhouse on Broadbridge Lane (Site 174).

5.2.54 To the north of the M23 motorway spur are Yew Tree Cottage (Site 76) and Inholms Farmhouse (Site 75), both on Haroldslea Drive, also Fishers Farmhouse (Site 80) and a former barn (now residential - Site 320) on Limes Avenue.

5.2.55 There are several Grade II listed buildings or structures within and adjacent to the Church Lane Conservation Area at Horley. These include the Boer War Memorial Lychgate to the south of the church (Site 390) and several tombs within the churchyard, as well as High House (Site 70), Ye Olde Six Bells public house (Site 370) and a barn to the north of Ye Olde Six Bells (Site 71). Further to the west are Hookwood Manor (Site 281) and Povey Cross House (Site 225).

5.2.56 A number of Grade II listed buildings are located at Charlwood, west of the operational airport. Some of these are outside the Conservation Area, including the farmhouse and associated buildings at Charlwood Place Farm (Sites 290; 251; 252; 270; 271), also the farmhouse and associated buildings at Spicers (Sites 253; 254; 272) and again at Tifters (Sites 275; 246).

5.2.57 Figure 5.2.2 presents a large-scale map of the designated heritage assets at Charlwood in relation to the ZTV prepared for the Project. This detailed image shows clearly how the local vegetation around the properties and within the village screens current and future views towards the operational airport. In the course of several visits, it has not been possible to find any location at Charlwood (inside or outside of the Conservation Area, or adjacent to any listed building) from which any part of the operational airport is visible.

Locally Listed Buildings

5.2.58 Locally listed buildings do not fall within the definition of 'designated heritage assets' provided within Annex 2 of the NPPF. However, they are identified by some local authorities and specific local plan policies are often in place which address how these heritage assets should be considered within the planning process.

5.2.59 Figure 1.2.2 shows the locations of locally listed buildings within 1 km of the Project site boundary. A number of these are located within the urban areas of Horley and the built elements of the Project would not represent a change within the settings of these assets. The locally listed buildings are within Reigate and Banstead Borough, Crawley Borough and Tandridge District as these local authorities maintain a local list of historic buildings.

5.2.60 One locally listed building is situated on the north western edge of the Project site boundary. This is Gatwick Manor Lodge on the south side of Povey Cross Road and it represents the only surviving structure associated with the former country house of Gatwick which replaced the earlier Gatwick Farm. The lodge fronts onto the road and is the only building on this side of the road. To the sides and rear is mature vegetation that provides a thick screen. Beyond the rear garden are the River Mole and the drainage lagoons, whilst to the east is the Travelodge and the Airport Inn.

5.2.61 There are four locally listed buildings on the southern edge of Horley, comprising a granary to the east of Bayhorne Farmhouse (Figure 1.2.2, Site 453), Pear Tree Cottage and a small barn on Haroldslea Drive (Sites 456 and 457) and Haroldslea House (Site 476).

5.2.62 There are several locally listed buildings to the east of the airport. On the west side of the M23 motorway these include Royal Oak House (Figure 1.2.2, Site 426), Touchwood Chapel (Site 428), Poplars (Site 425), Gatwick House (Site 427), No. 1 Pullcotts Farm Cottages (Site 424) and Burstow Hall (Site 410).

5.2.63 To the east of the M23 motorway are Brook Cottage and Brook Farm (Figure 1.2.2, Sites 421 and 422) and also the Rectory and Bartlemy at Burstow (Sites 413 and 414).

5.2.64 South east of the airport are The Cottage in the Wood, The Open Door and the Parsons Pig Public House, all on Balcombe Road (Figure 1.2.2, Sites 409, 433 and 434). Further to the west at Tinsley Green are Newbridge and Zell Cottages (Site 430), Greyhound Cottage (Site 431) and the Greyhound Inn (Site 432). At the very south eastern edge of the 1 km buffer is Rose cottage (Site 435).

5.3 Designated Heritage Assets within 1-3 km of the Project Site

5.3.1 The locations of designated heritage assets within 3 km of the Project site boundary and within the ZTV for the Project are indicated on Figure 5.2.1. The ones within 1 km have been described above.

Scheduled Monuments

5.3.2 There are two Scheduled Monuments within 1-3 km of the Project site boundary which are shown through the ZTV to have potential intervisibility with elements of the Project. One of these is a moated site at Ewhurst Place (Site 2). This is within the developed urban area of Crawley and is not further described here as it is considered that changes within its setting resulting

from the construction and operation of the Project are unlikely to affect its significance.

5.3.3 The second Scheduled Monument is the moated site at Ifield Court (Site 4). This includes the moat and internal island along with a platform and shallow ditch to the south west. It was formerly the site of the manor house of Ifield Court, replaced by the present house (now a hotel) which is to the east of the moat.

5.3.4 The setting of the Scheduled Monument includes the historic farm buildings to the north and the later house (now hotel) to the east, along with the hotel car park and other elements of the hotel infrastructure. To the south is open land representing the surviving part of the former park which surrounded the moated site, beyond which is the Ifield Village Conservation Area (see below for details of this designated heritage asset).

5.3.5 There is no intervisibility with any element of the operational airfield, and airborne noise from planes is not intrusive. Overall the setting of the Scheduled Monument makes a reasonable contribution to its significance.

Grade II* Listed Buildings

5.3.6 There are three Grade II* listed buildings within 1-3 km of the Project site boundary and within the ZTV (Figure 5.2.1).

5.3.7 One of these is Burstow Lodge to the north of Weatherhill (Site 30). This 15th century hall house sits within a moated platform, with later buildings to the south (outside the moated area) and with a motor-racing circuit (the Smallfield Raceway) immediately to the west. The listed building is enclosed within a screen of mature vegetation and there will not be any intervisibility with any element of the Project.

5.3.8 The second Grade II* listed building is located to the south east, on the eastern side of Smallfield. This is a divided house of 16th century date now known as Crullings and Smallfield Place (Site 21). The principal façade of the house faces to the east (away from the airport) and mature vegetation around the western boundary of the property ensures that will not be any intervisibility with any element of the Project.

5.3.9 The third Grade II* listed building comprises the tennis court and orangery at Crabbet Park (Site 18), to the south east of the airport. The parkland extends for some distance to the north of the tennis court and orangery, but a substantial scree of mature vegetation separates the buildings form the parkland and also prevents any potential intervisibility with the airport.

Conservation Areas

5.3.10 There is one Conservation Area within 1-3 km of the Project site boundary and within the ZTV (Figure 5.2.1). This is the Ifield Village Conservation Area, to the south west of the airport (Site 396).

5.3.11 A Conservation Area Statement was published in February 2018 by Crawley Borough Council and Ifield Village Association (2018). This explains that the area around the parish church was initially designated as a Conservation Area in 1891, and was subsequently extended to the north and east.

5.3.12 The Conservation Area character is summarised as '*a small, scattered rural settlement, focused upon an historic church and public house. In addition to the contribution made to the area's historic character by the many fine buildings, a number of other features contribute to its importance, including Ifield Village Green*'.

5.3.13 The ZTV for the Project suggests that elements of the Project may be visible from a small area of land in the north western part of the Conservation Area (Figure 5.2.1). This is an area of small enclosed meadows on the eastern side of Ifield Brook. On site visits to these meadows, it has not been possible to find any location from which views across the Conservation Area also include elements of the operational airport.

5.3.14 To the east of the Conservation Area is more recent development in a mixture of architectural styles. To the north west is former parkland associated with the moated site of Ifield Court, whilst to the west and south west are areas of more open farmland. Airborne noise from planes is not intrusive within any part of the Conservation Area. Overall, the setting of the Conservation Area makes a reasonable contribution to its significance.

Grade II Listed Buildings

5.3.15 There are a number of Grade II listed buildings within 1-3 km of the Project site boundary and within the ZTV (Figure 5.2.1). To the south of the airport these include Old Pound Cottage on Rusper Road (Site 116), The Tweed (Site 163) and Newstead Lodge (Site 295), both within the northern part of Ifield Village Conservation Area, and Pear Tree House at Crabbet Park (Site 131).

5.3.16 East of the airport are Stonelands Farmhouse (Site 176), Cherry Gardens (Site 99), Broadbridge Farmhouse (Site 174), Rough Beech (Site 177), Greenmeads Farmhouse (Site 177) and a barn south west of Burstow Lodge (Site 105).

5.3.17 To the north of the airport there are several Grade II listed buildings in the Hookwood and Norwood Hill areas, with more again to the west around Charlwood.

5.3.18 Close examination of the ZTV at a large-scale indicates that there is no intervisibility between any of the Grade II listed buildings and current elements of the operational airport.

5.4 Designated Heritage Assets within the Study Area for Air Noise Impacts

5.4.1 A separate study area has been defined with regard to the assessment of potential impacts on the significance of designated heritage assets resulting from changes in air noise, ie changes in flight routes and/or in aircraft frequency.

5.4.2 A previous study on behalf of English Heritage concluded that the energy generated by even the loudest aviation noise output is '*insufficient to affect the structure of even the most at risk structures*' (Temple Group and Cotswold Archaeology, 2014, page 12), although the report did acknowledge that high intensity low frequency air noise could induce perceptible vibrations in components of structures (eg window 'rattle').

5.4.3 The same study proposed a methodology for the assessment of impacts on the settings of heritage assets as a result of changes in air noise. This is the guidance referenced in paragraph 5.194 of the Airports NPS (Department for Transport, 2018) and identified above in paragraphs 2.3.20 – 2.3.21.

5.4.4 The initial steps of the methodology involve the establishment of a 'noise change footprint' (ie an area within which air noise is likely to change according to certain specified parameters) and then the identification of noise-sensitive heritage assets within the noise change footprint.

5.4.5 In reality there are actually two separate noise change footprints which need to be established: a 'positive' one where air noise will be reduced; and a 'negative' one where air noise will be increased.

5.4.6 Subsequent elements of the methodology involve asset-specific assessments of the existing and predicted noise environment in order to reach a judgement regarding the potential impact on the significance of each heritage asset and the consequent level of effect.

5.4.7 In order to establish the noise change footprints, the methodology requires the combination of two separate datasets. The first of these is the contour which shows the areas where there will be a predicted change of 1 decibel (dB) or more in the average summer daytime ($L_{eq\ 16\ hr}$) noise level (see chapter 14:Noise and Vibration of the PEIR for details).

5.4.8 The second dataset requires the establishment of the contour which shows the areas where there will be a 25% change in what is known as the daytime N60 (or N60 Day, or Number Above) contour. This represents the areas where there will be a predicted 25% change in the number of daytime flights for which the maximum outdoor noise level (L_{max}) is likely to exceed 60dB on an average summer day.

5.4.9 Consequently the 'negative noise change footprint' is the area where the predicted average summertime $L_{eq\ 16\ hr}$ noise level change will increase by 1dB or more and where there will be a predicted 25% increase in the number of daytime flights for which the maximum outdoor noise level is likely to exceed 60dB. Conversely, the 'positive noise change footprint' is the area where the predicted average summertime $L_{eq\ 16\ hr}$ noise level change will decrease by 1dB or more and where there will be a predicted 25% decrease in the number of daytime flights for which the maximum outdoor noise level is likely to exceed 60dB. The two noise change footprints can then be combined in GIS with the locational information for designated heritage assets.

5.4.10 Considering the areas of noise increase first. The guidance requires the noise change footprint for assessing impacts on heritage assets to be the area where the average $L_{eq\ 16\ hr}$ changes by 1dB and the N60 Day increases by at least 25%. By requiring both the $L_{eq\ 16\ hr}$ to increase by 1dB and the N60 Day to increase by at least 25%, the negative noise change footprint for heritage asset assessment is the overlap of the two noise change areas and will be smaller than either of these areas when considered in isolation.

5.4.11 Chapter 14: Noise and Vibration of this PEIR describes the noise modelling that has been done to predict and assess the changes in noise expected from the Project. The noise metrics used for this are as required by the Civil Aviation Authority's (CAA) CAP1616 guidance (Civil Aviation Authority, 2021) and include $L_{eq\ 16\ hr}$ day, $L_{eq\ 16\ hr}$ night, N65 Day and N60 Night. N60 Day has not been modelled and is not required under CAA guidance. Therefore, in order to follow the guidance provided in the Temple Group report (Temple Group and Cotswold Archaeology, 2014), the negative noise change footprint has been established by using the 1dB change in $L_{eq\ 16\ hr}$ only. This ensures a conservative assessment since had the N60 Day 25% change also been considered it would have resulted in a smaller noise change footprint.

5.4.12 Considering the areas of noise decrease, the same approach has been applied to ensure a conservative assessment.

5.4.13 Figure 5.4.1 shows the location of all designated heritage assets within the negative noise change footprint (orange tone) and the positive noise change footprint (pale green tone). The negative and positive noise change footprints are based on the predicted noise in 2032 (the year of greatest noise increase due to the Project) measured against the predicted noise in 2032 without the Project (ie. the Do-Nothing scenario). Further information regarding the methodology used to produce the contours for the noise change footprints is provided in Chapter 14 and Appendix 14.9.2 of this PEIR.

5.4.14 The designated heritage assets within the negative and positive noise change footprints include listed buildings, Scheduled Monuments and Conservation Areas. There are no Registered Parks and Gardens within either of the noise change footprints.

5.4.15 The next stage is to identify those heritage assets within the noise change footprints that can be classed as 'noise-sensitive'. The published methodology (Temple Group and Cotswold Archaeology, 2014) identifies four categories of noise-sensitive heritage assets and provides examples of each type, although these quoted examples should not be seen as definitive lists:

A. When solitude, embedded with quietness, is intrinsic to understanding the form, function, design intentions and rationale for the siting of a heritage asset. Examples include:

- hermitages and retreats;
- monastic sites (eg those associated with the Cistercian Order):
- most places of worship;
- memorials and graveyards; and
- components of designed landscapes.

B. When a non-quiet and specific existing soundscape forms part of the functional understanding of the heritage asset. Examples include:

- working windmills (the grinding machinery and 'whoosh' of the sails/blades;
- industrial sites (eg working furnaces and workshops);
- open air theatres;
- specific areas within places of worship (eg bell towers and chanting halls); and
- cascades and fountains.

C. When the abandonment of a heritage asset; a monument, building or landscape, in antiquity (or more recently) has created a perceived otherworldly romanticism enabled by the absence of anthropogenic sounds (quietness). Examples include:

- battlefields; and
- ruinous remains of former estate houses, amphitheatres, factories and workshops, collieries and mining landscapes, and deserted medieval villages.

D. When the absence of foreign (modern) sounds allow an asset to be experienced at a very specific point in time that is intrinsic to understanding the asset's significance. This could be associated with:

- the period of the monument or building's construction;
- a key moment intrinsic to the heritage asset's story, ie its association with an important historical individual or event;
- an important phase of its redevelopment; and
- its abandonment or destruction.

5.4.16 Examination has been undertaken with regard to the designated heritage assets within the negative and positive noise change footprints, ie those indicated on Figure 5.4.1. A total of five designated heritage assets have been identified as potentially falling within one of the four categories of noise-sensitivity as described above. These are shown on Figure 5.4.2 and comprise two Category A and one Category B assets within the negative noise change footprint, and 2 Category A assets within the positive noise change footprint.

5.4.17 The two Category A heritage assets within the negative noise change footprint are both Grade II listed places of worship located within the village of Capel and approximately 7.4 km west of the Project site boundary. One of these is the Church of St John the Baptist (Site 872, NHLE 1378150) whilst the other is a Quaker Meeting House with attached cottage (Site 873, NHLE 1028737).

5.4.18 Table 4.3.1 in Appendix 14.9.2 of this PEIR presents noise information with regard to noise-sensitive buildings including places of worship. For the Church of St John the Baptist at Capel the measured $L_{eq\ 16\ hr}$ day noise level (in 2019) is 53.4dB. Some of this is air noise from aircraft approaching and departing

Gatwick Airport, but there is also some road noise from the nearby A24. The $L_{eq\ 16\ hr}$ day noise level for the Quaker Meeting House with attached cottage at Capel is assumed to be very similar to the measured noise level at the Church of St John the Baptist.

5.4.19 The Category B heritage asset within the negative noise change footprint is the Grade II listed Lowfield Heath Windmill which has been relocated to a site south west of Charlwood, approximately 1.4 km west of the Project site boundary (Site 332, NHLE 1298883).

5.4.20 In the published methodology (Temple Group and Cotswold Archaeology, 2014), Category B noise-sensitive heritage assets are those where '*a non-quiet and specific existing soundscape forms part of the functional understanding of the heritage asset*'. Working windmills are included in the list of examples of Category B noise-sensitive heritage assets on the basis of noises associated with the grinding of machinery and the movement of the sails.

5.4.21 As a result of the Covid-19 pandemic the Lowfield Heath Windmill has been closed for much of the period throughout which baseline data for the assessment of impacts and effects arising from the Project have been collated. However, a number of open days have been identified for the summer and autumn of 2021 and it is hoped that attendance at one of these will enable a better understanding of the current baseline noise environment for this heritage asset. Table 4.3.1 in Appendix 14.9.2 of this PEIR presents noise information with regard to noise-sensitive buildings. For the Lowfield Heath Windmill the measured $L_{eq\ 16\ hr}$ day noise level (in 2019) is 57.9dB.

5.4.22 The two Category A heritage assets within the positive noise change footprint comprise the Grade II* listed Church of St Michael and All Angels at Lowfield Heath (Site 24, NHLE 1187081) and the adjacent Grade II listed Lowfield Heath War Memorial (Site 389, NHLE 1452793) which is located just within the north west corner of the churchyard. Both of these heritage assets are approximately 150 metres from the Project site boundary.

5.4.23 The Grade II* listed Church of St Michael and All Angels and the adjacent Grade II listed war memorial are the only surviving elements of the former settlement of Lowfield Heath; all other buildings having been demolished as a result of the expansion of Gatwick Airport and related development. The church and war memorial are now surrounded by modern industrial units and are only 150 metres from the airport perimeter fence. The church is no longer in use by the Church of England, however it is leased to the Horley Seventh-Day Adventist Church and remains an active place of worship.

5.4.24 In the published methodology (Temple Group and Cotswold Archaeology, 2014), Category A noise-sensitive heritage assets are those identified '*when solitude, embedded with quietness, is intrinsic to understanding the form, function, design intentions and rationale for the siting of a heritage asset*'. The current baseline noise environment of these two designated heritage assets reflects their location within an industrial estate and close to the airport, and for both assets it is clear that solitude and embedded quietness do not form part of that baseline.

5.4.25 Table 4.3.1 in Appendix 14.9.2 of this PEIR presents noise information with regard to noise-sensitive buildings including places of worship. For the Church of St Michael and All Angels at Lowfield Heath the measured $L_{eq\ 16\ hr}$ day noise level (in 2019) is 65.6dB. This is very high in comparison with most of the other places of worship (and the other noise-sensitive buildings) listed in Table 4.3.1.

6 Archaeological and Historical Background with Assessment of Significance

6.1 Timescales

Table 6.1.1: Timescales

Timescale	Date
Prehistoric	
Palaeolithic	900,000 - 12,000 BC
Mesolithic	12,000 - 4,000 BC
Neolithic	4,000 - 2,500 BC
Bronze Age	2,500 – 800 BC
Iron Age	800 BC – AD 43
Historic	
Roman	AD 43 – 410
Saxon/Early Medieval	AD 410 – 1066
Medieval	AD 1066 – 1530
Post-Medieval	AD 1530 – 1900
Modern	AD 1900 - Present

6.2 Introduction

6.2.1 This section relates to non-designated known (or suspected) and also currently unknown archaeological remains within the defined study area and also the wider vicinity of the airport. Scheduled Monuments are addressed in previous sections of this report.

6.2.2 The section opens with a brief description of the Local Planning Authority records of areas of archaeological potential from their respective current Proposals Maps. For West Sussex (Crawley District) these are recorded as Archaeological Notification Areas (ANAs) and the Red and Amber sub-categories reflect a grading of archaeological potential. For Surrey (Mole Valley District and Reigate and Banstead Borough), these are recorded as Areas of High Archaeological Potential (AHAPs) and also County Sites of Archaeological Interest (CSAIs). In all cases, this is a county level of designation used to identify areas that may have particular interest. The ANAs, AHAPs and CSAIs do not, however, indicate the only, or necessarily the most significant, areas of potential archaeological interest.

6.2.3 This is followed by a review of the influence of topography, drainage and geology on archaeological periods of inhabitation of the study area, encompassing the Project site and also the Weald in general.

6.2.4 A tabulation of previous archaeological fieldwork undertaken within the Project area is then followed by a full review of the archaeological database for the defined study area. This has been compiled for the Project from the data held on the West Sussex and Surrey HERs along with the corresponding Historic England Archive. This is supplemented by bibliographical research and involvement with archaeological projects in the vicinity.

6.2.5 The period-based review includes an assessment of the significance of the known archaeological remains and the potential significance of currently unknown archaeological remains.

6.2.6 The definition of the term 'significance' for heritage assets is provided in Section 2 above in relation to the Airports NPS. The term 'significance' in the context of this baseline report, has a

different meaning from the 'significance of effect' used in the wider EIA context. Significance determined within this appendix is more akin to the term 'sensitivity' in EIA terms.

6.2.7 There are no national government guidelines for evaluating the significance of all types of heritage asset. For archaeological remains, DCMS has adopted a series of recommended (ie non-statutory) criteria for use in the determination of national importance when scheduling ancient monuments (DCMS, 2013).

6.2.8 The criteria include period, rarity, documentation, group value, survival/condition, fragility/ vulnerability, diversity and potential, and can be used as a basis for the assessment of the importance of historic remains and archaeological sites. However, the document also states that these criteria *'should not be regarded as definitive; but as indicators which contribute to a wider judgment based on the individual circumstances of a case*'.

6.2.9 These criteria can be used as a basis for the assessment of the importance of archaeological remains/heritage assets of national importance. However, the categories of regional and district/ local importance are less clearly established than that of national importance, and implicitly relate to local, district and regional priorities which themselves will be varied within and between regions.

6.2.10 Clearly a degree of professional judgement is necessary, guided by acknowledged standards, designations and priorities. It is also important to understand that buried archaeological remains may not be well-understood at the time of assessment, and can therefore be of uncertain importance.

6.2.11 Table 6.2.1 assists in assessing the significance of archaeological assets.

Table 6.2.1: Factors for Assessing the Significance of Archaeological Assets

Significance / sensitivity	Type of Asset
Very High	▪ World Heritage Sites ▪ Assets of acknowledged international importance ▪ Assets that can contribute significantly to acknowledged international research objectives
High	▪ Scheduled Monuments ▪ Undesignated assets of schedulable quality and importance
	▪ Assets that can contribute significantly to acknowledged national research objectives
Medium	▪ Designated or undesignated assets that contribute to regional research objectives
Low	▪ Undesignated assets of local importance ▪ Assets compromised by poor preservation and/or poor survival of contextual associations ▪ Assets of limited importance, but with potential to contribute to local research objectives
Negligible	▪ Assets with very little or no surviving archaeological interest
Unknown	▪ The importance of the asset cannot be ascertained

6.2.12 Initial stages of desk-based analysis were conducted for a previous baseline report compiled in respect of the Gatwick Second Runway (R2) proposals. These included an aerial photographic rectification study (Air Photo Services (APS), 2014) and a LiDAR analysis using Environment Agency data (AOC, 2016). A site walkover was also conducted. The results of all of those pieces of work are summarised within this baseline report, along with the results of further walkovers and geophysical surveys of selected areas within the Project site boundary.

6.3 Baseline

6.3.1 There are no known archaeological assets of Very High or High significance within the Project site boundary. There are two Scheduled Monuments within 1 km of the Project site boundary (Figure 1.2.1); these are discussed in Section 5 above.

Local Authority Areas of Archaeological Potential

West Sussex Archaeological Notification Areas (ANAs)

6.3.2 A total of twelve Red ANAs and one Amber ANA are located within the defined study area, of which four (all of which are Red category) are located within the Project site boundary (Figure 1.2.2, Sites 478 - 490). Those within the Project site boundary are discussed first below.

West Sussex ANAs within the Project Site Boundary

6.3.3 Red category ANA DWS8667 (Site 487) has been recently designated within the north western part of the Project site, in the area of the Grade II* listed Charlwood Park Farmhouse. The ANA allows for the possibility of Bronze Age remains associated with the River Mole to extend further north from a previously excavated site within the car park zone (see 'Bronze Age' section below). The ANA is also associated with the potential for archaeological remains associated with Charlwood Park Farm (Site 27 on Figure 1.2.1). The historical Charlwood Park is now below the North Terminal and the North West Zone car parks (Figure 1.2.2, Site 854).

6.3.4 ANA DWS8661 'Roman Occupation, Balcombe Road, Crawley' (Figure 1.2.2, Site 485) relates to antiquarian evidence for Roman settlement at the former Horley Land Farm (now a surface car park area) to the east of the A23 road/London-Brighton railway, within the eastern area of the Project. This Red category ANA has been fully defined in recent years to encompass a larger area of the Gatwick car park zone than previously and includes the location of the Roman finds themselves (Site 695). Its southern area was formerly a soft landscape area that had been the subject of a geophysical survey (Site 735) and excavation ahead of construction of Gatwick's 'Balancing Pond North' (also known as the Pollution Control Lagoon). Although not yet recorded on the HER, the location of the storage lagoon was subjected to an archaeological open area investigation and an interim plan and text of the key findings have been provided by Network Archaeology. Identified remains included two Iron Age ring-gully features (possible roundhouses), pits and water-holes, a rectilinear field-system and a Late Iron Age urned cremation, along with a concentration of domestic debris, including pottery, bone and iron slag.

6.3.5 Red category ANA DWS8660 (Figure 1.2.2, Site 484) within the south eastern part of the Project site, has been recently designated with regard to a further scatter of Iron Age cremation burials identified by Network Archaeology (see 'Iron Age' section below). The southern extent also includes the Radford Farm historic farmstead (Site 585 – see also Figure 4.1.1) and the site of a barn which was built *c.* AD 1500 (Site 831).

6.3.6 Red category ANA DWS8656, within the south western part of the Project site (Figure 1.2.2, Site 480), refers to the location of Park or Park House Farm (Site 695). A farm is shown here on Rocques' Map of Surrey 1768 and therefore pre-dates that map. It is also shown on the OSD map of 1810 (Figure 4.1.1). The 1842 Tithe Map shows the farm with a series of ditches surrounding the farmhouse. Park Farm was subsequently demolished and when the airport was established there was little

remaining. A homestead moat appears likely to have been associated with this farm according to the HER.

West Sussex ANAs within the Defined Study Area

6.3.7 Red category ANA DWS8657 (Figure 1.2.2, Site 481) is located immediately to the south of Gatwick and relates to a field associated with a former post-medieval windmill at Lowfield Heath (Sites 694; 852). However, this windmill was dismantled in 1987 and re-erected at Charlwood in 1988-1991. Archaeological traces of former windmills, such as cross-trestle and mill post foundations can sometimes survive. In this case the foundations of the windmill were examined on its removal. The associated Windmill Cottage is also no longer present but some archaeological evidence for this building may have survived.

6.3.8 West of Gatwick, beyond the Project site boundary, an area of possible mine pits has recently been designated as a Red category ANA DWS8666 (Figure 1.2.2, Site 486). These fields contain a series of pit and landscape features which are discussed in the 'Post-Medieval' section below (Sites 604-606; 631-633; 640-641). Also included are former field boundaries identified by walkover survey and LiDAR assessment (Sites 604-606).

6.3.9 Red category ANA DWS8655 (Figure 1.2.2, Site 479) to the immediate south of the airport relates to the possible medieval moated site at Charlwood House and also possible archaeological remains in the field to the west. The possible moat is referenced (Site 689), whilst an archaeological watching brief carried out during the construction of a new nursery building at Charlwood House did not identify any associated medieval archaeological remains (Sites 636 and 737) (Wessex Archaeology, 1993b). The field to the west has some evidence of (possible) archaeological crop-marks and soil-marks including a building/hut platform of unknown date (Site 629). LiDAR analysis for the R2 project identified a paleochannel of the River Mole in the western zone of the ANA (Site 610), whilst a cropmark of a building is also located within the central area of the ANA (Site 629).

6.3.10 To the south of the airport, the area around the Grade II* listed Church of St Michaels and All Angels (Figure 1.2.1, Site 24), is also designated as a Red Category ANA, DWS8673 (Figure 1.2.2, Site 489).

6.3.11 The former medieval moated site of Gatwick Manor Inn, within the southern zone of the defined study area is designated as Red category ANA DWS8658 (Figure 1.2.2, Site 482). The ANA is associated with a series of HER entries (Sites 571, 638-639, 685, 734, 742 and 749 – see 'Medieval' section below).

6.3.12 Just clipping the south western area of the defined study area, Red category ANA DWS8516 relates to both the iron ore industry and the medieval moated site at Ifield Court Hotel (Figure 1.2.2, Site 478). The ANA also includes a War Memorial in the grounds of the hotel (Site 688).

6.3.13 The Scheduled Monument at Tinsley Green, to the immediate south of the eastern part of the Project site (Figure 1.2.1, Site 9), is located within the much larger Red category ANA DWS8659 which has been identified for its association with medieval ironworking and settlement (Figure 1.2.2, Site 483).

6.3.14 Finally, Red category ANA DWS8675 (Figure 1.2.2, Site 490) relates to 'Toovies Farm Medieval Earthworks, Crawley' within the south eastern party of the defined study area.

6.3.15 The restricted area of Amber category ANA DWS8668 (Figure 1.2.2, Site 488) has been identified around the Grade II* listed building known as The Beehive (Figure 1.2.1, Site 35).

Surrey AHAPs and County Sites of Archaeological Interest (CSAIs)

Surrey AHAPs within the Project Site Boundary

6.3.16 There is one AHAP partially within the Project site boundary. This is a triangular area of land (now a staff car park) to the north of the A23 road and at the eastern end of Riverside Garden Park (Figure 1.2.2, Site 498). It comprises an area of antiquarian finds including prehistoric flintwork, Late Iron Age cremation burials, and Roman pottery and coins.

Surrey AHAPs and CSAIs within the Defined Study Area

6.3.17 There are two AHAPs within Charlwood at the western end of the defined study area. AHAP MV065 (Figure 1.2.2, Site 493) refers to the historic core of the village, including the 11th century Church of St Nicholas (Figure 1.2.1, Site 14), whilst AHAP MV066 (Figure 1.2.2, Site 494) relates to the core area of Charlwood Green.

6.3.18 Several further AHAPs are located in the northern part of the defined study area. One of these includes a CSAI (Figure 1.2.2, Site 491) within a wider AHAP (Site 492); both relating to a possible moated enclosure at Povey Cross and associated fish ponds which are linked to the River Mole and a wider stock enclosure (Site 554).

6.3.19 Immediately adjacent is a second AHAP (Figure 1.2.2, Site 497) which includes the medieval church and churchyard of the Church of St Bartholomew (Figure 1.2.1, Site 16). There are a number of associated entries on the HER which are discussed further below (Figure 1.2.2, Sites 525, 527, 711 and 849).

6.3.20 Further north is another AHAP (Figure 1.2.2, Site 496), which has been designed to incorporate the medieval manor and possible moated site of Court Lodge Farm and is associated with several HER references (Sites 555, 805; and 848). A fourth AHAP in this area (Site 499) has been identified with regard to a possible moated site at Ringley Oak Cottage.

6.3.21 The importance of the Scheduled Monument of Thunderfield Castle (Figure 1.2.1, Site 7) in the north eastern part of the defined study area is also reflected by its identification as a CSAI (Figure 1.2.2, Site 495). The associated gardens and park (Site 512) and the HER castle description (Site 557) are also associated with the designation.

6.3.22 Finally, there are two closely-spaced Surrey AHAPs at Burstow, to the east of the M23 motorway. A western AHAP (Figure 1.2.2, Site 502) refers to a 'Medieval Mound at Topnotch, Church Lane, Burstow' adjacent to a 12th/13th century homestead site and possible glasshouse (Site 507). To the east is a second AHAP (Site 501) relating to a medieval moated site at Burstow Rectory, which is associated with two CSAIs (Sites 500; 503). This complex also includes a 16th century moated manor house at Court Lodge Farm (Site 504), the Church of St Bartholomew (Site 505), a 14th century house and moat (Site 506) and the site of a further medieval moat and homestead and possible glasshouse (Site 507).

Previous Archaeological Work Within and Adjacent to the Project Site Boundary

6.3.23 The following table summarises the archaeological fieldwork that has previously been undertaken within the Project area, including work within the operational airport. The significance of these projects to the understanding of the potential of areas that have not been subject to archaeological investigation will be considered in the period-based assessment below.

Table 6.3.1: Summary of Archaeological Fieldwork Undertaken Within the Project Area

Event (locations shown on Figure 1.2.2 and Figures 6.3.1 - 6.3.5)	Main Findings	References/ sources
Evaluation trenching and subsequent mitigation of built-out areas - Gatwick North West Zone (Sites 666–669).	Late Bronze Age enclosure and gully-defined roundhouse. Late Bronze Age/Early Iron Age features. Late Bronze Age boundary ditch. Medieval field ditches. Post-medieval field ditches. Desk Based Assessment noted deep alluvium and thin deposits of peat associated with the River Mole valley.	Framework Archaeology, 2001a; 2002a; 2002b. Wells *et al*, 2005.
Further evaluation stage of North West Zone for Stands.	38 more evaluation trenches investigated to raise percentage to 5%. Identified 5 undated linear features.	Framework Archaeology, 2008.
Evaluation of Gatwick Airport Car Park Z, Perimeter Road South (Sites 670; 671).	Two ditches - both present on the 1839 Tithe Map.	Framework Archaeology 2001b.
Evaluation and watching brief - Proposed Immigration Removal Centre (Sites 683; 776).	Features associated with former 18th century Oaktree House. Included possible ha ha, pond, brick paths, ditch and tree throw (from evaluation). A 19th / 20th century boundary and modern foundations from watching brief.	Framework Archaeology, 2007a; b.
Evaluation - Edgeworth House and Wing House (Sites 779; 780).	Small rubbish pits, dump and ditches of late post-medieval date, considered to be insignificant.	Framework Archaeology, 2007c.
Evaluation and excavation at the Pollution Control Lagoon (Sites 485; 735). Evaluation and excavation at Flood Storage (Control) Reservoir scheme construction compound area (Sites 568; 719), also wheel-wash and compound areas (Site 484).	Sites 485; 735 - Late Iron Age ditches of a probable field-system and two Iron Age ring-ditches likely to have surrounded structures. Sites 568;719 - evaluation of 49 trenches for Flood Storage (Control) Reservoir - thick alluvium and 'numerous palaeo-channels', Palaeolithic (1) and Mesolithic artefacts, Iron Age, Roman and medieval features with associated landscape. Subsequent mitigation found Late Iron Age urned and unurned cremations, along with a further Iron Age field ditch. Sites 484; 568 - another two possible Iron Age roundhouses, also within an archaeological landscape setting of Iron Age ditches. Site 568 – Mesolithic flint scatter in flood plain of Gatwick Stream (test pit mitigation).	Bartlett Clarke Consultancy, 2011. Network Archaeology, 2012a; 2012b; 2013; 2014. RPS correspondence in 2014 with County Archaeologist and Network Archaeology regarding mitigation results (including Flood Storage Reservoir plan).
Lowfield Heath excavation (Site 852).	Minor investigation of Lowfield Heath Windmill foundations when removed.	Journal of the Sussex Industrial Archaeology Society, 1989 22-23 Sussex Industrial History 33. (English Heritage Archive 916235).

Review of Archaeology by Period

6.3.24 This section comprises an overview of the known and potential archaeological resource within the defined study area and the wider vicinity. It is based on the HER data and also the Historic England Archive, along with published and unpublished archaeological reports and more general publications. The section incorporates brief summaries of the general character of the Low Weald and wider South East region with regard to the archaeological context of the defined study area (including the land within the Project site boundary).

6.3.25 For each period, the section ends with a review of the potential for further (as yet) unknown remains to be present, and also an assessment of the significance of such remains (if found to be present). Both the potential (for remains to be present) and the significance (of such remains) are expressed on a three-point scale: low; moderate; and high.

Palaeolithic (*c.* 900,000 - 12,000 BC)

6.3.26 The complexities of hunter-gatherer occupation of Britain in the Palaeolithic within changing glacial and inter-glacial environments are provided in a publication by Pettit and White (2012). Detailed studies of the Palaeolithic artefactual resource in the south east indicate that the river valleys provide a particularly significant source of material (Wessex Archaeology, 1993a; Wymer, 1999).

Palaeolithic Material within the Project Site Boundary

6.3.27 A single Upper Palaeolithic long blade exhibiting some retouch and use damage was recovered from subsoil during archaeological evaluation at the existing Flood Storage Reservoir (Figure 1.2.2, Sites 568 and 719).

Local and Regional Context

6.3.28 Despite the presence of 1st and 2nd terrace gravels of (cold phase) Pleistocene age associated with the River Mole and its

tributaries within the western and central and part of the western areas of the Project area, notwithstanding the single find described above there are currently no other sites or finds of this date recorded for the defined study area. Low Weald Clay sites elsewhere have produced sporadic evidence of activity in the Palaeolithic, usually comprising occasional artefacts.

6.3.29 For example, several hand axes loosely recorded '*from the Crawley area'*, are thought to have been derived from terrace gravels, whilst Lower Palaeolithic worked flints and bifaces have been recovered in rolled condition from both the Mole and Wey valleys to the north, and in fresh condition from claylands from to the north of Reigate (CgMs, 1997, page 7; Cotton *et a*l., 2004, page 21; Framework Archaeology 2001a).

6.3.30 Also in Surrey, the North Downs area includes some evidence for Lower and Middle Palaeolithic camps, for example at Lower Kingswood, where flint flakes demonstrating a Levallois component were identified (Cotton *et al.,* 2004, pages 19-21). In the wider region, major Lower and Middle Palaeolithic sites demonstrating some degree of in-situ activity include the internationally significant Lower Palaeolithic chalk cliff site at Boxgrove in West Sussex (Roberts and Parfitt, 1999).

6.3.31 Palaeolithic material in the Thames Valley and Estuary, usually in the form of re-deposited rolled handaxes and other flint artefacts, is relatively common. These regions also include occasional semi in-situ sites, most famously at Swanscombe with its human skull fragments. The Palaeolithic material is usually deposited within terrace gravels associated with the formerly braided channels of the River Thames. Bates (1998) explained that '*sediment units beneath the floodplains of rivers in southern England typically consist of basal gravels (deposited under cold conditions in braided river channels during the last cold period) and finer grained sands, silts, clays and organic deposits (laid down under temperate conditions on the floodplain of the river during the last 10,000 years*'. The latter units, which belong to the Holocene, are discussed below in the appropriate sections for those periods.

6.3.32 The windblown Brickearths of the Devensian (within the Thames Valley and Estuary) and the peri-glacial Head deposits (eg those flanking the Greensand ridge at the base of the Sussex Downs) can also contain Middle and Upper Palaeolithic material. For example, an important concentration of Palaeolithic flintwork is known from the Hayes region of West London, both with terrace gravel and at the contact with the capping Brickearth. Upper Palaeolithic material, including white-patinated flint blades, has also been found associated with the Cargo Distribution Services site on the southern site of Heathrow Airport (Cotton *et al.,* 2004, page 23).

6.3.33 Probable Neanderthal artefacts of the Mousterian Middle Palaeolithic tradition, such as finely flaked 'bout coupé' handaxes have been found from Head deposits and in the Thames Valley. As Weald Clay was deposited well before hominins were present in the area, material of Palaeolithic date in such zones within the Project site boundary could only collect at surface level and/or within erosion events, most notably river channels.

Potential Significance of Areas of Unknown Palaeolithic Activity and/or Palaeo-environmental Remains

6.3.34 There is some potential for the Pleistocene terraces and stream valleys to contain early archaeological material, whilst some material may also be found associated with Head deposits elsewhere. If present, Palaeolithic activity is likely to be represented by sporadic, patinated, worked flint artefacts such as the long blades (noted above), handaxes, scrapers and waste flakes. Such finds where found in isolation within secondary contexts can usually be considered to be of low significance.

6.3.35 There is a low possibility for larger scatters of redeposited artefacts associated with strata containing Pleistocene palaeo-environmental evidence. In this unlikely event such 'sites' would be of moderate to high significance, due to their rarity.

6.3.36 The most likely location for Palaeolithic evidence to be present within the Project site boundary is in the gravels associated with former corridors of the River Mole to the north of the northern runway.

Table 6.3.2: Summary of Known Palaeolithic Material within the Project Site Boundary

Palaeolithic sites or finds	Location	Significance/ sensitivity value	Potential for currently unknown sites
1 – Site 568/719 – single blade	Flood Storage (Control) Reservoir	Low	Moderate (isolated finds). Low (semi in-situ sites associated with terrace gravel).

Mesolithic (*c.* 12,000 - 4,000 BC)

6.3.37 Mesolithic hunter-gatherers exploited game and natural resources within the thickly wooded post-glacial forests in the Weald, with watercourses probably used as route-ways. These activities were based on seasonal mobility cycles, with the activity of small bands sometimes demonstrated by small concentrations of artefacts and animal bone at 'kill sites' or campsites. Base camps, where larger groups congregated, tended to be focused on the rivers where resources were more abundant.

Mesolithic Activity within the Project Site Boundary

6.3.38 A single early Mesolithic core was recovered from deposits associated with a palaeochannel of the River Mole in the Gatwick North West Zone (Framework Archaeology, 2001a, page 9) and Mesolithic worked flint finds (possibly early Mesolithic) were recovered during archaeological work conducted by Network Archaeology in between 2012 and 2014 within the Flood Storage (Control) Reservoir area (also known as a flood compensation area to the west of Gatwick Stream) to the east of the airport (Figure 1.2.2, Sites 719 and 568).

6.3.39 The latter comprised an initial collection of 304 worked flints found during evaluation trenching (Network Archaeology, 2012b) and a further 2,080 from a test-pitting exercise targeted on the recovery of worked flints (Network Archaeology, 2014, 'weekly reports'). The evaluation stage material was recovered from many of the 49 trenches across the 11.7 hectares of the Flood Storage (Control) Reservoir site (to the west of the Crawley STW), mainly from alluvium, but also in small quantities from one of the palaeochannels and from tree holes (Site 719). The initial assemblage included two microliths (composite points used as arrows and spears), 19 retouched items, four single platform cores, small blades and waste flakes (*ibid*). At evaluation stage it was suggested that the flintwork was '*of possible national significance*' as it comprised exceedingly rare in-situ flint scatters.

6.3.40 The mitigation process (Site 568) comprised two phases of test-pitting within the Gatwick Stream flood plain, with 870 worked flints recovered from phase 1 and 1,190 from phase 2. The composition of this assemblage is yet to be fully reported on but distribution 'heat maps' showing areas of relative concentration are available (Figure 6.3.5).

6.3.41 The flintwork was generally in 'fresh' condition *'indicating that although it may have moved up and down through the various soils on the site, and in and out of features, it had not moved far… This shows that Mesolithic peoples were actively using the landscape…not just passing through it'* (Network Archaeology, 2012b, page 52).

Mesolithic Finds within the Defined Study Area

6.3.42 A Mesolithic worked flint scatter has been investigated at Haroldslea (Horley) in the north eastern part of the defined study area (Site 508, Network Archaeology, 2012a; Archaeology South East (ASE), 2009).

Local and Regional Context

6.3.43 The West Central Weald is an important landscape for understanding the Mesolithic, with its rivers such as the Mole, Adur and Arun and their various tributaries providing Mesolithic people with '*convenient highways*' containing resources of fish, fowl, beavers and otter (Margetts 2018, page 26). The main source of evidence comprises worked flint scatters representing short-stay camps.

6.3.44 The most significant activity locally (beyond the defined study area) has been uncovered well above the floodplain to the north west of Charlwood, where approximately 15,000 worked flints were recovered from an area only 8 metres by 12 metres in size (Framework Archaeology, 2001a, page 9). Evidence from Charlwood has also included several relatively late Mesolithic pits containing a few scraps of roe deer bone (Cotton *et al.,* 2004, pages 23-24) and thus indicating one of the species hunted locally. A further 'chipping floor' and other worked flints are located at another site at Charlwood (associated with Surrey County Council's AHAPs).

6.3.45 Fieldwalking studies are one of the most effective methods for locating Mesolithic activity sites within arable areas. Whilst few such studies have been undertaken to date on the West Sussex and Surrey Wealden sites, this type of study has identified further scatters of worked flint to the north west of Charlwood (Framework Archaeology 2001a, page 9) and at Outwood, also in Surrey. These discoveries have reinforced the expectation that *'human groups were active throughout the Mesolithic'* in the western Weald (Cotton *et al.,* 2004, page 24).

6.3.46 Characteristic later Mesolithic microliths have recently been found in association with further small worked flint concentrations within a hollow and tree-throw holes at Broadbridge Heath, approximately 11 km to the south west of the Project site (Margetts, 2018). Such finds indicate a low degree of activity, probably directly associated with hunting, fishing and fowling near watercourses.

6.3.47 Very few actual habitation structures are known nationally and the presence of surviving traces within the Project site boundary must be considered to be unlikely. The most convincing example in southern England was identified in Hampshire; this was an artificial hollow enclosed by stake-holes with a central hearth containing diagnostic flintwork (Wymer, 1977; Bewley, 2003, page 44).

6.3.48 The single, small-scale, flint concentration within the Project site is consistent with such a small temporary hunting encampment within a forested environment. As noted above, much larger-scale Mesolithic flintwork collections, potentially associated with base camps engaged in fishing, are found associated with the sand-mantled terrace gravels of the formerly braided River Thames to the north. Examples include thousands of semi in-situ worked flints sampled at Bronze Age Way (A2016) at Erith (Bennell, 1998) and similarly at a recently investigated Crossrail site at North Woolwich. To the south the highest concentrations of activity have previously been recorded on the West Sussex coastal plain and the South Downs and the lower Greensand ridge to the north (Network Archaeology, 2012a).

Potential Significance of Areas of Unknown Mesolithic Activity

6.3.49 If further evidence of Mesolithic activity is present, it is most likely to be represented by sporadic worked flint artefacts such as waste flakes, small blades and possibility occasional microliths. Such finds where within secondary contexts and in isolation or low-density can be considered to be of low significance. The potential for at least modest semi in-situ concentrations of flintwork has been demonstrated by flints trapped within streamside alluvium at the Flood Storage (Control) Reservoir site (Network Archaeology, 2012b; 2014), by the impressive collections of flintwork and presence of pits north west of Charlwood, and by two possible 'camps' identified on the basis on concentrations of flintwork associated with natural hollows and tree holes at Broadbridge Heath (Margetts, 2018).

6.3.50 There is low to moderate potential (based on regional finds) for large and intensive flint scatters of the type associated with the braided streams of the late Mesolithic River Thames. However, as noted above, there is moderate to high potential for the presence of small-scale temporary camps, particularly within the stream/river corridors within the Project site and associated with broadly contemporary deposits of alluvium (notwithstanding that the large flintwork concentration at Charlwood was found on higher ground, indicating further potential on the adjacent ridges). If present and similar in nature to the examples noted above, such sites are unlikely to exceed moderate significance, although, given the extensive nature of the Project site, there is a slight possibility that more significant in-situ concentrations might be encountered.

6.3.51 The most important aspects increasing the significance of such scatters is whether they are fully in-situ and/or whether they are associated with preserved organic remains including animal bone, plant macrofossils and pollen. In the case of the Flood Storage (Control) Reservoir site, the material is likely to be only semi in-situ, ie it is unlikely to have been lying exactly where it was dropped/fallen having been subject to post-depositional processes such as washing with flood water, bioturbation and trampling. Although clearly representing a camp site and/or a series of visits to the location, potentially over a long period of time, the lack of associated land-surfaces, animal bone, burnt flint concentrations combined with the dried-out nature of the associated alluvium (equating to poor environmental preservation) are considered to reduce the significance and potential of this site.

6.3.52 The most likely areas within the Project site where Mesolithic material may be encountered comprise river and stream corridors – particularly adjacent to the River Mole and the Gatwick Stream.

Table 6.3.3: Summary of Known Mesolithic Material Within the Project Site Boundary

Mesolithic sites or finds	Location	Significance/ sensitivity value	Potential for currently unknown sites
1 - Flint scatter associated with Gatwick Stream (Sites 719; 568; 290)	Flood Storage (Control) Reservoir site north of Radford Road.	Moderate	Moderate to high (particularly close to river and stream courses).

Neolithic (*c.* 4,000 - 2,500 BC)

6.3.53 The first farmers of the Neolithic created forest clearances for the newly domesticated crops and stock. Evidence of settlements is generally restricted to flint scatters within the modern ploughsoil and sometimes to clusters of shallow pits containing artefacts, charcoal and charred cereals indicative of settlement and arable in the vicinity. Buildings remain very rare in southern and central England (examples include White Horse Stone in Kent, four structures on the Thames Gravels at Horton associated with a causewayed enclosure, and another one at Yarnton in Oxfordshire). As in the following prehistoric periods, the chalk subsoils and river terraces proved a focus for settlement and are

generally proven to be more attractive to Neolithic and Bronze Age farmers than the claylands (although Neolithic settlements are no longer unknown on clay subsoils).

6.3.54 The earlier Neolithic is also characterised by large open arena style monuments known as causewayed enclosures and various forms of long barrow, with henge monuments typical of the later Neolithic. These attest to high degrees of social cohesion and community effort in their construction and use. However, Neolithic archaeology is relatively rarely found in the clay land of the West Central Weald (Margetts 2018).

Neolithic Activity Within the Project Site Boundary

6.3.55 The mitigation for the Flood Storage (Control) Reservoir (Site 568) included topsoil stripping of 'Area 3' in 2013. This work lead to the recovery of a small assemblage of worked flints of possible Neolithic date including a polished stone axe.

6.3.56 The preceding evaluation for the Flood Storage (Control) Reservoir (Site 719) included a small number of pits, one of which contained a single sherd of Late Neolithic/Early Bronze Age pottery along with wood and charcoal fragments. '*The evaluation also found evidence to suggest that wood clearance had taken place on the site at some stage during the later prehistoric period. A number of tree bole features were identified many of which contained charcoal and worked flint which would suggest tree felling*' (Network Archaeology, 2013).

Neolithic Activity within the Defined Study Area

6.3.57 There are currently no definite Neolithic sites of the earliest farmers on the HER within the defined study area, but again some of the non-diagnostic worked flints noted may date to this period. However, a flint blade found at Tinsley Green (CgMs, 1998b) is typical of the period, whilst a diagnostic polished Neolithic flint axe was found to the north west of Gatwick at Charlwood. Axes demonstrate some Neolithic presence in the area, perhaps associated with forest clearance.

Local and Regional Context

6.3.58 As numerous Neolithic axes have been found within river valleys within the Weald it is reasonable to assume some tree clearance was taking place (Gardiner, 1990).

6.3.59 Evidence for clearances of the post-glacial forests by the earliest farmers in the Thames Valley includes 'clearance horizons' associated with the so-called elm decline, approximately dated to *c*. 3,900-3,500 cal BC (Cotton *et al.,* 2004, page 24), whilst cultivated cereal grain alongside domesticated and wild animal and marine resources appear in the archaeological record, for example within pits in east Kent at the 'Thanet Earth' 47 hectare excavation site (Rady *et al.* forthcoming).

6.3.60 The evidence for the earliest phases of the Neolithic period (formative Neolithic), beginning *c*. 4,100 cal BC and associated with 'Carinated Bowl' pottery, commonly demonstrates that the earliest Neolithic farmers favoured the lighter chalk and gravel geologies, presumably because of ease of tree clearance and their well-drained, light soils suitable for cultivation. The very early sites are generally associated with the Greater Thames Estuary, the closest contact area to the Continent.

6.3.61 The following phase of the period, associated with Plain Bowl pottery, is well-known for its monuments such as the 'ceremonial' causewayed enclosures of the 37th to 36th centuries BC and the contemporary or slightly later 'cursus' linear monuments and mortuary long and oval barrows. These sometimes cluster to comprise 'monumental landscapes' and include the monument-dominated landscapes of Heathrow, with the Stanwell cursus and smaller oval and circular mortuary and/or 'open arena'/hengiform ceremonial monuments (Brown *et al.,* 2006; Cotton *et al.,* 2004, page 25). These complexes required extensive woodland clearance. The transient settlements of the period are generally indicated by the presence of lithic scatters and/or pit clusters, for example as recently excavated at Brighton and Hove Waste Water Treatment Works on the South Downs at Peacehaven (Hart, 2015).

6.3.62 The extent of clearances within the West Central Weald clay zones is less well-known than within the adjacent Downlands and the drift deposits of Thames Valley and the chalk and drift deposits of the Thames Estuary. There are certainly no known local causewayed enclosures or Neolithic barrows, whilst pollen studies tend to indicate that despite some early tree clearance, reforestation tended to follow until renewed clearance in the Bronze Age led to soil exhaustion and creation of heaths (Framework Archaeology, 2001a, page 9).

6.3.63 Nevertheless, as hinted at by axe distribution, some modest activities took place within the clay landscapes, despite being less favourable to early slash-and-burn or swidden style agriculturalists. In addition to small flint scatters in the Surrey (Cotton *et al.,* 2004, page 25) and West Sussex Weald, larger excavations on the Weald Clay at Broadbridge Heath and at Westhawk Farm in Kent (Margetts, 2018; Booth *et al.,* 2008) similarly provide 'background noise' in the form of lithic artefacts, whilst further afield the Boulder Clays of north west Essex at Priors Green, Takeley near Stansted have produced small clusters of early Neolithic pits containing pottery and worked flint. These pits have been radiocarbon dated to the 38th century cal BC (Germany, Scruby and Masefield, 2015).

Potential Significance of Areas of Unknown Neolithic Activity

6.3.64 Given the wider local context of limited Neolithic activity and an absence of Neolithic features recorded during the extensive archaeological works associated with the airport's North West Zone, or by the flood attenuation works to the east side of the Brighton-London mainline railway, the potential to encounter Neolithic 'sites' and/or monuments (rather than scattered flintwork) is considered to be low. Should sites be located they are most likely to be represented by Early Neolithic flintwork concentrations showing continuity of mobility patterns with the preceding Mesolithic, possibly pit clusters or even mortuary features. Such sites are most likely to be of moderate significance, if present.

6.3.65 The most likely areas where Neolithic material may be encountered comprise river and stream corridors including:

- adjacent to the River Mole/Man's Brook and areas at Brook Farm/Museum Field; and
- adjacent to Gatwick Stream (including Site 484).

Table 6.3.4: Summary of Known Neolithic Material Within the Project Boundary

Neolithic sites and monuments	Location	Significance/ sensitivity value	Potential for currently unknown sites
Site 568 – Neolithic polished axe and flintwork. Site 719 – Pit containing Late Neolithic/Early Bronze Age pot sherd.	Flood Storage (Control) Reservoir site north of Radford Road.	Low	Low to moderate

Bronze Age (*c*. 2,500- 800 BC)

6.3.66 Following the emergence of copper in the archaeological record from around 2,500 BC (the Chalcolithic), and within a couple of hundred years of bronze, society was transformed. This was probably associated with the arrival of newcomers from the

Continent bringing with them the 'Beaker package' of Beaker pots, barded and tanged arrowheads and other archery equipment such as stone wrist-guards, and copper daggers. The form of burial remained as crouched inhumations but now often within round barrows for a single important individual.

6.3.67 The Middle to Late Bronze Age (*c.*1500 – 800 BC) provides the first substantial evidence for settlement and farming within the wider area. It is also notable that the emergence of Middle and Late Bronze Age field-systems, representing a further intensification of land clearance for the first permanent farming settlements, are a common phenomenon close to the major rivers such as the Thames and its tributaries (Yates, 2007). However, once again a lower concentration of sites and field-systems tend to be found on the clay geologies of the Central West Weald.

Bronze Age Activity Within the Project Area

6.3.68 The key known Bronze Age settlement site within the Project area relates to archaeological excavation works undertaken in 2001 within the *c*. 78 hectares. North West Zone (Site 726; Framework Archaeology 2001a; 2002a; 2002b; Wells *et al.,* 2005). Excavation here defined a modest streamside Late Bronze Age settlement engaged in mixed agriculture on the edge of the River Mole floodplain, on the first gravel terrace, to the north east of Brockley Wood (Figures 6.3.1 and 6.3.2).

6.3.69 The site included Late Bronze Age to Early Iron Age date activity, mostly *c*. 1,000 to 700 BC, and comprised an enclosure ditch around a gully-enclosed roundhouse, with associated pits and post-holes. The pits included two which contained relative concentrations of deliberately deposited pottery. However, only 272 sherds of pottery were recovered in total, probably reflecting the limited scale of occupation. The settlement was located on slightly elevated land at *c*. 58 metres AOD adjacent to the river floodplain and it is suggested that it may have been only occupied for a short period, perhaps due to climatic factors (Framework Archaeology, 2002a). Nevertheless, a small number of sandy sherds may pre-date the Late Bronze Age period, being 'perhaps of Early or even Middle Bronze Age' date (*ibid*). Regional summaries (eg Cotton *et al.,* 2004, page 28) regard this settlement in the Weald to be *'something of a rarity*' compared to those of the Thames Valley.

6.3.70 Nearby, a large (5 m wide and 2 m deep) north/south aligned ditch, also containing Late Bronze Age pottery, was identified (Site 667; Wells *et al.,* 2005). The full extent of the 136 metre long ditch was uncovered with both terminals excavated. This substantial ditch probably relates to some form of territorial or estate boundary, hence its scale. The size also implies a significant attachment to place rather than a transient population. Pollen preservation was found to be high within the deeper stratified deposits within the ditch. There is a correspondence between the alignment of the Bronze Age enclosure and the boundary ditch and later phases of enclosure, including a possible droveway and perpendicular medieval ditch (Framework Archaeology, 2002a, Figure 2). This suggests that the Bronze Age features remained as earthworks and affected later field layouts.

6.3.71 With the exception of these sites, the extensive archaeological investigations for the North West Zone by Framework Archaeology found very little else of archaeological interest, indicating both a modest level of Bronze Age activity on the east side of the River Mole and little subsequent activity within the area. Framework Archaeology concluded that the landscape within Gatwick, to the south of the Late Bronze Age settlement and below c. 58 metres AOD, was probably too damp at that time for occupation.

6.3.72 As noted above, the area beyond Gatwick's North West car parks, around Charlwood Park Farmhouse, has been recently allocated as a West Sussex ANA (Site 487) due to potential for further Bronze Age activity along this largely undeveloped zone of the River Mole.

6.3.73 Some further probable Bronze Age (or possibly Neolithic) flintwork, including arrowheads (Site 540), has been recovered from close to the railway line near the eastern end of Riverside Garden Park (north of the A23 road) and is associated with a Surrey AHAP (Site 498). The location is adjacent to the Gatwick Stream and this is likely to be a primary factor for the associated activity.

Bronze Age Archaeology Within the Defined Study Area

6.3.74 An early Bronze Age barbed and tanged arrowhead was found at Haroldslea in Horley in the north east part of the defined study area (Site 509).

6.3.75 A ritual association with water during this period is potentially demonstrated by a Late Bronze Age sword found to the west of Lowfield Heath, Charlwood (south of Gatwick and outside the Project site boundary (Site 646). The sword was found by workmen in 1952 at a depth of 0.6 - 0.9 metres during canalization of the 'Polesfleet Stream' (the large tributary stream that runs through Langley Green). It appears to have been recovered from an alluvial or peat deposit (John Mills pers. comm.) and is most likely to have been deliberately deposited in water as a 'votive offering' perhaps as a 'coping mechanism' adopted by a community facing rising water levels during the later stages of the Bronze Age (Cotton *et al.*, 2004, 29). The LiDAR study undertaken for the Gatwick R2 project identified a former paleochannel at the location which would appear to represent the context for this find (Site 609). The specific location at the northern end of the stream close to its connection with the River Mole may have been considered to have symbolic significance but may also be indicative of settlement nearby, perhaps within the triangular area defined by the watercourses.

6.3.76 Bronze Age metalwork is not common in the adjacent areas of Surrey with a *'decorated axe recovered from the Weald Clay at South Nutfield…added to a handful of early metalwork finds from Wealden localities generally…*' (Cotton *et al.,* 2004, page 27). The same pattern is applicable to the Low Weald of northern West Sussex, with the most recent addition to the afore-mentioned sword being a small copper alloy axe found residually within a medieval pit at Broadbridge Heath (Margetts 2018).

6.3.77 Deposition of metalwork is also sometimes associated with wooden raised walkway structures or brushwood trackways across wetlands (Cotton *et al.,* 2004, page 30) and the possibility of preserved wood structures associated with alluvium and/or peat cannot be discounted. As well as the famous Flag Fen and Must Farm sites near Peterborough, structures of this sort are known from a number of sites within the Thames marshes and in East Sussex at Shinewater Park, Eastbourne.

6.3.78 Although peat deposits can date from the Neolithic and Bronze Age, climatic conditions (increasing rainfall) and the emergence of more intensive farming, caused increased runoff leading to the formation of alluvial deposits on floodplains. There has been limited work undertaken on the local floodplain and palaeochannels, but an initial study for the Gatwick Stream at the Crawley North East Sector by Martin Bates (1998) discussed the nature of preliminary results from test trenches as follows: *'The evidence collected from the excavation of trenches has indicated that the sediments present beneath the modern ground surface in the site are complex. Sediments types encountered in the survey are typical of those expected to occur beneath the surface of floodplains of rivers in southern England… Archaeological material may exist at any point within the sequences observed. In order to ascertain the archaeological potential of these sediments further investigation of the nature of the buried stratigraphy would be required, as would an age evaluation of the sediments observed'*.

6.3.79 Network Archaeology (2012a, page 18) suggested two possible ring-ditches based on aerial photographic review, east of Rowley Farm and north of Radford Road at Tinsley Green but these were not confirmed by specialist aerial photographic analysis and rectification for the Gatwick R2 project (APS, 2014).

Local and Regional Bronze Age Settlement and Landscape Context

6.3.80 In terms of landscape, the Low Weald has produced very few examples of Early Bronze Age barrows or co-axial field-systems. No definite evidence of either was found at the Gatwick North West Zone or the surrounding area (Wells *et al.,* 2005), the Flood Alleviation Scheme project (Network Archaeology, 2014), the extensive investigations at Horley (ASE, 2009) or at Broadbridge Heath (Margetts, 2018). This suggests both a low density of settlement and that any farming settlements present may have operated on the basis of large, open, common pastures, with very low levels of arable within small 'Celtic fields'.

6.3.81 Evidence for the precise locations of Early Bronze Age settlement sites is scant in the south east of England, with the enclosure at Bishopstone on the South Downs being a rare example of archaeological survival of the period (Drewett *et al.,* 1988). The areas of contemporary habitation may best be illustrated by the distribution of funerary monuments. The West Central Weald generally has a very low concentration of Early Bronze Age funerary monuments (ring-ditch defined barrows around one or more crouched burials) compared with other geological zones, although a few are known in upland areas (Gardiner, 1990).

6.3.82 Much higher concentrations are found on the chalk of the South Downs and coastal Kent, as demonstrated by the following recent large area investigations: eight standard barrows and a pond barrow were excavated in 2007 – 2008 within the 47 hectares excavated at 'Thanet Earth' (Rady *et al.,* forthcoming), whilst two ring-ditch barrows (one of Neolithic date), a Late Neolithic or Early Bronze Age open arena monument and a possible pond barrow were excavated in the 32 hectares investigated at Peacehaven (Hart, 2015). As noted above, the 21 hectares of Perry Oaks (Heathrow) produced a generally earlier range of monuments (Brown *et al.,* 2006).

6.3.83 Some of the most significant levels of Middle and Late Bronze Age occupation in the south east of England were located within the gravel terraces of the Middle and Upper Thames, for example at Heathrow with its complex of rigidly co-axial field-systems (Brown *et al.,* 2006), and the chalklands and Brickearths of the Thames Estuary and east Kent coast. This latter area includes the 'Thanet Earth' site where extensive, less regular, Early/Middle Bronze Age field-systems were found associated with dispersed settlements across the 47 hectares of excavation (Rady *et al.,* forthcoming). Similar patterns of occupation, often associated with 'Sussex-style' terrace and post-hole defined roundhouses, are found throughout the South Downs, for example at several sites along the route of the A27 Brighton Bypass (Rudling, 2002), whilst at the Peacehaven site near Brighton there were four or five areas of possible small-scale settlement, including pit clusters and one cluster of two to three roundhouses, all set within a 32 hectares+ field-system originating in the Early Bronze Age (Hart, 2015).

6.3.84 Within West Sussex, the Brickearths of the Coastal Plain also appear to have been the most heavily exploited region for occupation and farming, in addition to famously high concentrations of metalwork hoards. An example of settlement was indicated by a pit-complex and associated co-axial field-system of fields and tracks at the Ford Waste Water Treatment Works (Place, 2003). The development of field-systems has been argued to represent an intensification of farming practices associated with increased hierarchy and control of the trade in bronze (Yates, 2007). This development suggests that the areas of highest Bronze Age population were associated with the Thames Valley gravel terraces, the chalk of east Kent (including the islands of Thanet and Grain), the South Downs and the Brickearths of the West Sussex coastal plain, whilst much of the Weald remained a relative backwater.

6.3.85 Although exploitation of claylands was clearly less intensive, in Kent there are emerging instances of Middle-Late Bronze Age farms associated with fields on the Weald Clay. Most significant in this respect are field boundaries investigated at the Ashford sites of Brisley Farm and Westhawk Farm (Stevenson, 2013; Booth *et al.,* 2008). The earliest dated features at Brisley Farm comprised pits containing Middle to Late Bronze Age pottery, one of which was radiocarbon dated to 1,500-1,300 cal BC (at 95 per cent probability). However, in West Sussex traces of managed Bronze Age landscapes on the marginal clay lands are less evident. At Gatwick North West Zone the Bronze Age enclosure with its single boundary feature is suggestive of some form of division (Yates, 2007), especially as some degree of continuity with a drove and field-system seems credible, whilst it is possible that some of the undated field-system ditches associated with the Flood Storage (Control) Reservoir east of the Gatwick Stream might be of Bronze Age date (Network Archaeology, 2012b).

Potential Significance of Areas of Unknown Bronze Age Activity

6.3.86 The presence of a significant Late Bronze Age settlement on the edge of the gravel terrace in the North West Zone suggests the probability of other similar sites in the vicinity, especially as individual families or extended families rarely operated in a social or economic vacuum. The expectation here is for the existence of a wider farming community and additional farmsteads within the general area, particularly in topographical and geological contexts analogous to the known example. The potential for currently unknown sites is therefore moderate to high.

6.3.87 The known site at the North West Zone is rare within the region but can be regarded as typical of gravel valleys associated with Thames tributaries generally, although its moderate significance (though now impacted by car park development) is slightly enhanced by its rare Weald setting. There is moderate to high potential for the alluvium deposits associated with the River Mole and its tributaries to contain further artefacts and Holocene environmental evidence (including pollen, plant macrofossils and insects). Such information may be of low to moderate significance.

6.3.88 As noted above, palaeochannels of general prehistoric date were identified within the River Mole floodplain, to the south of the Project site, through a combination of aerial photographic analysis and LiDAR analysis (Sites 607-610, APS, 2014; AOC, 2016). As noted above, Site 609 equates with the Bronze Age sword find (Site 646), suggesting a Bronze Age date for the former channel. A further palaeochannel was identified adjacent to Crawter's Brook to the north of Manor Royal and west of Rowley Farm (Site 613). Palaeochannels of prehistoric date, associated with the Gatwick Stream, were physically encountered by evaluation trenching for the aforementioned Flood Storage (Control) Reservoir adjacent to the Crawley STW north of Radford Road (Site 719). Further examples have been plotted south of Radford Road (Sites 603; 615). Due to rising sea levels in the Bronze Age, alluvial overbank flood deposits are commonly found to be of Bronze Age derivation.

6.3.89 The most likely areas within the Project site boundary where Bronze Age material would be encountered comprise areas adjacent to watercourses including:

- River Mole corridor including ANA DWS8667 (Site 487); and
- Gatwick Stream zone including AHAP RB089 (Site 498).

Table 6.3.5: Summary of known Bronze Age Material Within the Project site Boundary.

Bronze Age finds, sites and monuments	Location	Significance/ sensitivity value	Potential for currently unknown sites
1 – Sites 487, 666 – 669 (Late Bronze Age settlement and boundary).	Gatwick's North West Zone.	Moderate (mitigated)	Moderate to high (particularly close to river and stream courses).
2 – Sites 498 and 540 (flintwork).	East end of Riverside Garden Park (north of A23 road).	Moderate	

Iron Age (*c.* 800 BC - AD 43)

6.3.90 This period is associated with the development of iron technology, changing settlement patterns reflecting environmental factors, and increased evidence for warfare reflected by a proliferation in defensive hillforts.

6.3.91 Other than a possible Late Bronze Age/Early Iron Age end to occupation at the Gatwick North West Zone settlement, Iron Age settlement and burial evidence from the Project area north of Tinsley Green includes the evidence from investigations by Network Archaeology for the Flood Storage (Control) Reservoir associated with the Gatwick Stream (Sites 719; 568, Network Archaeology, 2012b; 2014; John Mills pers. comm.), from the adjacent wheel-wash area south east of the Crawley STW that is now associated with an ASA (Site 484) and from the Pollution Control Lagoon site which is incorporated within the southern zone area of a separate ANA to the north east of the water treatment works (Sites 485 and 735, Network Archaeology, 2014).

6.3.92 An AHAP to the north of the airport (Site 498) includes an antiquarian find of a Late Iron Age urned cremation burial which suggests a further area of interest between the railway and Riverside Garden Park.

Iron Age settlement, burial and field-system evidence within the Project site boundary

6.3.93 The 49 trench archaeological evaluation, test pits and open area investigations by Network Archaeology in advance of the construction of the Flood Storage (Control) Reservoir to the south of the Crawley STW (Sites 719 and 568) and evaluation and mitigation of the wheel-wash area and Pollution Control Lagoon, to the south east and north east of the water treatment works respectively (Sites 484, 485 and 735, Network Archaeology, 2014), identified a number of Iron Age round-houses, along with field-system and burial evidence.

6.3.94 The geophysical survey (Site 735) and corresponding excavation for the Pollution Control Lagoon site produced Iron Age settlement and burial evidence that may extend into the Project site. Although the archaeological investigations here are yet to be fully reported on, the results were summarised in pre-report information provided by Network Archaeology in March 2014 and, as indicated above, the area forms the southern extent of a West Sussex ANA (Site 485).

6.3.95 The findings included two Iron Age ring-gully features (these are most likely to represent eaves-drip gullies around round-houses - although one is quite large at 15-20 metres in diameter) and a rectilinear field-system which appears to include double-ditched tracks or drove-ways. There was a concentration of domestic debris including Iron Age pottery, animal bone and a 'notable amount of slag' which could indicate iron-working (David Bonner pers. comm.). Other features included a Late Iron Age urned cremation burial, a number of dispersed pits and probable water-holes for stock. One pit contained a large preserved piece of split timber (*ibid*). A 'working' plan of the site has been provided by Network Archaeology (Figure 6.3.4) and this indicates that the Iron Age occupation area extends beyond the excavated extent of the lagoon site.

6.3.96 The Flood Storage (Control) Reservoir site to the south of the Crawley STW and north of Radford Road (Site 719), flanked by the Gatwick Stream on its west side, also produced Iron Age archaeological remains from investigation areas comprising the 'site compound' and 'wheel-wash' areas (Network Archaeology, 2014). Initial plans of these areas are produced on Figure 6.3.4. The former included a cemetery of Late Iron Age urned and unurned cremation burials (at least nine are indicated on the plan), along with further Iron Age field or enclosure ditches (Sites 719 and 568).

6.3.97 Another two possible Iron Age round-houses, also within an archaeological landscape setting of Iron Age ditches, including a droveway (some post-dating one of the round-houses) and with a possible enclosure to the south side, were identified by the southern of the three Network Archaeology investigations for the 'wheel-wash' area (Network Archaeology, 2014). Again, several cremation burials were identified (Site 484). Collectively, these sites indicate a wide area of Iron Age settlement and burials associated with contemporary agricultural fields along the Gatwick Stream corridor. Notably a thin skim of alluvium was identified below the topsoil and overlay the Iron Age archaeology in parts of these areas.

6.3.98 Similar evidence of Late Iron Age urned cremation burials was found in the southern part of Horley (Site 498), hinting at a further element of ribbon-like, small-scale settlements along the Gatwick Stream corridor. This area is located at the eastern end of Riverside Garden Park, immediately north of the A23 road and west of the railway line and is included as an AHAP that includes Roman artefacts, suggesting some continuity of occupation.

6.3.99 Undated 'cropmark sites' within the Project area include a putative large (150 metres diameter) 'doubled ditched enclosure' in fields south of Brook Farm (within the Project site boundary) on the west side of Gatwick (Site 628). The colour photograph was from a 1991 aerial photographic survey of West Sussex (photograph number 147 91 209). However, specialist examination of the photograph in 2014 has cast doubt on the validity of the cropmark and it is no longer considered likely to be genuine (APS, 2014 and below).

6.3.100 A further possible 'banjo enclosure' (a circular form of enclosure with a long double-ditched entrance funnel of a type known from the Iron Age) has been suggested at a location to the north of the 'double ditched enclosure' (and outside the Project site boundary). This tentative identification was based on a visual inspection at Brook Farm from the air (Site 635) but again the anomaly is no longer considered to be genuine following specialist study of the photographic evidence (APS, 2014).

Iron Age activity Within the Defined Study Area

6.3.101 There are no further known Iron Age sites or finds within the defined study area.

Local and Regional Iron Age Activity Context

6.3.102 Further afield, investigations by ASE have recently identified further evidence of Iron Age inhabitation of the landscape to the

north of Gatwick, on the north east side of Horley (ASE, 2009). A total of up to six ring-gullies, or eaves-drip gullies for round-houses of Middle to Late Iron Age date were excavated, all set within ditched enclosures and field-systems. The site was located along the banks of the Burstow Stream and appears to have been very similar in nature to the evidence from the Flood Storage (Control) Reservoir scheme at Gatwick. Only two other Iron Age farmsteads were previously known from the Surrey Weald, including a site at Cranleigh about 10 km to the west-north west of Gatwick (Poulton in Cotton *et al.,* 2004, Figure 4.1).

6.3.103 The Broadbridge Heath (Horsham) excavations in 2012 (Margetts, 2018) identified several areas of Iron Age settlement, including another cluster of round-houses of Middle Iron Age date. Longevity of landscape inhabitation, although following a shift in settlement location closer to the contemporary stream, was evidenced by a Late Iron Age phase comprising low-lying settlement associated with a single round-house and set within a series of ditched stock enclosures. Probably associated mortuary enclosures were located on higher ground to the west and north east (the latter associated with cremation burials).

6.3.104 Collectively these three Western Weald sites (Gatwick, Horley and Broadbridge Heath) contradict previous notions that the Low Weald, apart from Iron Age ironworking sites and some grazing land, was a wooded wilderness throughout prehistory. For example, Poulton (in Cotton *et al.,* 2004, pages 55-6) stated with justification at the time that *'the general lack of positive evidence for Iron Age settlement from trial trench evaluations on either the western greensand or the Weald tends to confirm that the main uses of such areas were for extensive grazing and exploitation of woodland, activities which did not give rise to the type of occupation that leaves much trace for the archaeologist to discover'*. However, he also added that *'settlement sites may nevertheless remain to be discovered within this large area, but they will almost certainly be associated with locally favourable topographic conditions'*. As an example he cites a site at Cranleigh where the Weald Clay was actually capped by superficial Head deposits on a south-facing slope. The sites mentioned above were on Weald Clay, their advantage being access to local streams.

6.3.105 The Weald was an area of early ironworking. The earliest ironworking of the Iron Age from the western Low Weald is found sporadically to the east and south of the Gatwick area. There is some evidence of significant ironworking at the named sites close to Gatwick, at Horley or Broadbridge Heath and most significantly Late Iron Age to Roman ore roasting furnaces have been investigated at Southgate, Crawley (CgMs, 1997, page 9). Further ironworking sites at Crawley have been identified at Broadfield and at Goffs Park in Crawley, where a bloomery industrial hearth site included two early examples of cylindrical shaft smelting furnaces, suggesting a more significant scale of production (Network Archaeology, 2012a, page 12). The ironworking on this scale may have been closely linked with the local elites.

6.3.106 The closest hillforts are located in a cluster on the southern edge of the North Downs, some 10.5 km to the north west of Gatwick, at Holmbury, Felday and Anstiebury (*ibid*, Figure 4.1). The site of the latter hillfort may have been occupied from the Late Bronze Age but appears not to have been fortified until the Late Iron Age. Felday similarly appears to have been constructed in the Late Iron Age. This evidence has been considered to reflect a general Late Iron Age expansion into parts of the Weald. It is therefore possible that these high status defensive and administrative sites may have offered protection and/or extracted taxation from the local modest farming settlements, perhaps in the early phase including the Late Bronze Age to Early Iron Age settlement at Gatwick North West Zone (Wells *et al.,* 2005). In the Late Iron Age the Gatwick area was probably located within the territory of the Atrebates tribe.

6.3.107 Significant recent developments in terms of understanding settlement pattern and density inhabitation in the Weald have also come from the Brisley Farm and Westhawk Farm sites south of Ashford in Kent. These similarly demonstrate that the formerly held views of the heavy clays being not significantly encroached upon due to thick woodland can no longer be sustained. However, there probably remains some truth in the former perception, as Stevenson (2013) indicated that a near absence of prehistoric evidence in the Weald *'is in part due to the more limited extent of excavation, a situation that the recent profusion of developer-led work may rectify, but is also a reflection in trends in the pattern of prehistoric occupation suggestive of a wide-scale socioeconomic collapse at the end of the Bronze Age/early Iron Age'*.

6.3.108 By far the most significant period of occupation at Brisley Farm was the Middle to Late Iron Age (*c*. 100 BC to AD 50). This is probably analogous to the main period of Iron Age activity at Horley, Broadbridge Heath and perhaps also at the Gatwick sites (John Mills pers. comm.). The Brisley Farm settlement included a complex series of ditched enclosures with associated roundhouses and trackways. A small cremation cemetery was also identified around an 'enigmatic circular space'. More spectacularly, two weapons graves with swords and spears within small square ditched enclosures (probably originally associated with barrow mounds) dated to around the time of the Roman conquest were excavated during the large-scale investigation of Brisley Farm, on the south side of Ashford (Stevenson, 2013).

6.3.109 In south eastern Britain there are several examples of small square barrow enclosures around or associated with burials, but few small circular examples. The most recent are the square ditched enclosures around latest Iron Age weapons inhumation burials found at Brisley Farm on the south side of Ashford in Kent. These are the only examples of enclosed weapons graves of the Iron Age in southern England (*ibid*, page 177).

6.3.110 Closer to Gatwick, very similar small square barrow enclosures have recently been excavated at Broadbridge Heath, West Sussex, associated with two external cremations (Margetts 2018), as well as from the Channel Tunnel Rail Link at Saltwood, near Folkestone, also associated with similar cremation burials (Riddler and Trevarthen, 2006, page 19).

6.3.111 Stevenson (2013, page 177) noted that the southern square barrows are similar to the well-known square barrows of the 'Arras Culture' of East Yorkshire. These include barrow cemeteries at Garton and Wetwang Slacks in the Yorkshire Wolds (Dent, 1982, page 437). The Arras Culture reflects the otherwise highly unusual British Iron Age practices of cart or vehicle burials and inhumation burials associated with cemeteries of small square barrows (Cunliffe, 2005). These square barrows may suggest Continental influence from northern Gaul where the rite is prevalent.

6.3.112 Despite the recent findings in the south east of England, once again the highest concentrations of Iron Age settlement and associated activities are focused on the River Thames (Poulton in Cotton *et al.,* 2004, Figure 4.1) and coastal zones.

Potential significance of areas of unknown Iron Age activity

6.3.113 The presence of a small-scale Iron Age settlement on the Gatwick Stream corridor, along with the analogous settlements at Horley and Broadbridge Heath (Horsham), underline the extent to which Wealden watercourses influence settlement location. The potential for currently unknown sites within undeveloped parts of the Project site near watercourses is therefore moderate to high. The current sites would have been considered rare within the region had it not been for the recent discovery of the Horley and Broadbridge Heath Iron Age sites and landscapes and can now

be regarded as typical of riverine zones in the West Weald, with a moderate significance applicable.

The most likely potential construction areas to encounter Iron Age material would comprise:

- River Mole corridor including ANA DWS8667 (Site 487);
- Gatwick Stream zone including AHAP RB089 (Site 498);
- Pentagon Field – adjacent to ANA DWS8661 (Site 485); and
- land adjacent to Gatwick Stream zone including ANA DWS8660 (Site 484).

Table 6.3.6: Summary of Known Iron Age Material Within the Project Site Boundary

Iron Age finds, sites and monuments	Location	Significance/ sensitivity value	Potential for currently unknown sites
1 – Site 484 (cremations, possible round-houses and field-system).	Flood Storage (Control) Reservoir compound area and flood control works (north of Radford Road).	Moderate	Moderate to High (particularly close to river and stream courses).
2 - Site 485 (occupation).	Pollution Control Lagoon site (north of Radford Road).	Moderate	
3 – Site 498 (Late Iron Age cremation burials).	East end of Riverside Garden Park (north of A23 road).	Moderate	

Roman Period (AD 43 - 410)

6.3.114 The Claudian conquest led to centralised administration and the establishment of towns associated with a proliferation of trades and business-like commerce - supported by an effective road network. This led to further agricultural expansion and minerals exploitation. The area of the Weald is most notable for its Imperial ironworks and for exploitation of timber, although some of the landscape was also occupied and farmed.

Roman Settlement and Landscape Evidence Within the Project Site Boundary

6.3.115 Despite large-scale archaeological investigation for the Gatwick North West Zone and the flood attenuation project adjacent to the Crawley STW, no significant Roman settlement remains have been encountered at these locations.

6.3.116 A potential Roman site within the Project site boundary is referred to as on the West Sussex HER as 'Roman occupation' at Horley Land Farm (Site 696), which is now a Gatwick car park (South Valet Car Park/Self-park South). This identification (an antiquarian find first recorded in 1857) has been based on surface finds of Roman pottery and a coin of AD 138-42 (Faustina). Its potential moderate significance (if surviving below the car park or within adjacent greenfield areas) is highlighted by its inclusion as a Crawley ANA (Site 485).

6.3.117 A second possible settlement is suggested by another antiquarian find of Roman artefacts, including coins and pottery, at a location adjacent to the railway line at the eastern extent of Riverside Garden Park (Site 541). A triangular area (now a staff car park) flanking the west side of the railway is a Crawley AHAP (Site 498). The aforementioned Late Iron Age cremation burial was found from approximately the same location and suggests the possibility of a long-lived occupation at a suitable location adjacent to the Gatwick Steam.

Roman Settlement and Landscape Evidence Within the Defined Study Area

6.3.118 There are no further Roman sites currently recorded within the defined study area, although an archaeological evaluation comprising 30 trenches excavated across three fields in the south eastern part of the defined study area recorded possible Roman boundary/drainage ditches (Peyre, 2011).

Local and Regional Roman Settlement Context

6.3.119 Beyond the defined study area, a fort with surrounding timber buildings was built in the Southgate area of Crawley and early settlement in the vicinity suggests that the military influence stimulated earlier Roman occupation which then rapidly declined (Network Archaeology, 2012a, page 13).

6.3.120 Again, although occupation in the Weald was certainly less intensive than in coastal areas in the south east, such as the West Sussex Coastal Plain, and within the Thames Valley, there is increasing evidence for low levels of rural occupation. In addition to the possible occupation zone at the east side of Gatwick, areas of Roman farming and settlement, associated with fields and trackways, have also been excavated recently at land to the north east of Horley (ASE, 2009; 2013a; 2013b).

6.3.121 A few other Roman farms are known or suspected within the wider area, including a modest farmstead with attendant enclosures and large 'ranch-like' fields investigated at Broadbridge Heath (ASE, 2013a; 2013b; Margetts, 2018). A distribution map of major Roman sites in the Surrey Weald shows no sites in the Gatwick area (Bird in Cotton *et al*., 2004, Figure 5.1). However, David Bird has noted the possibility of a few farms in the western Weald including a possible villa, stating that *'at Treveroux south of Limpsfield, pottery indicates an Iron Age/Romano-British occupation site. Further west, in the Outwood area, the results of fieldwalking suggest more occupation sites. More certainly, a site at Wyphurst Road, Cranleigh has produced evidence suggesting a stone-founded structure, possibly a villa...*' (*ibid*, page 71).

6.3.122 To date, no moderate to high status Roman villas have been found within the Gatwick area, perhaps confirming the general impression that the agricultural productivity of the clay lands (though not necessarily its mineral resources and clay for tile/ pottery manufacturing) was generally insufficient to support wealthy estates.

Roman Communications and Industry

6.3.123 There are no major Roman routes known from the defined study area, with the closest being approximately 7 km to the east, leading from *Londinium* (London) to the south coast (Margary, 1955: Roman Road 150) and Stane Street, the route from Southwark to Chichester via the small town of Ewell, some 10 km to the west (*ibid*; Roman Road 15). These roads would not have directly affected the local settlement pattern which would have been served by minor tracks, some of which might be traceable archaeologically within the Project site.

6.3.124 In terms of industry, Gatwick is located just beyond the western fringe of the known Iron Age and Roman ironworking area, which covers most of the Weald east of East Grinstead (into East Sussex). The industry was closely associated with the Roman fleet, the *Classis Britannica*. The possibly peripheral nature of the Gatwick area to this industry may be reflected by an absence of major Roman roads running through the defined study area (Margary, 1965).

6.3.125 There is, however, a cluster of undated bloomery sites *c*. 8 km to the north east of the Project site (Hodgkinson, 2004, Figure 17.1).

The closest known Iron Age/Roman iron forging site within Surrey is at Dry-Hill about 15 km to the east (*ibid*) but the rescue excavations at the Southgate area of Crawley also identified evidence of no fewer than 36 domed and shaft-type Roman furnaces in addition to buildings and surfaces constructed from slag (CgMs, 1997, page 9).

6.3.126 Another local industry comprised ceramic tile manufacture. Several tile kiln sites are known in the Horsham area associated with the River Arun, whilst there was an important Roman tile industry centred at the former Doods Farm site (Reigate) which supplied London and Canterbury (Masefield and Williams, 2003). This latter site is located 10 km to the north of Gatwick and is the closest 'major site' of Roman date (Bird in Cotton *et al*., 2004, Figure 5.1). The site exploited both clay and sand in manufacturing. It is possible that ceramic tile works could exist within the Project site, although substantial works of the order found at Reigate would not be expected given that the River Mole is relatively slight here, rendering river transportation more problematic, whilst the major Roman roads are somewhat distant.

Potential Significance of Areas of Unknown Roman Activity

6.3.127 The presence of a small-scale Late Iron Age and Roman settlement along the Gatwick Stream corridor and the analogous settlements at Horley (associated with the Burstow Stream) and Broadbridge Heath, Horsham, indicate a high probability that these settlement corridors and those associated with the other watercourses continued to be exploited for modest-scale settlement and farming into the Roman period. The potential for currently unknown sites is therefore moderate to high. The current sites can no longer be seen as unusual in the region, with a moderate level of significance applicable.

6.3.128 The most likely construction areas where Roman material would be encountered comprise:

- Gatwick Stream zone including AHAP RB089 (Site 498);
- Pentagon Field – adjacent to ANA DWS8661 (Site 485); and
- adjacent to Gatwick Stream zone including ANA DWS8660 (Site RPS 484).

Table 6.3.7: Summary of Known Roman Material Within the Project Site Boundary.

Romano-British settlement sites	Location	Significance/ sensitivity value	Potential for currently unknown sites
1 – Sites 696 and 485 (possible occupation area).	Horley Land Farm, now Gatwick car park east of railway (ASA).	Unknown (possibly moderate)	Moderate **to** high (includes landscape and industrial elements)**.**
3 – Sites 541 and 498 (possible occupation).	Land at east end of Riverside Garden Park (AHAP).	Unknown (possibly moderate)	

Anglo-Saxon (AD 410 - AD 1066)

6.3.129 Early Germanic settlers of the 5th and 6th century tended to occupy the coastal and downland areas initially. There is still very little known about the Early and Middle Saxon settlement of the Weald (Drewett *et al.,* 1988) and it has been suggested that clearances made in the Iron Age and Roman period reverted to forest (Gardiner, 1990).

6.3.130 Elsewhere in the south east, cemetery sites have been the principal means of identifying Early and Middle Saxon occupation. In Surrey these tend to cluster around the former Roman centres such as Ewell, Mitcham, Beddington and Croydon, well to the north.

6.3.131 Settlement sites are less common but follow a similar distribution (although with a greater focus on the River Thames – see Hines in Cotton *et al.,* 2004, Figure 7.1). These are usually defined by pits and/or sunken-floored buildings, sometimes associated with post-built halls. Recently excavated Anglo-Saxon occupation sites in the West Sussex Weald include an example at Bolnore (Margetts, 2018). Although such settlements remain rare in the Weald, place-name evidence indicates increasing encroachment into the Wealden forest (the *Andredsweald* - the word weald itself meaning forest and the *Andredsweald* meaning forest of the port of Anderita, ie Pevensey) for farming. By the Late Saxon period the Weald had been sparsely settled.

6.3.132 The closest manor recorded in the 1086 Domesday survey is at Ifield, to the south west of the defined study area (Open Domesday website, 2019).

Anglo-Saxon Settlement and Landscape Archaeological Evidence Within the Project Site Boundary and the Defined Study Area

6.3.133 A gully traced for about 20 metres at the North West Zone site produced three sherds of Saxon pottery and was suggested as being potentially associated with a nearby settlement (Framework Archaeology, 2001b, page 13).

Local Anglo-Saxon Settlement Context

6.3.134 Notwithstanding the above, there are no other Anglo-Saxon sites or finds noted on the HER/Historic England Archives within the Project site, or the defined study area, and it is possible that the area was largely forested until at least the later Saxon period. The relatively large-scale archaeological excavations at Horley (ASE, 2009; 2013b) and Broadbridge Heath (Margetts, 2018) have failed to identify archaeological evidence for Early-Middle Saxon settlement (although Saxo-Norman occupation was present) and it is therefore possible that such settlement evidence will be similarly elusive within the Project site.

6.3.135 The presence of occupation by at least the Late Saxon period is, however, implicit in the documentary evidence and local place-name evidence, including Gatwick itself. The place-names of most of the principal villages and hamlets within the defined study area reflect clearances in woodland.

6.3.136 The Old English place-name 'Charlwood' emphasizes the largely wooded nature of the area in the Anglo-Saxon period, meaning 'Wood of the freemen or peasants' (*ceorl* + *wudu* – Mills, 1998). It was first referred to as *Cherlewde* by the 12th century. Charlwood's existence in the 7th century is attested by a charter of AD 675 when it was included in lands given to Chertsey Abbey, a grant that was confirmed in AD 967 and again in AD 1062 (Framework Archaeology, 2001, page 12). The present form of the associated roads and settlement foci may have been formed in the Late Saxon period (*ibid*). Sewell and Lane (1979) mentions the local legend that *'the women of Charlwood utterly routed the remnants of the Danish (Viking) force defeated at the battle of Ockley in AD 851*'.

6.3.137 The name 'Rowley', as in Rowley Farm and Rowley Wood within the central southern part of the defined study area, is considered to reflect a 'rough wood or clearing' (ibid) and may therefore

indicate an Anglo-Saxon date for the lands occupied by the later farm.

6.3.138 Ifield, to the south west of the defined study area, was mentioned as '*Ifelt*' in the Domesday Book (1086) with its name meaning 'open land where yew-trees grow' (Mills, 1998). Langley (as in Langley Green) within the south western zone of the defined study area, is a fairly common name meaning *'long wood or clearing*' (ibid), whilst Tinsley Green (immediately south of the eastern part of the Project site), although not covered by Mills (*ibid*), may be similar to Tinsley in Yorkshire which is thought to translate as *'mound of a man called Tynni*'.

6.3.139 Horley is probably a reference to *'woodland clearance in a horn-shaped piece of land*' with the place name first mentioned in the 12th century (Mills, 1998). Crawley, though first mentioned as *Crauleia* in 1203, also reflects woodland clearance in the Anglo-Saxon period, its name meaning *'woodland clearing frequented by crows*' (*ibid*). The church at Worth includes some Late Saxon elements, whilst the Crawley area fell within the administrative Rape of Bramber and Lewes.

6.3.140 Further afield, Horsham translates as *'homestead or village where horses are kept*' (Mills, 1998). Other place names of Wealden villages including the suffix -hurst or -den may indicate inhabited woodland clearings and areas of pannage respectively, pannage being the practice of driving pigs into woodland for fattening prior to slaughter. There are no den place names within the Project site boundary, but Hydehurst Furze to the west of Rowley Wood on the north side of Manor Royal may indicate an area used as Anglo-Saxon pannage.

6.3.141 The use of the Weald for transhumance grazing associated with parent settlements elsewhere is clearly a possibility for some of the these 'clearances' (Whitney, 1976, illustrates the process for Kent) although some may well have been existing clearances from the later Roman period (eg Late Roman pottery from enclosures at Broadbridge Heath hints at potential continuity of landscape use into the Saxon period). There is currently no information from within the Project site of any such continuity.

6.3.142 Bird (in Cotton *et al*., 2004, 83) also drew attention to the origins of the place-name 'Thunderfield', located to the north of the eastern end of the Project site. The Old English is translated as 'Thunor's open space' with the suggestion that it might have originated as a sacred grove deep within the Weald. A trackway connecting Earlswood to Horley Common may also have had origins in the period as a droveway (Network Archaeology, 2012a, page 14).

Potential significance of areas of unknown Anglo-Saxon activity

6.3.143 Early Saxon settlement is not expected within the Project site boundary - this is based on the general impression of a contraction of settlement within this period in the Western Weald and the rarity of archaeological remains of Early and Middle Saxon date within the defined study area. The conclusion is reinforced by the nature of the evidence from other large-scale archaeological investigations at the Crawley North East Zone, Horley and Broadbridge Heath sites. There is low potential to identify Early to Middle Saxon settlements or cemeteries within the Project site but if encountered these would be of moderate to high significance.

6.3.144 The Middle to Late Saxon instigation of settlement at Charlwood is likely to have coincided with the settlement of its hinterland (as shown by place-names) and the emergence of the system of local lanes. There is moderate potential for later Saxon settlement and landscape archaeology (including former routeways) to be encountered and such remains would be between low and moderate significance depending on the forms present (landscape fragments would normally be considered to be of low significance and settlements of moderate significance).

6.3.145 The most likely construction areas where Anglo-Saxon period material would be encountered comprise:

- currently greenfield areas proposed for construction.

Table 6.3.8: Summary of Known Anglo-Saxon Material Within the Project Boundary

Anglo-Saxon sites	Location	Significance/ sensitivity value	Potential for currently unknown sites
20 metre length of Saxon ditch.	Gatwick North West Zone.	Low.	Low for Early-Middle Saxon (includes landscape and industrial elements). Low to Moderate – Late Saxon.

Medieval (AD 1066 - *c*. 1530)

6.3.146 By the medieval period the Weald was increasingly densely settled. This appears to have begun with seasonal use of Wealden pastures as detached elements of manorial holdings on the fringes of the Weald, leading to permanent farmsteads and hamlets - as recently identified at 'Wickhurst Green', Broadbridge Heath (Margetts, 2018). The medieval settlement pattern of the Western Weald region is typified by a dispersed arrangement of farming small-holdings, higher status moated sites, hamlets and villages and their associated fields, indicating further encroachment into the forest. The hamlets of up to five dwellings often include the name 'green' as at Langley Green.

6.3.147 The place name 'Horley' possibly means woodland clearing in a horn-shaped piece of land and originates from the 12th century (Mills, 2011) and in 1263 the Abbot of Chertsey acquired lands in Horley and annexed them to his manor of Horley (Malden, 1911).

6.3.148 The Historic England monument description for the Tinsley Green Scheduled Monument (Figure 1.2.1, Site 9) illustrates the nature of settlement at this time stating: *'Medieval dispersed settlements, comprising of hamlets of up to five dwellings or isolated farmsteads were throughout the parish or township. Often occurring in more densely wooded, less intensively farmed areas, or associated with a core of medieval industry, the form and status of the medieval settlements varied enormously. When they survive as earthworks, the most easily distinguishable features of dispersed settlements include roads and tracks, platforms on which stood houses and other buildings such as barns, and the enclosed fields or irregular field systems with which the dwellings were associated. These rural settlements can also be represented by below ground deposits. High status dwellings, such as moated residences or manorial complexes, may have well-defined boundaries and planned gardens. In the western and south-eastern provinces of England, dispersed settlements were the most distinctive aspect of medieval life, and their archaeological remains are one of the most important sources about rural life in the five or more centuries following the Norman Conquest*'.

6.3.149 The core of Charlwood has probably changed very little in layout since the medieval period.

Medieval Settlement Within the Project Site Boundary and Immediately Adjacent

6.3.150 Most of the land within the Project site is in West Sussex, but much of this was formerly within the Surrey parishes of Charlwood and Burstow (now neighbourhoods of Crawley) - although these villages themselves remain in Surrey. The village centres lie beyond the Project site boundary but associated hamlets at Lowfield Heath and Fernhill and known and unknown

farmsteads may contain medieval remains. The important (Scheduled) site of Tinsley Green medieval hamlet is located beyond the southern edge of the Project site boundary (see below and Section 5).

6.3.151 Documentary evidence indicates that the medieval to post-medieval Gatwick House was located adjacent to what is now the North Terminal at Gatwick Airport (Site 680 – see also Figures 4.1.2 and 4.1.3). The location of the fish pond is also recorded (Site 806). The house was mentioned in a will of 1576 and in 1912 was referred to as moated, although the HER notes that there is no moat but rather a fishpond of later date at the now demolished house. The location will have been compromised by the construction of the airport although deeper features such as a moat might partially survive.

6.3.152 There are two ANAs within the southern part of the Project site or immediately to the south that may potentially relate to medieval moated sites. These are the former Park House Farm within the airport boundary (Site 480) and Charlwood House moated site (Site 479) just to the south of the perimeter road.

6.3.153 Red category ASA DWS8656 (Site 480) is within the south western part of the Project site, adjacent to the perimeter road, and references Park or Park House Farm (Site 695). A farm is shown here on Rocques' 1768 Map of Surrey and therefore pre-dates that map (not 1681 as indicated in a desk-based assessment of this location (AOC Archaeology, 2007). This desk-based assessment was produced ahead of the demolition of previously existing buildings at the site for a temporary Customer Care Unit. The 1842 Tithe Map shows the farm with a series of ditches surrounding the farmhouse.

6.3.154 Park Farm was demolished between 1895 and 1919 and when the airport was built little remained here. A homestead moat appears likely to have been associated according to the HER although the assessment noted that *'It is not possible to determine the nature or date of the settlement at Park House Farm through the study of historical sources alone. At this stage there is a low-medium possibility that settlement activity can be traced back to the medieval period*' (ibid). Its inclusion as an ANA may also refer to post-medieval iron extraction in the wider vicinity, as the Senior Archaeologist at West Sussex County Council has noted that bell pits, typically associated with iron production, were identified here during geological survey in the 1960s.

6.3.155 The HER also records a possible moat associated with the medieval Charlwood House within Red category ANA DWS8655 (Site 479), just to the south of the airport boundary/ perimeter road. There is an associated stretch of 'ornamental water' on the north and east sides which could represent a survival of part of the homestead moat (Site 689), although the remainder cannot be traced (but might be represented archaeologically). A watching brief during the construction of a new nursery building at Charlwood House did not identify any associated medieval archaeological remains (Wessex Archaeology, 1993b).

6.3.156 The field to the east has some evidence of possible archaeological crop-marks and soil-marks including a potential building/hut platform of unknown date (Site 629). LiDAR analysis for the R2 Project identified a paleochannel of the River Mole in the western zone of the ANA (Site 610).

6.3.157 Red category ANA DWS8657 (Site 481) is located to the south of the airport and relates to a field associated with a former post-medieval windmill at Lowfield Heath (Sites 694 and 852). However, this windmill was dismantled in 1987 and re-erected approximately 3.5 km to the north west at Charlwood in 1988-1991. Archaeological traces of former windmills, such as cross-trestle and mill post foundations, sometimes survive. In this case the foundations of the windmill were examined on its removal. The associated Windmill Cottage (the miller's house) was demolished in the early 1980s but some archaeological evidence for this building may have survived.

6.3.158 Lowfield Heath was a hamlet of Charlwood within the medieval Hundred of Reigate (*Cherlewude* in the 13th century; *Cherlwude* 13th/14th century; *Chorlwode* 14th century) and is now a neighbourhood of Crawley. Although known of in the Domesday survey (Goldsmith 1987, 122), the heath was not named until the 14th century when it was identified as Lowe Heath after a man called Lowe, with later corruptions as Lovel Heath and Lovell Heath by the 18th (*ibid*, page 5; Harper, 1906, page 316). However, the location of associated habitations and whether the now relocated 19th century windmill replaced a medieval version in the same area are not known.

6.3.159 The hamlets located within the Project area are likely to have some buried archaeological remains associated with medieval phases.

6.3.160 Tinsley Green, flanking Radford Road which forms the southern extent of the Project, was originally a hamlet in the parish of Worth. The name was first recorded in the 14th century when Richard de Tyntesle (Richard of Tinsley) was named on a tax return (Gwynne 1990, 50; CgMs 1997, page 10). The Scheduled site at Tinsley Green (Site 9) and surrounding area south of Radford Road is the focus of a lower status hamlet occupied from the 12th century onwards.

6.3.161 The surrounding area was extensively evaluated for the Crawley North East Sector development (Sites 46-61, 755). Remains survive as low earthworks up to 0.5 metres high and include a holloway and flanking house platforms (with a trench excavated though the holloway and one of the house platforms in 1998). The associated buried archaeological remains are described in more detail in Section 5 above. Analysis of aerial photographs taken in 1969 and part excavation in 1998 (Wessex Archaeology, 1998) confirmed its significance as a rare survival of earthworks representing a West Sussex hamlet (largely because other similar sites were later built over).

6.3.162 Both the HER and Scheduled Monument description indicate the possibility that further associated dispersed settlement archaeological remains may survive beyond the Scheduled area, in particular in areas of post-medieval occupation at Tinsley Green and to the north of Radford Road (within the Project site boundary). However, the Network Archaeology evaluation of 49 trenches north of Radford Road (Site 719) found only medieval field-ditches and no further medieval settlement or ironworking evidence that may be associated with the Tinsley Green Scheduled Monument (Network Archaeology, 2012b). Part-excavation of the core area of the monument itself has indicated continuous occupation well into the post-medieval period due to a close symbiotic relationship with the nearby ironworking centre at Forge Farm (see below).

6.3.163 An evaluation in the grounds of the late medieval Grade II listed (15th/16th century) properties of Edgeworth House and Wing House on the west side of the Balcombe Road and within the Project site boundary failed to identify remains earlier than the later post-medieval period (Sites 779 and 780, Framework Archaeology, 2007c).

6.3.164 At the northern extent of the Project site are two further medieval and related Surrey AHAPs. To the north is a Red CSAI within a wider AHAP (Sites 491 and 492), relating to the Povey Cross possible moated enclosure and fish ponds associated with the River Mole and wider stock enclosure (Site 554). The Surrey HER states: '*On the west bank of the River Mole at Horley Street is a small sub-rectangular moated enclosure, waterfilled and in fair condition. There are remains of a retaining bank around the*

NW and NW sides. The moat was formerly connected with the river from the S corner. The enclosed area is hardly large enough for the smallest homestead, it may have been used for stock'.

6.3.165 The second AHAP (Site 497) includes the medieval church and churchyard of the Church of St Bartholomew. The AHAP is located to the immediate north east of the Project site boundary.

6.3.166 There are a number of associated entries on the HER which are discussed further below (Sites 525, 527, 711 and 849). It should be noted that the southern boundary of the associated Conservation Area at Church Road, Horley (Site 406) extends into the Project site to the north of the Longbridge roundabout and there is some potential for medieval archaeology within this area.

Field Systems

6.3.167 The open-field system around the village of Charlwood comprised six large fields with surrounding common grazing and woodland to the west (Framework Archaeology, 2001a, page 13, citing Sewill and Lane, 1979). A more detailed discussion of the medieval landscape and relatively early enclosure of the much of the common land is contained within Section 4 of this report. The heaths and commons probably originated in this period, including: Westfield Common (north east of the former Park Farm within Gatwick); the extant Lowfield Heath; White Common (formerly at the north west extent of Gatwick); and Horley Common (formerly occupying much of the Fernhill area to the east of the Project site).

6.3.168 The North West Zone archaeological excavation works undertaken in 2001 (Site 666, Framework Archaeology, 2001a; 2002a; 2002b; Wells, 2005) included the identification of medieval field ditches. These confirm the existence of medieval field systems within the landscape in the vicinity of Brook Farm.

6.3.169 The Flood Storage (Control) Reservoir project identified further medieval field boundary ditches and aerial photographs have suggested ridge and furrow earthworks to the east in a field south of Tinslow Farm (Network Archaeology, 2012a). Further hints at elements of medieval landscape elements have been indicated within the walkover survey described below. The remains of a pattern of lost field boundaries (some of which had probably survived until enclosure at around 1840) would be expected to be present.

6.3.170 Medieval field ditches were also encountered within the flood attenuation works evaluation between Radford Road and the Crawley STW in the south eastern area of the Project site (Site 719).

6.3.171 The landscape analysis in Section 4 of this report provides details of the surviving elements of medieval landscape and the process of woodland clearance via assarting.

Medieval Settlement Within the Defined Study Area

6.3.172 The following section is divided into moated sites and possible moated sites, farmsteads, associated farming landscape and hamlets.

Surrey

6.3.173 There are two AHAPs within Charlwood, in the western part of the defined study area. AHAP MV065 (Site 493) refers to the historic core of the village, including the 11th century Church of St Nicholas (Site 14), whilst AHAP MV066 (Site 494) relates to the core area of Charlwood Green. The village core includes a number of surviving medieval sites and buildings, including the 15th century Charlwood Place (just beyond the defined study area). The village shows no sign of deliberate planning and the period at which it was nucleated is unknown (Turner in Cotton *et al.,* 2004, page 133).

6.3.174 Within Horley, to the north of Gatwick, are AHAP RB045 (Site 496), which has been designed to incorporate the 12th century medieval manor and possible moated site of Court Lodge Farm and is associated with several HER references (Sites 555, 805and 848), and AHAP RB97 (Site 499), associated with a possible moated site at Ringley Oak Cottage (Picketts Farm) (Site 545).

6.3.175 The Scheduled Monument of Thunderfield Castle (Site 7) in the north eastern part of the defined study area is also reflected by CSAI RB026 (Site 495). The associated gardens and park (Site 512) and the HER castle description (Site 557) are also associated with the designation.

6.3.176 'Ye Olde Six Bells' public house is located just north west of the Project site and dates from the 15th century – it is within the Church Road (Horley) Conservation Area. A watching brief within the grounds and on the fabric of the building recorded no finds or medieval fabric (Sites 704 and 548).

6.3.177 Finally, there are two closely spaced Surrey AHAPs at Burstow to the east of the M23 motorway. The westernmost AHAP TA109 (Site 502) refers to a 'Medieval Mound at Topnotch, Church Lane, Burstow' adjacent to a 12th/13th century homestead site and possible glasshouse (Site 507).

6.3.178 To the east is AHAP TA047 (Site 501) relating to a medieval moated site at Burstow Rectory, which is in turn related to two CSAIs, TA029 and TA135 (Sites 500; 503). This complex also includes a 16th century moated manor house at Court Lodge Farm (Site 504), the Church of St Bartholomew (Sites 505 and 556), a 14th century house and moat (Site 506), and the site of further medieval moat and homestead and possible glasshouse (Site 507).

West Sussex

6.3.179 An ANA at Gatwick Manor Inn to the south of the Project site boundary (Sites 482, 571, 638, 639, 685, 734, 742 and 749) incorporates the former open-hall 15th century and later timber-framed house also known as Hyders and Hydehurst Farm (Site 29 - see Section 5 above for a more detailed description). The HER/English Heritage Archive records that the remaining arm of an original moat around it has been converted for use as an ornamental pond. Although the square-plan layout is suggestive of a large moated establishment, a desk-based study and fieldwork within the grounds undertaken in 1996 concluded that the ornamental ponds on the west side had always been ponds rather than surviving elements of a medieval moat around the structural complex (Thames Valley Archaeological Service (TVAS), 1996).

6.3.180 An evaluation comprising six trial trenches was conducted ahead of construction of the hotel accommodation (Site 734). These were positioned in the central northern, north eastern and south eastern areas of the square plan hotel complex (*ibid*). No medieval features were noted during the evaluation, or during a subsequent watching brief on the new building footings. However, given the relatively limited distribution of trenches and the late date of the cartographic material used to suggest that there was no moat, the possibility of survival of medieval features and of a moat cannot yet be completely discounted.

6.3.181 The medieval moated site at Ifield Court to the south west of the defined study area is described further in Section 5 above (Site 618). Buried remains of the foundations of the original house and any associated features are likely to be present within the moat, although the wider associated landscapes around such sites may include former satellite settlements (eg estate workers' houses) as well as paddocks for livestock, ponds, tracks and field-boundaries.

6.3.182 Langley Green, now a neighbourhood of Crawley, is likely, based on its Old English place-name, to have been a medieval hamlet of Ifield. Fernhill Hamlet and its surrounding (former common) landscape was formerly a hamlet of the parish of Burstow in the Tandridge District of Surrey.

Medieval farmsteads within the defined study area

6.3.183 Some of the locations of post-medieval farms within the wider study area, such as Hyder's Farm, Brooklyn Farm, Amberley Farm (Langley Green), Hawthorne Farm, Rowley Farm, Oldlands Farm (Tinsley Green) and Fern Court Farm (Fernhill), might represent continuity from earlier farms with buried medieval archaeological remains.

6.3.184 Given the Saxon origin of the place name Rowley (Rowley Farm – south of the Project site boundary) and the prominent location of the post-medieval farmstead set within an oval landscape block around the hill (including Crawter's Brook to the west), a medieval phase here still seems to be very likely. The historic farmhouse (Sites 586 and 775) and its yards are located within a curvilinear earthwork partially around the western and southern sides (Site 626), all set within a wider oval enclosure incorporating fields to the west and east with possible cultivation remains of ridge and furrow agriculture (Sites 612 and 614). Walkover survey and aerial photographic analysis for the Gatwick R2 project identified a further bank and ditch within the western field (Site 611).

6.3.185 The archaeological investigations at Horley in the wider area have identified elements of medieval landscape, but it is the recent excavations at Broadbridge Heath that provide the most valuable available local evidence for the form of dispersed medieval settlement in the West Weald region (Margetts, 2018). The main site comprised farmstead buildings within ditch-defined farmyards, set within the wider context of contemporary field systems. The principal 11th to 13th century occupation included a large, rectangular, ground beam trench-founded, timber-framed, hall-like structure with two similar but smaller houses and/or barns. A fourth building within a smaller compound some distance apart in the landscape may relate to a subsidiary estate workers' dwelling combined with a barn (byre). The Broadbridge Heath evidence may be replicated within the as yet unknown archaeological record for the 11th to 13th/14th centuries within the Project site boundary, perhaps close to or beneath known later 'historic farmsteads'.

Medieval Field Systems

6.3.186 Several sections of sinuous hedgerow, noted during the 2014 archaeological walkover for the Gatwick R2 project and within the western part of the defined study area, probably relate to the late Anglo-Saxon and medieval fields, whilst patchworks of irregular small pasture fields along the valley of the River Mole in the southern part suggest an area of less fragmented medieval or early post-medieval landscape. The expectation is that buried archaeological manifestations of similar landscapes will exist within areas of later field systems in the Project site.

6.3.187 This was precisely the situation at Broadbridge Heath (Margetts, 2018), where ditched landscapes of the 11th to 13th centuries were partially replaced by late medieval and post-medieval landscapes such that some elements of the medieval landscape could be proven to have continued to the modern era whilst most were overlaid or modified. The thoroughness of the removal of medieval fields depends on the completeness of mid-19th century Parliamentary enclosure.

6.3.188 Other medieval landscape features outside the Project site boundary include an HER entry and associated ANA (Sites 490 and 682) related to a possible medieval earthwork 'pillow mound' (rabbit warren) at Toovies Farm, Crawley which was noted by walkover survey to the west of the M23 motorway (Jepson 1997; CgMs 1998a). Medieval field boundaries containing medieval pottery were identified by a trial trench at Court Lodge School, Horley in the northern zone of the defined study area (Sites 510; 547).

The Medieval Wealden Iron Industry

6.3.189 A principal area of archaeological and historical interest for the Low Weald and of particular interest within the vicinity of Horley and Crawley relates to the ironworking industry. Hodgkinson (2004) provides an exhaustive analysis of ironworking in the Low Weald, much of which is of relevance to the present defined study area. He states: *'although there is very limited evidence for iron working in the early Middle Ages, production does not seem to have developed in the district around Horley until the fourteenth century, when it formed part of a larger area that extended into northern Sussex and south-west Kent. This activity may be regarded as a precursor to the main expansion of iron production based on water power which promoted the Weald to national significance in the sixteenth and seventeenth centuries'*.

6.3.190 The first stage of ironworking comprised creation of a bloom of iron via smelting. This usually took place close to the source of the ore (*ibid*). The secondary working (at a forge) could take place further away depending on transport constraints and the availability of a water source.

6.3.191 At Tinsley Green this situation is reflected by the growth of the industry in the late 14th century in concert with the technological development of the blast furnace. The raw material to be gleaned from the Weald Clay around Crawley was ideal for iron production and Tinsley Forge (now Forge Farm - Site 643) was one of a number established at this time (Gwynne 1990, 70-1). The initial stage of cast iron production took place at Tilgate with the product transported to Tinsley Green for its reworking into wrought iron using the blast furnace technology (*ibid*, page 73). The Crawley North East Sector investigations included preliminary evaluation trenching around Forge Farm, Tinsley Green in the form of 34 trial trenches which confirmed the site as a late medieval and post-medieval ironworks (Wessex Archaeology, 1998).

6.3.192 Negative evidence from the area around Oldlands Farmhouse includes a geophysical survey for Network Archaeology which reported that *'a geophysical survey to the north of Radford Road revealed a range of magnetic anomalies, the vast majority of which have been interpreted as being non-archaeological/ natural, recent ground disturbance and buried iron objects. A number of linear anomalies are considered to be buried pipes. In addition, there are a limited number of small anomalies of possible archaeological origin but these do not display any significant concentrations or configurations which might result from any significant concentration of settlement remains (Figure 4). None of the anomalies are sufficiently extensive and varied to suggest the presence of ancient iron-working or other industrial activities*' (Bartlett-Clarke, 2011).

6.3.193 In addition to the important medieval to post-medieval forge at Forge Farm (Tinsley Green), a medieval smelting site was located at Thunderfield Castle (Sites 7, 495, 512 and 557), with further possible smelting sites at Ten Acre Wood (Burstow), Burstow Park Farm and Horncourt Wood to the north east (Gwynne, 1990, pages 70-1).

Medieval Communication

6.3.194 The existence of Ifield, Charlwood, Horley, Burstow, Worth and Crawley in the medieval period and the meandering routes such as Charlwood/Ifield Road and Bonnetts Lane in particular suggest an ancient derivation, with various episodes of re-alignment, as suggested based on a walkover observation (Observation 11 - see below).

Potential Significance of Areas of Unknown Medieval Occupation and Landscape

6.3.195 There is a moderate potential that currently unknown archaeological features, structures or slag concentrations associated with the medieval and later iron industry will be located within the Project site boundary. There is a high potential that former medieval field systems and lanes (or fragments of) and presently unknown occupation sites (farms/hamlets) and agricultural buildings will also be present. The known medieval settlement sites have a high potential to contain medieval archaeological remains. Well-preserved evidence of medieval industry and settlement is likely to be of moderate significance whilst medieval landscape remains are generally considered to be of low significance.

6.3.196 The most likely construction areas to encounter medieval archaeology would comprise:

- Currently greenfield proposed construction areas, including Museum Field and land adjacent to Brook Farm, Pentagon Field, Reigate Fields and the land to the south of the water treatments works adjacent to the Gatwick Stream (most likely former field boundaries);
- Land adjacent to the ANA for the medieval Park House Farm (Site 480);
- Land around Edgeworth/Wing House; and
- Land within the northern extent of the Project adjacent to CSAI MV033/AHAP MV053 (Sites 491 and 492), relating to the Povey Cross possible moated enclosure and fish ponds and AHAP RB056 (Site 497) including the Church of St Bartholomew.

Table 6.3.9: Summary of Known Medieval Material Within and Adjacent to the Project Site Boundary

Medieval settlement sites (HER/EH Archives)	Location	Significance (archaeology only)	Potential for currently unknown sites
1. Park House Farm (Site 480).	South west part of airport.	Moderate (if elements survive).	High
2. Charlwood House moated site (RPS 479).	South of airport.	Moderate **to** high (if elements survive).	High
4. Windmill sites, eg possibly at Lowfield Heath at location of the post-medieval mill (RPS 481).	Lowfield Heath.	Moderate (if medieval version was present and elements survive).	Low
5. Historic farmsteads such as Edgeworth/Wing House (Sites 133; 134).	Various.	Moderate**.**	High
6. Former landscape elements including field systems and lanes.	Various.	Low to moderate.	High
7. Structures, features and finds associated with industry (particularly ironworking).	Currently unknown within Project site boundary (but known immediately adjacent).	Low to moderate (at least) if present and depending on type/ preservation.	High

Post-medieval (AD 1530 - 1900)

6.3.197 The post-medieval period is assessed in terms of historic periods of influence as landscape layers in the sections below. With the exception of the superimposition of Gatwick Airport (Site 304) and the Manor Royal Industrial Estate, the extant surrounding rural landscape has changed very little since the post-medieval period. This section principally considers potentially associated below-ground archaeological remains with only brief contextualisation. The key influences on inhabitation (density of occupation) up to AD 1900 have been the 16th to 17th century expansion of the iron industry, the subsequent Agricultural Revolution and the construction of the Brighton-London mainline railway.

Post-medieval Farmsteads Within the Project Site Boundary

6.3.198 The possible medieval moated sites (discussed in the medieval section above) including at Park House Farm (Site 480), have post-medieval phases. Buried archaeological remains are to be expected associated with these properties, as demonstrated by the fieldwork trenching and watching brief at Gatwick Manor Inn (TVAS, 1996) which identified a beehive-shaped brick cess pit and a Victorian well or soakaway.

6.3.199 A number of existing farmhouses have been entered on the HER following a 'Historic Farmlands and Landscape Character in West Sussex' survey (the project aimed to represent all farmsteads shown on the Ordnance Survey 2nd edition 25" (to the mile) mapping of 1895); these are further discussed below.

6.3.200 Site 672 relates to Charlwood Park Farm in the north west area of the Project site, as shown on Rocque's 1798 Map of Surrey. The farm complex is to the west of the Project site.

6.3.201 Brook Farm, Crawley (Site 698) is located at the western edge of the Project site.

6.3.202 The site of Larkins Historic Farmstead, Crawley (Sites 573 and 584) was located below the runway in the central eastern area of the airport, with the site of Westfield Farm Historic Farmstead (Site 600) to its west within the central western area of the airport.

6.3.203 The sites of Oaktree Historic Farmhouse, Crawley (Sites 582 and 583) and Hydecroft Historic Farmhouse (Site 570) were located within the southern central part of the Project site.

6.3.204 The site of Heath House Farm Historic Farmstead, Crawley (Sites 563; 564) was also located within the southern central part of the Project site.

6.3.205 The site of High Castle Farm (RPS 565 and 566), nearby unnamed former historic farmhouse (RPS 558 and 559) and the site of Huntsgreen Historic Farmstead, Crawley (RPS 569) were all located in the south eastern area of Gatwick, demonstrating a density of landholdings.

6.3.206 The site of 'Roles' Historic Farmhouse (Site 593) was located within the eastern part of the Project site, with the site of Pickett's Barn historic farmstead, Rusper (Site 590) at the central eastern boundary of the Project site.

6.3.207 It is likely that archaeological remains of these farmsteads, where there is correspondence with the airport's infrastructure and surfacing, will have been removed during the levelling works and construction.

Post-medieval farmsteads within the defined study area

6.3.208 Within the Charlwood House ANA (Site 479) is a reference to a tree ring (dendrochronological) assessment for Lowfield Hall off Poles Lane (Site 729) which dated the timber-framed barn to 1604-29 with later extensions.

6.3.209 Gatwick Dairy Farm to the north of the Project site boundary, includes a post-medieval granary (Site 839).

6.3.210 The following are located within the defined study area and may be associated with post-medieval archaeological remains:

- Littlepark Farm Historic Farmstead and Birchfield Historic Farmstead, Crawley (Sites 579 and 697) at the western extent of the defined study area;
- the sites of Hairbrains Farm (Sites 561 and 562), Hydehurst (Site 571) at Gatwick Manor, the site of a Historic Outfarm north east of Lovell Farm (Site 587), the site of Parkhouse Farm, Rusper (Site 589), Polesacre (Poles Farm) (Site 591) Taskers Farm (Site 597), Amberley Farm (Sites 692 and 693) Rowley Farm (Site 775) and Brooklyn Farm, Rusper (Sites 699 and 700) are all located to the south of the Project site boundary;
- the site of Summersvere Historic Farmstead is located at the southern extent of the defined study area (Site 595);
- Little Radford Historic Farmstead (Sites 575 and 576), Tinslow Farm Historic Farmstead (Site 598) and Oldlands Farm (Site 584) are located to the south east of the Project site boundary; and
- Forge Farm and Toovies Farm Historic Farmhouses (Sites 560 and 599), the site of Little Teizers Historic Farmstead (Site 577), Riverington Farm Historic Farmstead (Site 592), the site of Allen's Farm outfarm (Sites 690 and 691) and Heathy Ground Farm, Crawley (Sites 673-675) are located in the south eastern and eastern zone of the defined study area.

Post-medieval field-systems and landscape

6.3.211 Many of the field boundaries shown on the 1839 tithe map remain in the present landscape, whilst the straight-sided fields of the grid at Lowfield Heath provide the clearest example of 19th century enclosure of the commons and heaths within the defined study area. In terms of archaeological remains, the previously 'open' heath area may contain traces (ditches and/or holloways) of the tracks depicted on early mapping.

6.3.212 The North West Zone excavation works undertaken in 2001 (Framework Archaeology, 2001b; 2002a; 2002b; Wells, 2005) identified medieval and undated boundaries and a possible drove route that show remarkable continuity of alignment with the Late Bronze Age enclosure ditch and appear to also respect the northern end of the large Late Bronze Age boundary ditch (Site 667). The undated elements correspond with the 1839 tithe map.

6.3.213 It appears therefore that banks associated with Bronze Age landscape elements may have influenced the associated landscape as late as the 19th century. Ditches shown on the 1839 Charlwood Tithe Map were identified as archaeological features by Framework Archaeology within the area for the proposed River Mole diversion corridor (notably this zone was devoid of any earlier archaeology, probably due to its low-lying and damp topography).

6.3.214 Site 670 relates to two linear ditches recorded on the 1839 tithe map and identified during archaeological investigations within Car Park Z at the southern edge of the airport (Framework Archaeology, 2001b).

6.3.215 Although the Wealden forest is long since been cleared, a number of small woods remain or have since been planted within the Project site. These include Brockley Wood within the Gatwick North West Zone, and Horleyland Wood and Upper Pickett's Wood to the east of the railway.

6.3.216 A number of field banks, some of which doubled as possible tracks, were noted during the walkover survey within Upper Pickett's Wood (see below). These indicate survival of post-medieval and possibly earlier plot/field boundaries and are amongst the few earthwork features surviving within the modern landscape within the Project site boundary. Similar features were trenched for the Crawley North East Sector project and *'although none of these could be closely dated, some are considered most likely to be of post-medieval date*' (Wessex Archaeology, 1998, page iv). Buried archaeological remains may also be better-preserved within woodland where they have been protected from deep modern ploughing.

6.3.217 LiDAR-identified earthworks of uncertain but probable post-medieval date within the defined study area include a very denuded possible boundary bank/ditch just east of the Project site boundary near Burstow Hall that may indicate the presence of an earlier boundary (Site 621), a field boundary (Site 617) and area of possible ridge and furrow at Rusper in the south west part of the defined study area (Site 618), and field boundaries of former fields immediately south of the Project site boundary and north of Brooklyn Farm (Site 619). To the west of the airport are former field boundaries identified by LiDAR in 2016 for the Gatwick R2 project (Sites 604 - 606).

Post-medieval Hamlets and Dispersed Settlements (Including Sites of Historic Buildings)

6.3.218 Surviving and former dispersed properties/hamlets are shown on the historic mapping. Examples in the defined study area include Ifield Hall, Stafford House, Ditsworthy, Little Dell, The Cottage in the Wood, Poplars and Burstow Hall, and all of these may be associated with archaeological remains.

6.3.219 Archaeological work has previously taken place within two dispersed hamlet sites within or adjacent to the Project site boundary. Site 716 relates to an evaluation and watching brief to the south of the airport (Perimeter Road South) at the location of the former 18th century Oaktree House (Sites 683 and 776 - Framework Archaeology, 2007a; b). The house had been identified from historical and cartographic research.

6.3.220 Several post-medieval entries on the Surrey HER are located just beyond the northern boundary of the Project site. These relate to structures within the Church Road (Horley) Conservation Area (Sites 406 and 295) including the 17th century 'High House' (Site 1017), a 16th century 'Barn 10 yards north of Ye Olde Six Bells' (Site 1018), the 1720 tomb of William Barnes (Site 1019) and the 1725 tomb of Samuel Billings (Site 1020).

Post-medieval Windmills

6.3.221 A post-medieval windmill known as Lowfield Heath windmill was formerly located close to the Project site boundary (Sites 112 and 510) before it was dismantled in 1987 and re-erected at Charlwood in Surrey in 1988-1991. When it was moved some archaeological recording was undertaken on its foundations (Site 694). The formerly associated Windmill Cottage (the miller's house) also no longer survives but may have left archaeological traces (this location is also a Crawley ANA - Site 481). Further information on the windmill is included below and in various summaries:

- http://www.ockleywindmill.co.uk/lowfieldheathwindmill.htm;
- http://www.charlwoodandhookwood.co.uk/lowfield-heath-windmill.php; and
- http://en.wikipedia.org/wiki/Lowfield_Heath_Windmill

6.3.222 'Windmill Field' (Site 631) to the west of the airport and outside the Project site boundary suggests another former windmill

location within Charlwood parish, and there is also a (relocated) windmill base in the eastern side of the village.

6.3.223 South of the Project site boundary, an extant windmill at Gatwick Manor Inn is a late 18th century smock mill which was removed from its former home at Littleworth, Partridge Green, and rebuilt in 1959 at Gatwick Manor (Site 685).

Post-medieval industry

6.3.224 Although present in the 14th century, the Wealden iron industry gained major prominence in the 16th and 17th centuries and was accompanied by widespread tree felling for furnace fuel. This process was restricted by royal decree in the late 16th century but since Charlwood was unaffected by the decree it is assumed that the associated ironworks were relatively small-scale (Sewill and Lane, 1979; Framework Archaeology, 2001a, page 15). The ironmasters were ordered to metal their roads in 1584 and such metalling may be evidenced archaeologically within the Project site. The development of ironworking in northern England in the 17th century led to the decline of the Wealden industry.

6.3.225 In terms of associated ore extraction, there are a number of Historic England Archive/HER documentary and field observation references relating to the area to the west of the airport and south of Charlwood.

6.3.226 A post-medieval bloomery site has been suggested at Westfield Place on the basis of documentary evidence (Hodgkinson, 2000). The Westfield Bloomery may have had its origins in the late medieval or early post-medieval period. Associated place-names include 'Pit Croft' just beyond the south west extent of the airport which suggests a former mine (Site 633). The associated ANA DWS8666 (Site 486) also includes possible locations of former post-medieval mine pits suggested by the place-names of 'Pit Meadow' (Site 632) and 'Minepit Close' (Site 641). Similar examples are known at Ifield (Site 640) and further to the west (Cleere and Crossley, 1995). These locations are commensurate with the presence of Weald Clay which can contain iron ore seams as well as building stone.

6.3.227 As noted above, the Park House Farm ASA (Site 695) may also refer to the iron extraction in the wider vicinity as the former West Sussex County Archaeological Officer has noted that bell pits typically associated with iron production were identified here during geological survey in the 1960s (John Mills pers. comm.). These are circular, near originally vertical-sided mine or pit features, whose sides tend to collapse leaving a bell-shaped profile. In addition to extraction pits, hammer ponds and watermills were required for ironworking.

6.3.228 Although wrought iron production industry generally declined in the 17th century, at Tinsley Green itself this process remained successful (at Forge Farm) well into the 18th century when it finally closed (Gwynne, 1990, page 89). The place name 'Black Corner' on the bend of the B2036 (the Balcombe-Horley road – a former route to London) at the junction with Radford Road, is a reference to the industry. Oldlands Farmhouse is a historic farm of 17th century date located on the north side of Radford Road and adjacent to the Project site boundary; it was built and owned by the ironmaster who owned the forge.

6.3.229 In an archaeological assessment of the Tinsley Green medieval and post-medieval ironworks just to the south of the Project site in the Forge Farm area of Tinsley Green (for the Crawley North East Sector proposals), it was noted that; *'excavation of comparable Weald sites at Ardingly, Blackwater Green and Chingley suggest that the Forge Farm site will contain the remains of two or three stream races running through the remains of the forge buildings. These could contain in situ water wheels below existing ground level. The hearths tend to leave slight traces due to their insubstantial footings. The hammer and anvil foundations are likely to survive in good condition. Excavated examples have generally been of massive timber construction, which because of their location, in waterlogged alluvial conditions adjacent to streams, tend to be well preserved…'* (CgMs, 1997, page 12).

6.3.230 The preliminary evaluation here (Wessex Archaeology, 1998) confirmed evidence associated with the industry but noted that *'as the current river was scoured and widened by the water board in the past, the chances of significant remains surviving in this area are thought to be slight. Consequently, it is now not thought that any forge remains warranting preservation in situ will be present on the site. Rather, the truncated and disturbed remains present can be preserved by record through a programme of archaeological field excavation'*.

6.3.231 As noted above the geophysical survey and trenching by Network Archaeology around the former ironworks owners' house at Oldlands Farm did not identify any associated industrial evidence on the north side of Radford Road. Therefore, the main works appear to have been contained to the south of the Project site.

6.3.232 Brick-making industry (possibly associated with the iron industry) is implied by place-names within the Project site boundary, including 'Kiln Field' within the previously investigated North West Zone (Site 634). This field is referred to on the Tithe Apportionment of 1839 and could refer to brick/tile production or lime working. An undated lime kiln comprising a 2-3 metre diameter circular straight-sided pit (presumably with burnt sides and likely to be medieval or post-medieval in date) was found during evaluation work at Tinsley Green south of the Project area (CgMs, 1998b).

6.3.233 Potentially of relevance is a field name of Kiln Field for the land immediately east of the railway and north of the A23 road. However, as the location is next to the railway line it may have supported temporary brick kilns or clamps supplying the construction of the railway.

Post-medieval Communications

6.3.234 The London to Brighton railway was constructed in 1839-40, serving the former Gatwick racecourse by the late 19th century.

6.3.235 The main north-south roads through the area in this period comprised the route between Horley and Worth that ran along the western edge of the former Horley Common (the modern B2036 road) and the former route between Crawley and Reigate that ran through the centre of the Project site along the eastern edge of Lowfield Heath (where it is still represented by a section of the A23 road). These and the other routes between Hookwood and Charlwood along the northern edge of the airport, Lowfield Heath Road though Westfield Common (including an additional lane along its northern edge serving houses), Bonnetts Lane and Charlwood/Ifield Road were probably present well before the post-medieval period.

Potential Significance of Areas of Unknown Post-medieval Occupation and Landscape

6.3.236 There is a moderate potential that currently unknown archaeological features, finds and/or structures associated with the post-medieval ironworking industry will be located within the Project site, perhaps most likely in areas closest to the Westfield Place bloomery and the south western airside zone close to the former Park House Farm complex.

6.3.237 There is a high potential that former post-medieval field systems and lanes (or fragments of) and presently unknown occupation sites (farms/hamlets) and agricultural buildings will be present within the Project site, particularly at locations close to the contemporary road system.

6.3.238 The known post-medieval settlement sites have a high potential to contain associated archaeological remains of low significance. Well-preserved evidence of early post-medieval industry and settlement is likely to be of moderate significance whilst the post-medieval landscape remains are generally considered to be of low significance.

6.3.239 The most likely construction areas to encounter post-medieval archaeology would comprise:

- areas closest to Westfield Place bloomery (ironworking);
- Crawter's Wood near the former Park House Farm (settlement); and
- all other greenfield areas (agricultural features).

Table 6.3.10: Summary of Known Post-medieval Material Within the Project Site Boundary.

Post-medieval settlement and industrial sites (HER/HE Archives)	Location	Significance/ sensitivity value (archaeology only)	Potential for currently unknown sites
1. Historic farmsteads such as Charlwood Park Farm, residences at hamlets.	Various.	Low to Moderate (if elements survive).	High
2. Former landscape elements including field-systems and lanes prior to and shown in 1839 - see Sites 669 and 770 in Gatwick North West Zone.	Various.	Low to Moderate.	High
3. Bloomeries, structures, features and finds associated with industry (particularly ironworking).	Currently unknown within Project site but in known in adjacent areas (Westfield Bloomery).	Low to Moderate (at least) if present and depending on type/ preservation.	High

Modern (AD 1900 - Present)

6.3.240 The post-1900 features associated with the Project site beyond the 1950s airport boundary remain largely intact and more detail is provided within Sections 4 and 5 of this report (where appropriate) and within Annex 1.

6.3.241 The HER and Historic England Archives make particular reference to a Cold War Royal Observer Corps Monitoring Post building (Defence of Britain database) within the south of the airport (Site 681). The building was active 1962 to 1969.

6.3.242 The principal areas of archaeological interest relate to the railway and any buried features associated with the 1930s airport and the Second World War airfield (Site 746). The earliest aerodrome was constructed at Gatwick Farm and the racecourse in 1930, with The Beehive (the former terminal building) constructed in 1936 after a public licence for use as an airport was issued in 1934.

6.3.243 Pre-war airplane crash sites within the defined study area include a Sopwith Gnu of Lloyds Commercial Aircraft Co. which stalled on approach in 1926 and crashed at Horley, to the north of the Project site boundary (Site 516).

6.3.244 There are two Second World War crash sites at Horley and Smallfield in the northern and north eastern parts of the defined study area: a Miles Magister 1 of 19 E&RFTS RAF; and a German Messerschmitt Bf110C-6 (Sites 514 and 515). Anti-aircraft (Kentish Gun Belt) positions were located in the south eastern part of the defined study area (RPS 677 and 678).

6.3.245 A number of war memorials are also recorded on the Surrey HER for Horley and Burstow within the defined study area (Sites 524-531).

6.3.246 There is also a First World War memorial in the grounds of the Grade II* listed Church of St Michael and All Angels at Lowfield Heath, just south of the Project site boundary (Site 688).

6.3.247 Two former cinemas are recorded at Horley (Sites 522 and 523).

6.3.248 The 1950s development of London Gatwick Airport (Site 746) overlay most of the 1930s site, with the former terminal (The Beehive) and its associated tunnel to the railway station being the sole surviving remnants to the south of the current airport boundary. The racecourse station was upgraded to be the Gatwick Airport Station (Site 811).

6.3.249 The modern buried archaeology beyond Gatwick is considered to have low to negligible significance whilst the more significant aspects of modern built heritage associated with the aviation industry are dealt with separately below.

Undated sites

6.3.250 The HER records a 30 metre diameter circular enclosure within the airport (on the north side of the North Terminal). This had an out-turned entrance to the north east, based on aerial photographs (Site 679). The HER also records that site visits indicated the enclosure ditch to be around 3-4 metres wide and 0.4 metres deep. The scale of the enclosure might indicate a large prehistoric barrow, although the entrance to the north east would be atypical.

6.3.251 Other undated cropmark/earthwork sites of possible Iron Age date have been referred to in the Iron Age section above (Site 628).

6.3.252 The LiDAR study for the Gatwick R2 project identified an oval enclosure in woodland within the eastern edge of the Project site (Site 620). The HER records that *'the enclosure measures 150m North-West/South-East by 80m North-East/South-West, and comprises a ditch and bank c.4m across. A narrow entrance may be present on the South east corner. Although not depicted on the 1st edition Ordnance Survey map, the feature is neatly contained by a modern field, and is likely to be of relatively recent origin'*.

6.3.253 A cropmark of a building/hut platform of unknown date (Site 629) is identified just south of the Project site and may be included in the ANA here (Site 479).

6.3.254 Both the North West Zone evaluation and mitigation and the Flood Storage (Control) Reservoir sites (Sites 726 and 719) identified undated linear field system ditches that might date from any period between the Bronze Age and post-medieval periods (Framework Archaeology, 2008; Network Archaeology, 2012b).

Archaeology Walkovers

6.3.255 Site walkovers for archaeological purposes were conducted on 20th February 2014 (for Gatwick R2) and 1st October 2019. Due to access restrictions the walkovers were confined to observations made from public highways and footpaths. The locations of observations are indicated on Figure 6.3.6. The designated heritage assets were visited on separate occasions.

6.3.256 The 2014 walkover began from the roadside in the vicinity of the former Charlwood Park Farm (Site 27) at the north western edge of the airport. Bronze Age archaeology is known from the vicinity in the north west area of the airport (Site 666) and the area of soft landscape incorporating the former farm and adjacent car-parking are part of an associated ANA for possible further buried remains (Site 487). The land within the Project site boundary comprises car parks of tarmac and chippings. The use of this area for parking has precluded earthwork survival.

6.3.257 Following the road around the northern side of the airport towards Charlwood, a block of fields on the south side associated with Brook Farm (east of Charlwood) is noted as possible medieval in date by the West Sussex HLC (Figure 4.1.4). The land use around the farm, between the road and the airport perimeter, is wholly pasture. Although no earthworks are visible on the surface of the fields from the roadside, the S-curve form of the county boundary hedgerow, to the west of the farm, suggests that this boundary may be of medieval date [*walkover observation 1a*], although some of the straighter east-west aligned hedged boundaries are almost certainly later subdivisions.

6.3.258 There was a sight line across the fields towards the location of the possible cropmark/soilmark enclosures (Site 628 and a possible enclosure straddling the county boundary and Site 635, a possible banjo enclosure). However, there was no evidence of visible earthworks in these distant views. Brook Farm itself is a 'historic farmstead' recorded on the HER. The farm complex is situated across Man's Brook which is present as a small stream adjacent to the road.

6.3.259 The next stage of walkover followed Lowfield Heath Road southwards from Charlwood. The road passes Charlwood Place Farm (to the east) before crossing Man's Brook at Spicers Bridge (west of the Gatwick Aviation Museum). The landscape is relatively flat at *c*. 60 metres AOD adjacent to the stream. The route was followed around the western edge of the airport, passing large arable fields to the west. No earthwork features of possible archaeological interest were visible from the road.

6.3.260 The former location of 'Homestead Moat' at Park House Farm (Sites 480, 695 and 715) was viewed from the road and comprises modern airport-related structures, including ground level and raised car parks. As noted above, this area is also a Crawley ASA (Site 286) based on a possible medieval origin for the farm and the potential for associated buried features.

6.3.261 The route proceeded east and north through the woodland and around modern embanked lagoons in the south eastern part of the Project site. A series of banks and double-banked routes were noted [*walkover observation 19*] including a bank and ditch defining the west side of the wood, perpendicular to the road to the south, whose line curved north east and was mirrored by the boundary of the lagoon. Both this bank and a south west/north east aligned bank connecting to it and extending east, appear to be post-medieval divisions associated with a slightly raised bank-defined route or former boundary progressing approximately north/south through the wood.

6.3.262 No additional sites or features were recorded during the October 2019 walkover, which examined areas that had not been looked at in 2014.

Table 6.3.11:Summary of Walkover Observations

Walkover Observation No.	Description
1a	1a = S-curve form of the county boundary hedgerow, to the west of Brook Farm, suggests that this boundary may be of medieval date.
19	A series of linear banks and a double bank of a north/south aligned route noted within and flanking the west side of Upper Pickett's Wood, north of Tinsley Green. Probably post-medieval.

Summary of Aerial Photographic Study

6.3.263 An archaeological aerial photographic study was commissioned for the purposes of the Gatwick R2 historic environment baseline assessment and is therefore of relevance to the current review. The study included examination of historic photographs held by the Historic England Archive and other sources, including copies held by Gatwick Airport Limited, and comprised specialist interpretation and rectification plotting of crop-marks and soil marks that indicate or may indicate buried archaeological features. Although these cannot be verified and dated without further investigation, the forms of features and groups of landscape features are often characteristic of particular periods and/or activities. The report including sources and detailed results (APS, 2014) is summarised here, with the locations of features identified by the aerial photographic study indicated on Figure 6.3.7.

6.3.264 The following sources were consulted:

- Information supplied by Gatwick Airport Limited;
- Historic England Archive - air photo enquiry number AP 85431. This enquiry identified 80 separate vertical AP sorties between 1941 and 2001. The archive also holds 55 oblique aerial photographs, taken between 1929 and 2010, and 12 military obliques which were taken in 1941;
- Cambridge University Collection of Aerial Photographs (CUCAP) - this collection contains two runs of vertical aerial photographs on the eastern side of the defined study area which were taken in 1972, alongside eight oblique photographs taken between 1948 and 1978. These were consulted as scans supplied by the archive;
- West Sussex Record Office - this archive contains some material which is not held at the HE Archive, notably a whole county survey which was undertaken by JAS Air in 1988. This was consulted in the Record Office alongside vertical aerial photographs taken in 1969, 1991 and 1997; and
- Online sources including the ortho-rectified mosaics of vertical aerial photographs at Google Earth (earth.google.co.uk) and Bing (www.bing.com/maps).

6.3.265 The following relevant text is taken from the summary within the full specialist report (APS, 2014):

'S2 The object of this aerial photographic assessment was to provide information on the location and nature of archaeological sites and areas which are visible on aerial photographs, either as buried or upstanding features.

S5 Twenty-one areas of archaeological interest or potential interest were identified. These sites are summarised below ...

S6 The area contains some features which are archaeologically significant. These are:

- *AP 01 - linear features and boundaries adjacent to a moat and palaeo-channels at Ifield Court medieval moated manor [beyond the southern extent of the defined study area for the Project];*
- *AP 09 and AP 11 - some possible pits of unknown origin which may be associated with undated extraction of iron ore [within the defined study area but south and west of the Project site boundary];*
- *AP 18 - this is an earthwork or natural feature of indeterminate type and date [Site 679 - North Terminal]; and*

- *AP 19 - was not extant in the 1940s and is a series of former boundaries and enclosures or former buildings which show as marks in grass. The date and type of this site is unknown. [within the defined study area but south of the Project site boundary].*

S7 Palaeo-channels have been identified, alongside areas of post-inclosure field boundaries and likely drainage [within the defined study area but south of the Project site boundary].

S8 The area does not contain any definitely identified broad medieval ridge and furrow. Linear features which are residual in the ground are likely to be agricultural drainage or possible remains of post-medieval steam ploughing at Ifield Court (AP 01).

S9 The area has been significantly altered by the expansion of the airport during and since the 1940s.

S10 Sites which have been previously identified as 'enclosures' have been carefully examined at AP 05 [Site 628], 06 [Site 635] and 18 [Site 679]. AP 05 and 06 have not been identified as archaeological features and are natural or agricultural. AP 18 may be archaeological or natural, but its type and date are unknown.

S11 Features identified by Network Archaeology (2012) are summarised in Table 4.12 below [Table 6.3.12and are non-archaeological or part of the recently altered and residual modern landscape.'

Table 6.3.12:Summary of Aerial Photographic Survey Results

AP site	NGR	HER MWS	Site No.	Location	Form	Description
01	TQ 248 384	6508 SM 12884	126	Ifield Court [south of defined study area – Site 618 within ANA Site 478]	Eroded EWK and GM	Drainage, post-medieval boundaries, possible steam ploughing and palaeo- channels adjacent to a Scheduled moated site.
02	TQ 241 399	NA		Long Meadow Villas	GM	Linear features seen as marks in grass, which could possibly be eroded ridge and furrow, but more likely modern agricultural features or drainage as none of these features are seen as upstanding in the 1940s.
03	TQ 247 401	NA		Westfield Place Farm	CM SM	Linear features seen as marks in the grass, which could possibly be eroded ridge and furrow, but more likely modern agricultural features or drainage as none of these features are seen as upstanding in the 1940s. Later aerial photographs show the position of post- inclosure field boundaries which have been removed and now show variably in crops and bare soil as linear features.
04	TQ 250 400			Ifield Hall	CM GM	Linear features seen as marks in grass, which could possibly be eroded ridge and furrow, but more likely modern agricultural features or drainage as none of these features are seen as upstanding in the 1940s.
AP 06	TQ 253 409	4016	17	Brook Farm	NA	There is no trace of a banjo type enclosure on any of the APs at this, or any other location near Brook Farm. Linear features are indicative of modern livestock management and agriculture.
AP 07	TQ 264 390			Merline Centre	GM	Linear features seen as marks in grass, which could possibly be eroded ridge and furrow, but more likely modern agricultural features or drainage as none of these features are seen as upstanding in the 1940s.
AP 08	TQ 270 399			Lowfield Heath	GM	Linear features seen as marks in grass, which could possibly be eroded ridge and furrow, but more likely modern agricultural features or drainage as none of these features are seen as upstanding in the 1940s.
09	TQ 260 395			West of Ditsworthy Farm	CM	A group of sub circular pits seen on an image at GE 2007, are possibly the site of a former group of trees, due to their arrangement. However, this interpretation is not confirmed, and their origin is thus unknown. Similar sized and shaped pits are visible as marks in grass to the west at AP 11.
10	TQ 258 394			East of Amberley Fields Caravan Park (Sites 607; 609; 610)	GM	Palaeo-channel which shows as a mark in grass to the west of the modern course of the river.
11	TQ 256 393			Brooklyn Farm	CM	Possible anomalies or pits, which may be the position of former trees. The origin of these anomalies is unknown.
12	TQ 252 400 (approx. position)			Gatwick	GM EWK (1940s)	Circular feature which was upstanding in the 1940s and still visible as a mark in grass in 1969. This was in a small field or garden, and may have been an ornamental garden feature or possibly a Second World War defensive site. It is no longer extant.
13	TQ 251 398			Gatwick	Crater	Two circular features seen on 1940s APs and later which were possibly bomb craters, although their close spacing is not typical of these features. They are no longer extant.
14	TQ 263 406			Gatwick	GM now built over	Relict post-inclosure/ modern field boundaries, showed as marks in grass on the extent of the airport, and are now built over and destroyed.
15	TQ 250 381			Ifield Green	Crater	Former bomb crater, not now extant, visible on 1940s aerial photographs.
16	TQ 256 389			West of River Mole	CM	Palaeochannel
17	TQ 253 385			Willoughby Fields	CM	Palaeochannel

AP site	NGR	HER MWS	Site No.	Location	Form	Description
18	TQ 277 419	726	81 [Site 679]	North Terminal Gatwick	EWK	Subcircular cut feature seen on APs taken in 1941 and in 1965. Two sections of curvilinear possible are visible, and there is not a complete circuit. The area has been substantially redeveloped and landscaped. There were many military defensive earthworks in this area which lay within the boundary of the airport in the 1940s, and this feature may be military. However, its curvilinear form is indicative of a possible Iron Age 'banjo' type stock enclosure. There are two possible small linear entrance features on the south side of the 'enclosure' ditch. There is a gap in the circuit to the north east but no formal out-turned entrance. It is not a Bronze Age round barrow or a hengi-form monument and its origin and date remain questionable.
19	TQ 262 397	4010	11 [RPS 629]	Brookside Cottage	CM GM	Linear features which may show the outline of a former building or series of structures or enclosures with associated field boundaries. There are no extant features on the site in the 1940s.
20	TQ 289 408			Former buildings		Now under car parking, were seen as areas in the grass where modern buildings had been removed in the 1940s.

Summary of LiDAR Assessment

6.3.266 AOC Archaeology undertook a LiDAR assessment in 2016 for the much more extensive 7,400 hectares. study area of the Gatwick R2 scheme (AOC, 2016). Their abstract stated:

'LiDAR data collected by the Environment Agency was manipulated and visualised in conjunction with an assessment of existing HER records in order to identify, characterise and map previously unrecorded features of archaeological interest. Over 200 new features were documented, mostly relating to historic agriculture and land division, but also including several undocumented earthworks, enclosures, mounds and other features likely to be of archaeological importance'.

6.3.267 The LiDAR results have been cross-referenced with the walkover survey results pertinent to the present Project (Figure 6.3.64) as follows:

6.3.268 Walkover observation 1a – '*S-curve form of the county boundary hedgerow, to the west of the Brook Farm suggests that this boundary may be of medieval date'*. The AOC report states: *'the boundary is visible as a hedgerow within modern fields, located in the vicinity of other relict field boundaries*'.

6.3.269 Walkover observation 19 - '*a series of linear banks and a double bank of a north/south route noted within and flanking the west side of Upper Pickett's Wood, north of Tinsley Green. Probably post-medieval*'. The AOC report states: '*Field boundaries and drainage…are visible beneath scrub vegetation as a series of banks and ditches*'.

6.3.270 The LiDAR results have also been cross-referenced with the aerial photographic evidence (Figure 6.3.7) and the relevant results for the present study are as follows:

6.3.271 AP05 – '*This site was identified as a possible enclosure. Whilst there are some very faint anomalies in the crop and grass which show across this area, there is nothing on the original scan or print – both were examined to indicate a double ditched circular enclosure*.' The AOC report states: '*there is no evidence of an enclosure in the LiDAR data*'.

6.3.272 AP06 – '*There is no evidence of an enclosure in the LiDAR data'*.

6.3.273 AP08 – '*Linear features seen as marks in grass, which could possibly be eroded ridge and furrow, but more likely modern agricultural features or drainage as none of these features are seen as upstanding in the 1940s'*. The AOC report states: *'Linear features are visible in this field, but are probably related to modern cultivation*'.

6.3.274 AP12 – '*Circular feature which was upstanding in the 1940s and still visible as a mark in grass in 1969. This was in a small field or garden, and may have been an ornamental garden feature or possibly a WWII defensive site. It is no longer extant*'. The AOC report states: '*Nothing corresponding to this feature is visible in the LiDAR*'.

6.3.275 AP13 – '*Two circular features seen on 1940s and later APs which were possibly bomb craters, although their close spacing is not typical of these features. They are no longer extant*'. The AOC report states: '*Nothing corresponding to these features is visible in the LiDAR*'.

6.3.276 AP14 – '*Relict post inclosure/modern field boundaries showed as marks in grass on the extent of the airport, and are now built over and destroyed*'. The AOC report states '*Nothing corresponding to these features is visible in the LiDAR*'.

6.3.277 AP18 – '*Sub circular cut feature seen clearly on APs taken in 1941 and in 1965. Two sections of curvilinear possible ditch are visible, but there is not a complete 'circuit'. The area has been substantially redeveloped and landscaped. There were many military defensive earthworks in this area which lay within the boundary of the Gatwick Racecourse in the 1940s, and this feature may be military. However, its curvilinear form is indicative of a possible IA 'banjo' type stock enclosure. There are two apparent small linear 'entrance' features on the south side of the 'enclosure' ditch. It is not a BA round barrow or a hengi-form monument and its origin and date remain questionable. 104-s APs show some linear ditches which may be antilanding defences. These are no longer extant as the area has been developed at the present North Terminal*.' The AOC report states: '*Nothing corresponding to these features is visible in the LiDAR*'.

6.3.278 AP20 – '*Former buildings. Now under car parking areas, were seen as areas in the grass where modern buildings had been removed in the 1940s*'. The AOC report states: '*No evidence for this feature is present in the LiDAR data*'.

6.3.279 The AOC LiDAR assessment for Gatwick R2 highlighted 15 areas of key archaeological interest within the R2 study area (AOC 2016, Figure 3.1.2). None of these key areas of potential interest are within the Project site boundary.

6.3.280 The LiDAR assessment did identify an oval enclosure in woodland within the eastern edge of the Project site (west of the B2036 Balcombe Road), however this 150 metre by 80 metre enclosure is considered to be likely of likely modern origin (Site 620).

6.3.281 Within the defined study area, potentially the most significant identification from the LiDAR assessment was to the south of Gatwick at Amberly Farm (Site 693 - north of Langley Green) and was described as follows:

'Banked enclosure at Amberley Farm. A sub-rectangular enclosure, measuring 65m NNE/SSW by 37m WNW/ESE internally is visible immediately S of Amberley Farm historic farmstead. The enclosure is defined by a bank 10m in width, best preserved on the W. The interior of the enclosure is subdivided E/W into two areas, with a break in the dividing ditch. It is possible that a curving ditch on the opposite side of the River Mole, 200m to the NW, is a related feature. The enclosure is likely to represent a former stock and/or settlement-related compound. It appears typical of the Iron Age/Romano-British period although later date is also possible'.

6.3.282 A number of former field boundaries are noted which are in general accordance with the known post-medieval field system and relate to hedge removals, including examples in the vicinity of Brook Farm.

6.3.283 In addition, a series of palaeochannels of the River Mole, Crawter's Brook and Gatwick Steam, mentioned above within the Bronze Age section, have been identified to the south of the Project site boundary.

6.3.284 The LiDAR also identified a possible medieval motte moat with a slighted mound just to the south west of the defined study area (but labelled as part of Site 618 and within a red ANA). The AOC LiDAR assessment reported the find as follows:

'Enclosure/ringwork (possible) south of Ifield Court, River Mole (adjacent or within offsetting zone of proposed new woodland creation). A circular ringwork, 42m in diameter is located at the confluence of the River Mole and Ifield Brook. Although ploughed to only c. 0.3m in height, the central mound is defined by a wide circular moat which is interrupted to form a probable entrance on the E. The annular ditch measures 56 m in external diameter and may have been connected to the Mole via a narrow, curving channel located on the W. A drainage channel, probably modern

in origin, leads from the S side of the ditch. Although a date is difficult to assert, it is possible that the site is a defensive earlier medieval motte, perhaps a precursor to the moated settlement at Ifield Court, 300m to the north. Given the clear evidence for a central mound, other possible explanations include a large prehistoric or later tumulus, or possibly a small domestic moated site. However, prior to intrusive investigation the function and date remains speculative'.

Geophysical Survey Conducted for the Project

Introduction

6.3.285 A programme of geophysical survey (magnetometry) has been conducted at specific locations within the Project site boundary beyond the airfield. The scope and the methodology for this survey programme was set out within a Written Scheme of Investigation (RPS, 2019) and was agreed by the appropriate archaeological advisors to the local planning authorities.

6.3.286 An interim report has been produced that describes the methodologies used and the results of the survey (SUMO, 2019). Greyscale and trace plots were produced for each area of survey.

6.3.287 The interim report describes the anomalies located in each survey area and the potential for such anomalies to be of archaeological interest. The interim report also provides an indication of the confidence rating that can be placed on the results.

6.3.288 The survey areas were identified as Areas A-I (with E and G eventually not used) and their locations are indicated on Figure 6.3.8.

Results

6.3.289 *Area A*: No features of potential interest were identified by the geophysical survey in this area (Figure 6.3.9). The only anomalies represent former field boundaries known from historical maps (Site 865), along with some evidence of the former presence of ridge and furrow earthworks which are no longer discernible other than as traces picked up by this survey (Site 866).

6.3.290 *Area B*: Several possible features of archaeological interest were identified, including an apparent sub-rectangular enclosure (Site 861) at the eastern edge of the survey area and extending beyond the survey area (Figure 6.3.10). The linear feature forming the west side of the enclosure is well-defined, and in the northern part it is mirrored by a parallel feature. This may represent a livestock drove or funnel along the northern side of the enclosure. Another possible enclosure is suggested by a shorter linear anomaly to the south west.

6.3.291 A pattern of north-south aligned anomalies is also present across the survey area. Given their straight form (rather than the S-curve form typical of medieval ridge and furrow) these are likely to represent post-medieval arable practices (Site 866).

6.3.292 *Area C*: This land to the west of Brook Farm is bordered to the north by Man's Brook. A meandering linear anomaly just south of the stream (Site 864) may represent a former channel of the stream (Figure 6.3.10). A potential archaeological feature was recorded as a *c*. 100 metre length of curving ditch within the eastern area of the field (Site 862). This is to the south of the HER reference to a possible banjo enclosure (Site 635) and the anomaly does not suggest this type of enclosure. However, its curvilinear form is suggestive of a later prehistoric date (Bronze Age or Iron Age), most probably used for stock management.

6.3.293 This area also contains a pattern of linear anomalies which are perpendicular to the north/south alignment recorded to the south in Area B, although traces of a separate area of north-south aligned arable features are suggested in the northern part of Area C (Site 866).

6.3.294 The smaller field to the south east was less apparently successful due to magnetic debris interference and no anomalies of potential archaeological interest were noted.

6.3.295 *Area D*: The survey in this area was also notably less successful due to background magnetic noise, possibly associated with arable soil improvement techniques. However, two possible north/south aligned linear anomalies were noted in the northern field and probably represent former field boundaries (Site 865), whilst a further north west/south east aligned linear anomaly of unknown derivation was noted in the southern field (Figure 6.3.10). The pattern of furrows in these fields (if present) was obscured by the interference.

6.3.296 *Area F*: This is an area of horse paddocks. The survey of the eastern paddocks did not identify any potential archaeological features of note, although there were several discrete anomalies and three short linear anomalies that were considered to be of uncertain origin (Figure 6.3.11).

6.3.297 The survey of the larger western field has shown a high degree of interference for the majority of its area. This has unfortunately precluded identification of any archaeological features. The north eastern zone proved more susceptible to magnetometer survey, but the only visible feature was a north east/south west aligned modern service.

6.3.298 *Area H*: The survey of this area to the north east of Brook Farm identified a cluster of pit-like anomalies over a *c*. 15 metre diameter area in the centre of the field (Figure 6.3.10). A reasonably well-defined linear feature appears to provide an eastern boundary to this activity, with a potentially similar feature on the western side. If this group of features (Site 863) are contemporary, then they are most likely to be of prehistoric date.

6.3.299 *Area I*: This area was located to the south east of the Crawley STW including the area of previously known and partially excavated Iron Age archaeology. The survey area was intended to include all four small fields shown on Figure 6.3.12, but it was not possible to survey the north eastern field due to vegetation and tipping.

6.3.300 The south east field was least subject to magnetic disturbance and clearly identified the remnants of the former haul road (two parallel modern ditches) created/operative in 2013/2014 and visible, along with the former construction compound for the Flood Storage (Control) Reservoir on the contemporary Google Earth image.

6.3.301 Magnetic disturbance is greater in the north western area, which is theoretically least disturbed. There is a hint of a north/south aligned linear feature but otherwise it is possible that the interference relates to a thin layer of alluvium known from the investigations by Network Archaeology to cap the geology in that area. The absence of clear archaeological identifications is not considered reliable in this instance. This is because the examined archaeological remains located within the two Network Archaeology excavations for the wheel-wash and construction compound areas clearly extended beyond those areas into the zones of Area I that have not been previously affected.

6.3.302 Overall the geophysical survey has proved successful in its identification of a palaeochannel and also ditches, pits and enclosures of probable archaeological interest in the land at the western end of the Project site (survey Areas B, C, D and H) with few potential features identified in the remaining survey areas.

Truncation

6.3.303 An initial consideration of previous truncation (disturbance through agricultural activities and development) has been

considered at this stage for the land within the Project site boundary.

6.3.304 Considerable or even total destruction of potential below-ground archaeological deposits as a result of previous development activity is likely throughout the majority of the operational airport. This includes the modified/culverted route of the River Mole through the Gatwick North West Zone and beneath the runways. The initial diversion of the river took it to the north of the North Terminal, whilst more recently it was diverted around the North West Zone (Framework Archaeology, 2001a, Figure 6).

6.3.305 The previously trenched (Framework Archaeology, 2008) greenfield land and the un-trenched Brockley Wood woodland areas of the North West Zone are only plough-disturbed, and there are also partially wooded green strips along the northern side of the perimeter road at the south west edge of the airport where previous disturbance through development activity is likely to be minimal.

6.3.306 The area to the east of the London-Brighton railway is relatively heavily disturbed by the STW, car parks and lakes (the Pollution Control Lagoon and Flood Storage (Control) Reservoir). Horleyland Wood, Upper Pickett's Wood and the agricultural fields on the east side of the B2036 remain relatively undisturbed by modern development.

6.3.307 Much of the remaining agricultural landscape is likely to be undisturbed below the ploughsoil horizon, although ploughing will have removed the majority of archaeological layers leaving mainly negative features cutting into the subsoil or the basal geology.

6.3.308 Archaeological remains with a high degree of legibility may survive relatively well-preserved within the greenfield areas, with partial survival possible beneath properties and commercial facilities beyond the operational boundary of the airport. The main impact in these areas relates to ploughing and drainage. The former tends to remove the upper levels of features and most horizontal surfaces and layers.

Archaeological Potential - Overview

6.3.309 The areas beyond the operational airport boundary, including land within the Project site boundary, have limited information available with which to gauge archaeological potential; this is mainly due to a general absence of previous survey. The Kent, Surrey and Sussex Weald has traditionally been viewed as an area of poor archaeological potential with the exception of the medieval period, Roman roads and industrial sites. This view, prevalent until the last few years, has now been superseded following a series of recent discoveries including some at the airport itself.

6.3.310 The Wealden Clays are generally unfavourable for arable agriculture (as shown by the predominantly pastoral modern land use). However, where rivers such as the Arun, Adur and Mole and their tributaries cross the West Sussex Weald there is a higher potential for prehistoric and later pastoral farming (particularly where river terrace gravels are present).

6.3.311 Archaeological excavations in 2012-13 of the 46 hectares development at Broadbridge Heath, Horsham, approximately 10 km to the south west of the Project site, has identified the remains of five prehistoric settlements including six round-houses, along with a Roman farm and several medieval settlements including trench foundation buildings. A similar situation is possible at Gatwick where a Late Bronze Age enclosure site and an area of Iron Age and Roman settlement and farming are already known.

6.3.312 The character of the archaeological remains within the Project site boundary is unlikely to be intensive, based on the current state of knowledge. This is largely due to the likely modest scale and short duration of settlements on the Clays, compared to more favourable soils in the Thames Valley, Sussex Coast Plain and the North and South Downs. However, within this general picture some areas of significant and currently unknown activity may be present.

6.3.313 Table 6.3.13 below summarises the key known archaeological sites and areas within the Project site boundary, presented in date order and indicating where mitigation has taken place (if at all). These sites and areas have informed the establishment of the zones of archaeological potential presented as Figure 6.3.13.

Table 6.3.13:Summary of Known Archaeological Material Within the Project Site Boundary

Site Ref	Location	Nature and date of archaeology	Significance/ sensitivity value
Site 568	GAL Flood Storage (Control) Reservoir	Mesolithic worked flint scatter and single Palaeolithic worked flint (partial removal).	Medium (but at least partially investigated).
	(Gatwick Stream).		
Sites 666; 487	Gatwick North West Zone and Charlwood Park Farm including Holiday Parking.	Late Bronze Age settlement and boundary (previously mitigated). ANA at Charlwood Park Farm based on potential (also medieval potential).	Medium before investigation was conducted, now negligible).
Site 498	AHAP between Riverside Garden Park and railway line.	Prehistoric worked flint, Roman finds and Late Iron Age cremation burial (previously removed).	Unknown remaining presence/absence but likely to be low to medium if present.
Sites 484; 485; 735	GAL Flood Storage (Control) Reservoir and Pollution Control Lagoon ('New Lagoon').	Dispersed areas of Iron Age occupation, burials and field systems (previously investigated).	Medium (but at least partially investigated).
Site 485	Former Horleyland Farm (GAL parking east of railway Self Park South and South Valet).	Possible Roman occupation area based on previously removed artefacts (ANA).	Medium if not previously removed by car park construction.
Site 480	Former Park House Farm.	Former (possible) medieval moated site with possible medieval ancestry (now beneath car parks) (ANA).	Medium if not previously removed by car park construction.
Site 861	Geophysical survey Area B.	Possible enclosure and double ditched trackway.	Likely to be low-medium (subject to further investigation).

Site Ref	Location	Nature and date of archaeology	Significance/ sensitivity value
Sites 862; 863	Geophysical survey Areas C and H.	Undated pits and curvilinear features – probably of prehistoric date.	Likely to be low-medium (subject to further investigation).
Site 864	Geophysical survey Area C.	Palaeochannel associated with Man's Brook.	Low (subject to further investigation).
Site 865	Geophysical survey Areas B-D and H.	Undated potential archaeological features – possibly post-medieval field boundaries.	Likely to be low (subject to further investigation).
Site 866	Geophysical survey Areas B and C.	Undated potential remains of post-medieval agriculture.	Likely to be low (subject to further investigation).

Predictive Modelling

6.3.314 Some predictive modelling is possible on the basis of topography, geology and known or suspected settlement patterns.

6.3.315 The well-known preference for south-facing aspects is a recurrent theme in the identification of prehistoric and later settlement zones. For example, south-facing valley sides are preferred for Bronze Age house platforms terraced into the slopes of the Sussex Downs, although it should be noted this general preference is not to the exclusion of other topographical locations (eg Middle Bronze Age occupation sites at Peacehaven slopes and found on opposing sides of the east-west aligned Upper Piddinghoe Valley (Hart, 2015).

6.3.316 Another key topographical category influencing the activities of both hunter-gatherers and farmers were the floodplain corridors, palaeochannels and floodplain edge terraces adjacent. As noted above, the sediment units themselves date from the Pleistocene onwards, whilst subtle changes in relief on the floodplains and associated terraces have had implications for the siting of ancient settlements.

6.3.317 The Late Bronze Age occupation in the Gatwick North West Zone seems to have been consciously placed at and above the 58 metre AOD contour, avoiding lower-lying areas (Framework Archaeology, 2002b). However, climatic variations have affected water-tables and this localised finding does not permit this to be taken as an indication that no settlement will be present below 58 metres AOD. The availability of water was clearly of overriding importance for prehistoric settlement in the Weald. Rivers attract settlement for obvious reasons of security of water for human and stock consumption.

6.3.318 Other areas of known prehistoric settlement of the Weald are invariably close to rivers and include the Rivers Arun and Adur near a cluster of Iron Age sites at Broadbridge Heath, Horsham (Margetts, 2018), Burstow Stream at Horley (ASE, 2009) and at Westhawk Farm and Brisley Farm near Ashford in Kent (Booth, *et al.,* 2008; Stevenson, 2013).

6.3.319 The Ashford prehistoric sites (7.44 hectares combined) are situated within the Weald Clay Vale in the upper valley headwaters of the Great Stour river at around 39-45 metres AOD with the East Stour river located to the east. These sites, like those demonstrated at Broadbridge Heath, Horley and Gatwick, were associated with former tributary streams that are now present as silted-up palaeochannels.

6.3.320 Pleistocene Head deposits are formed within periglacial conditions south of the ice-sheets and can produce Palaeolithic artefacts such as handaxes, deposited on the former land-surface during the Middle to Upper Palaeolithic. Artefacts of earlier phases of the Palaeolithic are likely to have been removed from their primary contexts by subsequent freeze-thaw processes.

6.3.321 Alluvium has the potential to seal and mask earlier palaeochannels, which may contain peat and alluvium of archaeological interest. Low-lying, river-bank locations were attractive sites for early Mesolithic camps involved with fishing and fowling and for early farmers of the Neolithic and the Bronze Age. Alluvium can also seal early settlements and field-systems that were sited near to rivers due to their advantages for water provision, fishing and fowling and as early communication route corridors.

6.3.322 Where alluvium is present, its removal may expose relatively well-preserved earlier prehistoric archaeology. During alluvium formation, floodplain locations were less attractive for inhabitation but remained useful for stock-grazing (and hence associated settlement) due to the presence of nutrient-rich pastures kept fertile by the deposition of silts.

6.3.323 The medieval settlement around Gatwick and Crawley is based upon dispersed moated sites, hamlets and villages, some of which survive as modern settlements or as archaeological earthworks. The Broadbridge Heath example has also shown that other dispersed settlement forms in this area include long houses or byres within farmyard compounds. Therefore, the known moated site locations may not be the only forms of dispersed settlement within the Project site boundary.

6.3.324 Given the location of a major medieval and post-medieval ironworks and forges at Crawley generally, including the forge at Tinsley Green in addition to the Westfield Bloomery, there is some potential for further forge/bloomery sites, dumped concentrations of slag (perhaps used as metalling), hammer ponds and medieval and post-medieval mine pits.

6.3.325 Zones with high archaeological potential comprise:

- areas of known or suspected specific locations of medieval and post-medieval inhabitation and industry; and
- areas immediately adjacent to previously investigated fragments of significant archaeology.

6.3.326 Zones with medium to high archaeological potential comprise:

- topographical ridges and hills, particularly south facing-slopes;
- river and stream corridors in including flanking terraces; and
- the corridors of medieval and post-medieval lanes.

6.3.327 Zones of low to medium archaeological potential comprise:

- areas of Weald Clay distant from watercourses, known lines of communication and sites of known potential.

6.3.328 Therefore, the corridors of the Gatwick Stream, Crawter's' Brook and River Mole have a high potential to contain palaeo-environmental deposits of low to medium significance and generally has medium to high potential to contain archaeological remains from the Mesolithic period onwards. The significance of any remains is likely to vary from low to medium/high depending on completeness, rarity and degree of preservation.

6.3.329 The identified zones of archaeological potential are indicated on Figure 6.3.11 and described as follows:

Areas of High Potential

6.3.330 These are areas where it is possible to predict, with reasonable confidence, specific localities likely to contain archaeology of low to medium significance. The predicted sites include Crawley and Horley ANAs/AHAPs comprising:

- a Crawley ANA for Iron Age settlement evidence and possible Roman settlement evidence (Sites 485, 696 and

735) at the former Horleyland Farm, now part of the airport's eastern car parks and incorporating a pollution control lagoon (also known as 'New Lagoon') within its southern area;
- the Crawley ANA site at Park House Farm (Sites 480, 695 and 715) for a former homestead moat, now airside within the south west part of the airport;
- an area of Iron Age settlement and burial evidence is a Crawley ANA (Site 484), located to the south east side of the Crawley STW. This area was partially investigated to mitigate impacts from a former construction compound and a wheel-wash facility. To the immediate west of the ANA, extensive archaeological trial trenching ahead of an earlier flood attenuation project known as the Flood Storage (Control) Reservoir (between the Gatwick Stream and the railway) located a number of palaeochannels and associated alluvium in addition to a Mesolithic flint scatter (RPS 719 and 568);
- the Crawley ANA for Charlwood Park Farm and 'Holiday Parking' area, with potential for the extension of the Bronze Age settlement from the known (and investigated) Gatwick North West Zone to the south (Sites 487; 672);
- a triangular Horley AHAP zone south of Horley Station and north of the Northern Terminal at the east end of Riverside Park, partially within the Project site boundary (Sites 498, 540 and 541), covers an area of prehistoric flintwork including flint arrowheads, Late Iron Age cremation burials, Roman pottery and Roman coins; and
- an area at the northern extent of the Project site immediately adjacent to two Surrey AHAPs, associated with a medieval moated site and the Church of St Bartholomew at Horley (Sites 491, 492, 554, 497, 524, 525, 527, 556 and 711).

6.3.331 Zones of high potential just beyond the Project site boundary include two AHAPs for medieval and post-medieval Charlwood (Sites 493 and 494) and the medieval Charlwood House south of the airport (which has another a Crawley ANA relating to cropmarks located to the west (Site 479). The location of a post-medieval bloomery at Westfield Place (Site 486) at the western extent of the airport perimeter road) may also be considered to have high potential and is covered by an ANA.

Areas of Medium to High Potential

6.3.332 The watercourses and their floodplains are considered to have medium levels of archaeological and palaeo-environmental potential. The River Mole and its tributary streams have influenced prehistoric settlement. Known sites include the small Late Bronze Age settlement and boundary adjacent to the River Mole in the North West Zone and the Iron Age and Roman occupation adjacent to the Gatwick Stream within the south eastern and eastern areas of the Project site.

6.3.333 The superficial deposits within the Project site boundary are of key interest. Pleistocene Gravel and Head deposits have some potential to contain Palaeolithic material, although these artefacts are rarely 'in-situ', having been re-deposited by fluvial action. In later periods the lighter gravels were well-drained and would be attractive for farming. Islands of gravel within heavy claylands are particularly likely to have been sought out by early settlers due to the relative ease of tree-clearance and ploughing using an ard (in stark contrast to the heavy Wealden Clay).

6.3.334 Holocene alluvium (from overbank flooding) and channel deposits of the River Mole, Man's Brook, Crawter's Brook and the Gatwick Stream are most likely to date from episodes in the Mesolithic and/or Neolithic and the Early Iron Age onwards (when water tables started to rise).

6.3.335 Impacts within the floodplain areas of watercourses such as the Gatwick Stream may affect waterlogged archaeological remains of prehistoric, Roman and later dates. In addition to the known alignments of the River Mole, Gatwick Stream etc, there may be other silted-up palaeochannels whose locations are presently unknown and whose soft alluvial fills may be locally affected.

6.3.336 The geophysical survey results also suggest a medium to high potential for prehistoric archaeological remains to be present within the fields to the west, south and east of Brook Farm (geophysical survey areas B, C and H, Sites 861-866). These also have high potential for later (probably post-medieval) remains of ridge and furrow and former field boundaries. The association with occupation is yet to be tested through fieldwork but this area between Man's Brook and the River Mole to the east may have proven attractive. However, the HER suggestion of a large (200 metre diameter) double-ditched circular enclosure (Site 628) and an Iron Age banjo enclosure (Site 635) in these fields is not supported by the subsequent aerial photographic analysis (APS, 2014) and geophysical survey (SUMO, 2019).

6.3.337 Areas of medium to high potential for archaeological remains may include:

- the currently wooded zones to the south west of Brockley Wood and within the operational airport (east of geophysical survey Area B);
- The eastern area of Riverside Garden Park and geophysical survey area F, which are either side of the Surrey AHAP that includes prehistoric flintwork, Roman coins and Late Iron Age cremation burials (Site 498); and
- geophysical survey Area A as it is located just east of a Crawley APA for Roman occupation material and Iron Age settlement (Sites 114 and 283). However, it is possible that the settlement was closer to the Gatwick Stream to the west.

6.3.338 The Weald Clay area has a general potential to produce evidence of ironworking but, in addition to the bloomery site cited above, there are areas of general potential close to Forge Farm at Tinsley Green (although most if not all of the industrial remains may be contained in the area just to the south of the Project site boundary). Bell pits associated with the 'Pit Croft' place-name have been noted beyond the south west extent of the airport. Other place names in this area and associated with ore extraction (outside the Project site boundary) might indicate post-medieval open pit mining that could have had earlier origins.

6.3.339 It can be reasonably predicted that medieval and post-medieval settlement-related archaeological remains will be present (albeit at a low density) within a corridor extending either side of the medieval and post-medieval routes preserved in the modern landscape and re-constructed on the basis of historic maps.

Areas of Low to Medium Potential

6.3.340 Weald Clay was formerly considered to have been actively avoided by prehistoric settlement, but this position can no longer be sustained (Margetts, 2018). The Weald Clay supports predominantly pastoral economies as indicated by the distribution of medieval moated sites and other settlement forms, many of which are known and are included in the areas of high potential described above.

6.3.341 Weald Clay areas also have potential to contain low densities of currently unknown more isolated settlement sites whose precise locations cannot be ascertained at this stage.

6.3.342 There will also be landscape remains and perhaps some further ironworking sites and extraction areas. In particular, the geology includes seams of ore and this resource has been systematically exploited since the Early Iron Age. The Gatwick area is located just beyond most of the known Iron Age and Roman ironworking areas, although one confirmed site is known nearby at Crawley.

6.3.343 The heavily built-over areas of the airport (Site 746) have low potential for survival of archaeology, including remnants of the

former horse racing track, Charlwood Park, and various historic farmsteads that were previously located within the boundary of the airport.

Areas of Low Archaeological Potential But With Some Potential for Palaeochannels

6.3.344 As described above, in general the watercourses and their floodplains are considered to have medium levels of archaeological and palaeo-environmental potential. However, two areas in the western part of the airport are associated with the former alignment of the River Mole but the overall archaeological potential in these two areas is known to be greatly reduced as a result of previous archaeological investigation and/or known development.

7 References

AOC Archaeology (2007) A Desk Based Assessment of Q-park, Gatwick Airport, West Sussex. Unpublished report.

AOC Archaeology (2016) Gatwick Airport R2 Heritage Assessment: LiDAR Analysis. AOC Report 23373, May 2016.

Air Photo Services (APS), 2014, Gatwick Runway 2, Option 3: Assessment of Aerial Photographs for Archaeology, Air Photo Services, March 2014.

Archaeology South-East (ASE) (2009) Excavations in North East Horley, Surrey. A Post-excavation Assessment and Updated Project Design. Unpublished report, Archaeology South East, May 2009.

Archaeology South-East (ASE) (2010) A Post-excavation Assessment and Updated Project Design for Excavations at the Brighton & Hove Waste Water Treatment Works, Lower Hoddern Farm, Peacehaven, East Sussex (Stage 3). Unpublished report, Archaeology South East, December 2010.

Archaeology South-East (ASE) (2013a) Broadbridge Heath, West Sussex: A Post-excavation Assessment and Updated Project Design Report. Unpublished report, Archaeology South East, December 2013.

Archaeology South-East (ASE) (2013b) Final and updated Project Design for Excavations on land at North East Horley, Surrey. Unpublished report, Archaeology South East, July 2013.

Bartlett Clarke Consultancy (2011) Gatwick Airport: Pollution Control Lagoon – Archaeo-geophysical survey. unpublished report.

Bates, M. R. (1998) A Geoarchaeological Evaluation of Trenches from the Crawley North East Sector (W4324) Site Evaluation Works, West Sussex, unpublished report, March 1998.

Bennell, M. (1998) 'Under the road. Archaeological discoveries at Bronze Age Way, Erith'. London: Bexley Borough Council.

Bewley, R. (2003) Prehistoric Settlements. Tempus, Stroud.

Bird, J. and Bird, D. G. (eds) (1987) The Archaeology of Surrey to 1540. Stroud, Tempus.

Booth, P., Bingham, A. and Lawrence, S. (2008) The Roman roadside settlement at Westhawk Farm, Ashford, Kent: excavations 1998-9. Oxford Archaeology Monograph Series, 2.

British Geological Survey (n.d.) Geology of Britain Viewer [online]. Available: [redacted] [accessed: 29/11/2019].

The British Museum and the Department for Media, Culture and Sport (n.d.) Portable Antiquities Scheme [online]. Available: [redacted] [accessed: 29/11/2019].Brown, L., Lewis, J. and Smith, A. (2006) Landscape evolution in the Middle Thames Valley. Heathrow Terminal 5 excavations, Vol. 1, Perry Oaks. Framework Archaeology Monograph No. 1.

Civil Aviation Authority (2021) Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements, CAP1616, Civil Aviation Authority, 4th edition, March 2021.

CgMs (1997) An Archaeological Desk Based assessment of land at Crawley, North East Sector Development Site, unpublished report, CgMs Consulting.

CgMs (1998a) An archaeological walkover survey of land at the North East Sector Development Site Crawley, unpublished report, CgMs Consulting.

CgMs (1998b) Description of Historic Buildings at Forge Farm and Toovies Farm, unpublished report, CgMs Consulting.

Chartered Institute for Archaeologists (2014) Standard and Guidance for historic environment desk based assessment 2014, revised 2017.

Chichester District Council, East Sussex County Council and West Sussex County Council (2019) Sussex Archaeological Standards.

Cleere, H. and Crossley, D. (1995) The Iron Industry of the Weald. Leicester University Press.

Cotton, J., Crocker, G. and Graham, A. (2004) Aspects of Archaeology & History in Surrey: towards a research framework for the county. Surrey Archaeological Society, Guildford.

Crawley Borough Council (2015) Crawley 2030: Crawley Borough Local Plan 2015-2030

Crawley Borough Council (2021) Draft Crawley Borough Local Plan 2021-2037

Crawley Borough Council and Ifield Village Association (2018) Ifield Village Conservation Area Statement February 2018 [online] Available at: http://www.crawley.gov.uk/pw/web/int169915

Cunliffe, B. (2005) Iron Age communities in Britain, 4th edn. Routledge.

Dent, J. (1982) 'Cemeteries and settlement patterns on the Yorkshire Wolds', Proceedings of the Prehistoric Society **48**, 437-57.

Department for Culture, Media and Sport (DCMS) (2013) Scheduled Monuments & nationally important but non-scheduled monuments, Department for Culture, Media and Sport, October 2013.

Department of Communities and Local Government ((2010) PPS5 Planning for the Historic Environment: Historic Environment Planning Practice Guide 2010.

Department for Transport (2015) National Networks National Policy Statement, December 2014.

Department for Transport (2018) Airports National Policy Statement, June 2018.

Domesday Book (n.d.) Domesday Online [online]. Available: [redacted] [accessed: 29/11/2019].

Drewett, P., Rudling, D. and Gardiner, M. (1988) The Archaeology of the South East to AD1000. Longman.

Forum Heritage Services (2006) Historic Farmsteads and Landscape Character in West Sussex, unpublished report.

Framework Archaeology (2001a) North West Zone Development Phase 2 – Gatwick Airport, Archaeological Desk Based Assessment, unpublished report, ref. 49144.02.

Framework Archaeology (2001b) Gatwick Airport: Car Park Z (West) Archaeological Evaluation Report, unpublished report.

Framework Archaeology (2001c) Gatwick Airport, North West Zone Development Phase 1: Archaeological Evaluation Report, Contractor's Compound and Aircraft Stands, unpublished report, ref. 92005.02.

Framework Archaeology (2002a) Gatwick Airport, North West Zone Development Public Long-Term Block Car Park, Summary of Archaeological Evaluation and Excavation, unpublished report, ref. 92002.02.

Framework Archaeology (2002b) Gatwick Airport, North West Zone Development Phase 2 – Option 3, Archaeological Evaluation Report, unpublished report, ref. 92003.02.

Framework Archaeology (2007a) Proposed Immigration Removal Centre, Perimeter Road South, Gatwick Airport, West Sussex, unpublished evaluation report ref: 91911.02.

Framework Archaeology (2007b) Proposed Immigration Removal Centre, Perimeter Road South, Gatwick Airport, West Sussex, unpublished watching brief report ref: 91911.03.

Framework Archaeology (2007c) Gatwick Airport: Proposed Hotel, Edgeworth Site, Buckingham Gate, Crawley, West Sussex: Archaeological Evaluation Report, unpublished report.

Framework Archaeology (2008) Gatwick Airport North West Zone Project. Gatwick Airport West Sussex: Archaeological Evaluation Report, unpublished report.

Gardiner, M. (1990) 'The Archaeology of the Weald – A Survey and a Review', Sussex Archaeological Collections, 128.

Germany, M., Scruby, A. and Masefield, R. (2015) Excavation of Prehistoric, Roman and Medieval Remains at Priors Green, Takeley, 2006 to 2010. Essex Archaeology and History.

Goldsmith, M. (1987) Crawley and District in Old Picture Postcards. Zaltbommel, European Library.

Gwynne, P. (1990) A History of Crawley. Chichester, Phillimore & Co.

Harper, C. G. (1906) The Brighton Road: Speed, Sport and History on the Classic Highway. London, Chapman & Hall Ltd.

Harding, J. M. (1976) Four Centuries of Charlwood Houses. Charlwood Society.

Hart, D. (2010) A Post-Excavation Assessment and Updated Project Design for Excavations at the Brighton and Hove Wastewater Treatment Works, Lower Hoddern Farm, Peacehaven, East Sussex, Archaeology South East unpublished report.

Hart, D. (2015) Around the Track. Archaeological Excavations at Peacehaven, East Sussex. Spoil Heap Publications. London.

Hawtin, T. and Peyre, L. (2008) An archaeological watching brief at Balcombe Road, Horley, West Sussex, Archaeology South East unpublished report No. 08/182.

Historic England (n.d.) The National Heritage List for England [online]. Available: http://www.historicengland.org.uk/listing/the-list/ [accessed: 29/11/2019].

Historic England (2015a) Historic Environment Good Practice Advice in Planning: 1 The Historic Environment in Local Plans July 2015.

Historic England (2015b) Historic Environment Good Practice Advice in Planning: 2 Managing Significance in Decision-Taking in the Historic Environment July 2015.

Historic England (2016) Great London Archaeological Priority Area Guidelines July 2016.

Historic England (2017a) Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment 2008 (new Consultation Draft 2017).

Historic England (2017b) Historic Environment Good Practice Advice in Planning: 3 The Setting of Heritage Assets December 2017.

Historic England (2019) Statements of Heritage Significance: Analysing Significance in Heritage Assets, Historic England Advice Note 12, October 2019.

Historic England (2020) Historic Environment Good Practice Advice in Planning: 4 Enabling Development and Heritage Assets June 2020.

Hodgkinson, J. S. (2000) 'A Gazetteer of Medieval Iron-making sites in the Weald'. Wealden Iron, 2nd Series, No. 20.

Hodgkinson, J. S. (2004) 'Iron Production in Surrey' in Cotton et al, 2004.

Horsham District Council (2015) Horsham District Planning Framework (excluding South Downs National Park). November 2015. [Online] Available at: https://beta.horsham.gov.uk/__data/assets/pdf_file/0016/60190/Horsham-District-Planning-Framework-2015.pdf

Horsham District Council (2020) Draft Horsham District Local Plan 2019-2036. Available at: https://strategicplanning.horsham.gov.uk/consult.ti/LocalPlanReview/viewCompoundDoc?docid=10336756

Hughes, F. (2012) The Moat House Ifield Court Farm Hovel – Evaluation of building with supporting documentary information, unpublished report.

Institute of Historical Research (n.d.) British History Online [online]. Available: http://www.british-history.ac.uk/ [accessed: 21/11/2019].

Jepson, B. (1997) Tinsley Green, undergraduate essay in Landscape Conservation Policy and Practice, copy in West Sussex HER.

Kent County Council (n.d.) South East Research Framework [online]. Available: https://www.kent.gov.uk/leisure-and-community/history-and-heritage/south-east-research-framework [accessed: 29/11/2019].

Malden, H.E. (ed.) (1911) A History of the County of Surrey, Volume 3.

Margary, I. D. (1955) Roman Roads in Britain. Phoenix House. London

Margary, I. D. (1965) Roman Ways in the Weald, 3rd revised edition. Phoenix House. London.

Margetts, A. (2013) Broadbridge Heath Post-excavation Assessment Report, unpublished report.

Margetts, A. (2018) Wealdbaera: excavations at Wickhurst Green, Broadbridge Heath and the landscape of the West Central Weald. Spoilheap Publications.

Masefield, R. and Williams, D. (2003) 'A Roman Tilery at Reigate', Surrey Archaeological Collections Vol. 90.

Mid Sussex District Council (2018) Mid Sussex District Plan 2014 – 2031. March 2018. [Online] Available at: https://www.midsussex.gov.uk/media/3406/mid-sussex-district-plan.pdf

Mills, A. D. (1998) Dictionary of English Place Names. Oxford University Press.

Mills, A. D. (2011) Dictionary of English Place Names, revised edition, Oxford University Press.

Ministry of Housing, Communities and Local Government (2014) National Planning Practice Guidance.

Ministry of Housing, Communities and Local Government (2021) National Planning Policy Framework, July 2021.

Mole Valley District Council (2009) Mole Valley Core Strategy 2009 – 2026. October 2009. [Online] Available at: https://www.molevalley.gov.uk/media/pdf/6/s/Core_Strategy_DPD_(Adopted).pdf

Mole Valley District Council (2020) Future Mole Valley 2018-2033: Consultation Draft Local Plan. [Online] Available at: https://molevalley.gov.uk/sites/default/files/2020-05/Future%20Mole%20Valley%20draft%20Local%20Plan%20-%202020%20consultation%20version.pdf

Natural England (2013) Natural Character Area 121: Low Weald.

Network Archaeology (2012a) Gatwick Airport Pollution Control Lagoon: Written Scheme of Investigation for Archaeological Mitigation, unpublished report, March 2012.

Network Archaeology (2012b) Gatwick Upper Mole Flood Storage Reservoir: Archaeological Desk Based Assessment, Field Reconnaissance and Trench Evaluation, unpublished report, November 2012.

Network Archaeology (2013) Gatwick Upper Mole Flood Attenuation Project. Archaeological Mitigation Strategy, unpublished report, March 2012.

Network Archaeology (2014) Gatwick Flood Alleviation Scheme Summary, Interim note with 2013 weekly reports appended.

Ockley Windmill (n.d.) Lowfield Heath Windmill [online]. Available: [redacted] [accessed: 29/11/201].

The Parish of Charlwood and Hookwood (n.d.) Lowfield heath Windmill [online]. Available: [redacted] [accessed: 29/11/2019].

Pettit, P. and White, M. (2012) The British Palaeolithic: Human Societies at the Edge of the Pleistocene World. Routledge, Abingdon.

Peyre, L. (2011) Archaeological evaluation of Land east of London Road, Crawley, West Sussex, Archaeology South East unpublished report No. 11/309.

Place, C. (2003) Excavations at Ford Airfield, Yapton, West Sussex 1999, Heritage Archaeology Report No. 10. Great Dunham.

Rady, J., Holman, J., Masefield, R., Henshaw, R., and Weekes, J. (forthcoming) Archaeological Investigations at 'Thanet Earth', Kent, 2007-2012. Canterbury: Canterbury Archaeological Trust Occasional Paper No. 12.

Reigate and Banstead Borough Council (2014a) Horley Conservation Area Character Appraisal - Draft

Reigate and Banstead Borough Council (2014b) Banstead Conservation Area Appraisal. Draft. June 2014.

Reigate and Banstead Borough Council (2014c) Reigate and Banstead Local Plan: Core Strategy, Adopted July 2014. [Online] Available at: http://www.reigate-banstead.gov.uk/info/20380/current_planning_policy/24/core_strategy

Reigate and Banstead Borough Council (2019) Reigate and Banstead Local Plan: Development Management Plan (Adopted September 2019) [Online] Available at: http://www.reigate-banstead.gov.uk/info/20380/current_planning_policy/888/development_management_plan

Riddler, I. and Trevarthen, M. (2006) The prehistoric and Anglo-Saxon funerary landscape at Saltwood Tunnel, Kent. CTRL Integrated Site Report Series.

Roberts, M. and Parfitt, S. A. (1999) Boxgrove: a Middle Pleistocene hominid site at Eartham Quarry, Boxgrove, West Sussex. English Heritage Archaeology Report No. 17.

RPS (2019) Genesis Project, Gatwick Airport, Surrey and West Sussex: Written Scheme of Investigation for a programme of archaeological geophysical survey, July 2019.

Rudling, D. (ed.) (2002) Downland Settlement and Land-use. The Archaeology of the Brighton Bypass. Archetype Publications/English Heritage, London.

Sewill, R. and Lane, E. (1979) The Free Men of Charlwood. Charlwood Society.

Stevenson, J. (2013) Living by the Sword, The archaeology of Brisley Farm, Ashford, Kent. Monograph 6. Spoilheap Publications. Dorchester.

SUMO (2019) Land adjacent to Gatwick Airport: Geophysical Survey Report (interim), SUMO Services, September 2019, unpublished report ref. 15841.

Tandridge District Council (2014) Tandridge Local Plan Part 2: Detailed Policies 2014-2029. July 2014. [Online] Available at: https://www.tandridge.gov.uk/Portals/0/Documents/Planning%20and%20building/Planning%20strategies%20and%20policies/Current%20and%20adopted%20planning%20policies/Detailed%20policies/The-Local-Plan.pdf

Tandridge District Council (2019) Our Local Plan: 2033 (Regulation 22 submission). January 2019. [Online] Available at: https://www.tandridge.gov.uk/Portals/0/Documents/Planning%20and%20building/Planning%20strategies%20and%20policies/Local%20plan/Local%20plan%202033/Examination%20library/MAIN%20DOCUMENTS/MD1-Our-Local-Plan-2033-Submission-2019.pdf

Temple Group and Cotswold Archaeology (2014) Aviation Noise Metric: Research on the Potential Noise Impacts on the Historic Environment by Proposals for Airport Expansion in England, English Heritage Project No. 6865, Final Report, July 2014.

Thames Valley Archaeological Service (TVAS), (1996) Gatwick Manor Hotel, London Road, Crawley: An Archaeological evaluation, watching brief and desktop study for Scottish and Newcastle Retail, Thames Valley Archaeological Services, unpublished report.

Wells, N. A. Allen, M. J., Carruthers, W. J., Every, R., Mepham, L., Robinson, M., Scaife, R. and Webster, S. (2005) 'Excavation of a Late Bronze Age enclosure site at Gatwick Airport, 2001', Sussex Archaeological Collections, 143, 47-69.

Wessex Archaeology (1993a) The southern rivers Palaeolithic project report no. 2, 1992-1993: The South West and south of the Thames. Trust for Wessex Archaeology Ltd & English Heritage.

Wessex Archaeology (1993b) Charlwood House, West Sussex: Archaeological Monitoring of Groundworks, unpublished report.

Wessex Archaeology (1998) Crawley North East Sector Development Site, Report of a Preliminary Evaluation, unpublished report.

Whitney, K. P. (1976) The Jutish Forest: A study of the Weald of Kent from 450 to 1380 AD. The Athlone Press, London.

Wymer, J. J. (1977) Gazetteer of Mesolithic sites in England and Wales. Council for British Archaeology Research Report No. 22.

Wymer, J. J. (1987) 'The Palaeolithic Period in Surrey', In Bird & Bird (eds) 1987.

Wymer, J. J. (1999) The Lower Palaeolithic occupation of Britain. Salisbury, Trust for Wessex Archaeology & English Heritage.

Yates, D. T. (2007) Land, Power and Prestige. Bronze Age Field Systems in Southern England. Oxford, Oxbow.

8 Glossary

8.1 Glossary of Terms

Table 8.1.1: Glossary of Terms

Term	Description
AHAP	Area of High Archaeological Potential
Alluvium	Unconsolidated material deposited by floodwater
ANA	Archaeological Notification Area
aOD	above Ordnance Datum
APS	Archaeology Project Services
Ard	Simple light form of plough
Assart	Land informally cleared from the woodland
Banjo enclosure	Circular enclosure with long double-ditched entrance funnel – Iron Age date
Barrow	More usually round barrow, a circular burial monument of probable Bronze Age date
Beaker period	Archaeological Period c. 2,600 – 1,800 BC – the transition from the Neolithic into the Bronze Age
BGS	British Geological Survey
Bioturbation	Disturbance of deposit through biological processes, eg by root action or animal burrowing
Bronze Age	Archaeological Period *c.* 2,500 – 800 BC
CAA	Conservation Area Appraisal
Cal BC	Calibrated radiocarbon date within the prehistoric period
CAMP	Character Appraisal and Management Proposals
Causewayed enclosure	Earthwork enclosure of Early Neolithic date
Chalcolithic	Archaeological period usually described as the 'Copper Age'
Cretaceous	Geological Period *c.* 145 – 66 million years ago
Cropmark	Possible archaeological feature recorded on aerial photographs as a differentiated part of a crop in an arable field
CSAI	County Sites of Archaeological Interest
Cursus monument	Neolithic structure represented by two long parallel ditches
Devensian	The most recent glacial period – *c.* 115,000 – 11,700 BP
Early Bronze Age	Archaeological Period *c.* 2,500 – 1,500 BC
Early Iron Age	Archaeological Period *c.* 800 – 400 BC
Early Neolithic	Archaeological Period *c.* 4,000 – 3,000 BC
Early Saxon	Historic Period *c.* AD 410 - 650
Fieldwalking	Methodology for archaeological survey comprising surface artefact collection
GPA	Good Practice Advice
Head deposits	Fragmented material which has moved downslope in a post-glacial environment
HEAN	Historic England Advice Note
Henge monument	Earthwork enclosure of Neolithic date with the ditch positioned outside of the bank
Hengiform monument	Small henge monument
HER	Historic Environment Record
HEV	Historic Environment Value
Hillfort	Hilltop enclosed by earthworks
HLC	Historic Landscape Characterisation
Holocene	The current geological epoch – commenced *c.* 11,700 BP
HUCA	Historic Urban Character Area
Iron Age	Archaeological Period *c.* 800 BC – AD 43
Late Bronze Age	Archaeological Period *c.* 1,100 – 800 BC
Late Iron Age	Archaeological Period *c.* 100 BC – AD 43
Late Neolithic	Archaeological Period *c.* 3,000 – 2,500 BC
Late Saxon	Historic Period *c.* AD 850 - 1066
LiDAR	Light Detection and Ranging
Long barrow	Chambered tomb of early Neolithic date
Lower Palaeolithic	Archaeological Period *c.* 900,000 – 150,000 BC
Medieval	Historic Period AD 1066 - 1530
Mesolithic	Archaeological Period *c.* 12,000 – 4,000 BC
Microlith	Small piece of worked flint or chert used in composite tolls such as spear points
Middle Bronze Age	Archaeological Period *c.* 1,500 – 1,100 BC
Middle Iron Age	Archaeological Period *c.* 400 – 100 BC
Middle Palaeolithic	Archaeological Period *c.* 150,000 – 30,000 BC
Middle Saxon	Historic Period *c.* AD 650 - 850
Modern	Historic Period AD 1900 - present
Mortuary enclosure	Area set aside for burials
Motte	Raised earth mound, often topped with a structure
Mousterian	Lithic industry usually associated in Europe with Neanderthals
NCA	National Character Area
Neanderthal	Extinct species or subspecies of hominin who lived in Eurasia until around 40,000 BP
Neolithic	Archaeological Period *c.* 4,000 – 2,500 BC
NPPG	National Planning Policy Guidance
NPPF	National Planning Policy Framework
NPS	National Policy Statement
Palaeochannel	Former route of river or stream, now infilled

Term	Description
Palaeolithic	Archaeological Period *c*. 900,000 – 12,000 BC
Pleistocene	Geological epoch *c*. 2,580,000 – 11,700 BP
Pond barrow	Type of round barrow with concave depression encircled by an earth bank – Bronze Age date
Post-medieval	Historic Period AD 1530 – 1900
Ring ditch	Penannular trench denoting circular monument, possibly a barrow or round-house
Roman	Historic Period AD 43 - 410
Saxon / Early Medieval	Historic Period AD 410 - 1066
SCC	Surrey County Council
SEO	Statement of Environmental Opportunity
STW	Sewage Treatment Works
TVAS	Thames Valley Archaeological Services
Upper Palaeolithic	Archaeological Period *c*. 30,000 – 12,000 BC
WSCC	West Sussex County Council
ZTV	Zone of Theoretical Visibility

YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)
- 1km buffer from Project Site Boundary
- Scheduled Monument
- Grade I Listed Building
- Grade II* Listed Building
- Grade II Listed Building
- Conservation Area

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Designated Heritage Assets within 1 km of the Project Site Boundary

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 1.2.1	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:25,000

0 250 500 1,000 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0160-11.mxd

YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)
- 1km buffer from Project Site Boundary
- Locally Listed Building
- County Site of Archaeological Interest (Surrey)
- Area of High Archaeological Potential (Surrey)
- Red Archaeological Notification Area (West Sussex)
- Amber Archaeological Notification Area (West Sussex)
- HER Feature
- HER Event
- NMR Record
- Other Building
- Geophysical Anomaly

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Non-designated Heritage Assets within 1 km of the Project Site Boundary

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 1.2.2	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:25,000

0 250 500 1,000 m

YOUR LONDON AIRPORT Gatwick

KEY

Project Site Boundary (PEIR)

Elevation (m aOD)

High : 125

Low : 50

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Topography

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 3.1.1	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:40,000

0 500 1,000 2,000 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0180-06.mxd

YOUR LONDON AIRPORT Gatwick

KEY

Project Site Boundary (PEIR)

Artificial

Made Ground - Artificial

Superficial

Alluvium - Clay, silt, sand and gravel

Head - Clay, silt, sand and gravel

River Terrace Deposits (Undifferentiated) - Sand and gravel

River Terrace Deposits, 1 (Mole) - Sand and gravel

River Terrace Deposits, 2 (Mole) - Sand and gravel

Bedrock

Weald Clay Formation - Clay-ironstone

Weald Clay Formation - Mudstone

Upper Tunbridge Wells Sand - Mudstone

Upper Tunbridge Wells Sand - Sandstone and mudstone

Upper Tunbridge Wells Sand - Sandstone and siltstone, interbedded

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Geology

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 3.1.2	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:25,000

0 250 500 1,000 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0179-07.mxd

YOUR LONDON AIRPORT Gatwick

KEY

Project Site Boundary (PEIR)

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Ordnance Survey Drawing - 1810

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 4.1.1	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:20,000

0 200 400 800 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0243-06.mxd

YOUR LONDON AIRPORT
Gatwick

KEY

Project Site Boundary (PEIR)

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

1st edition OS 6" (to the mile) map – 1874

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 4.1.2	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:20,000

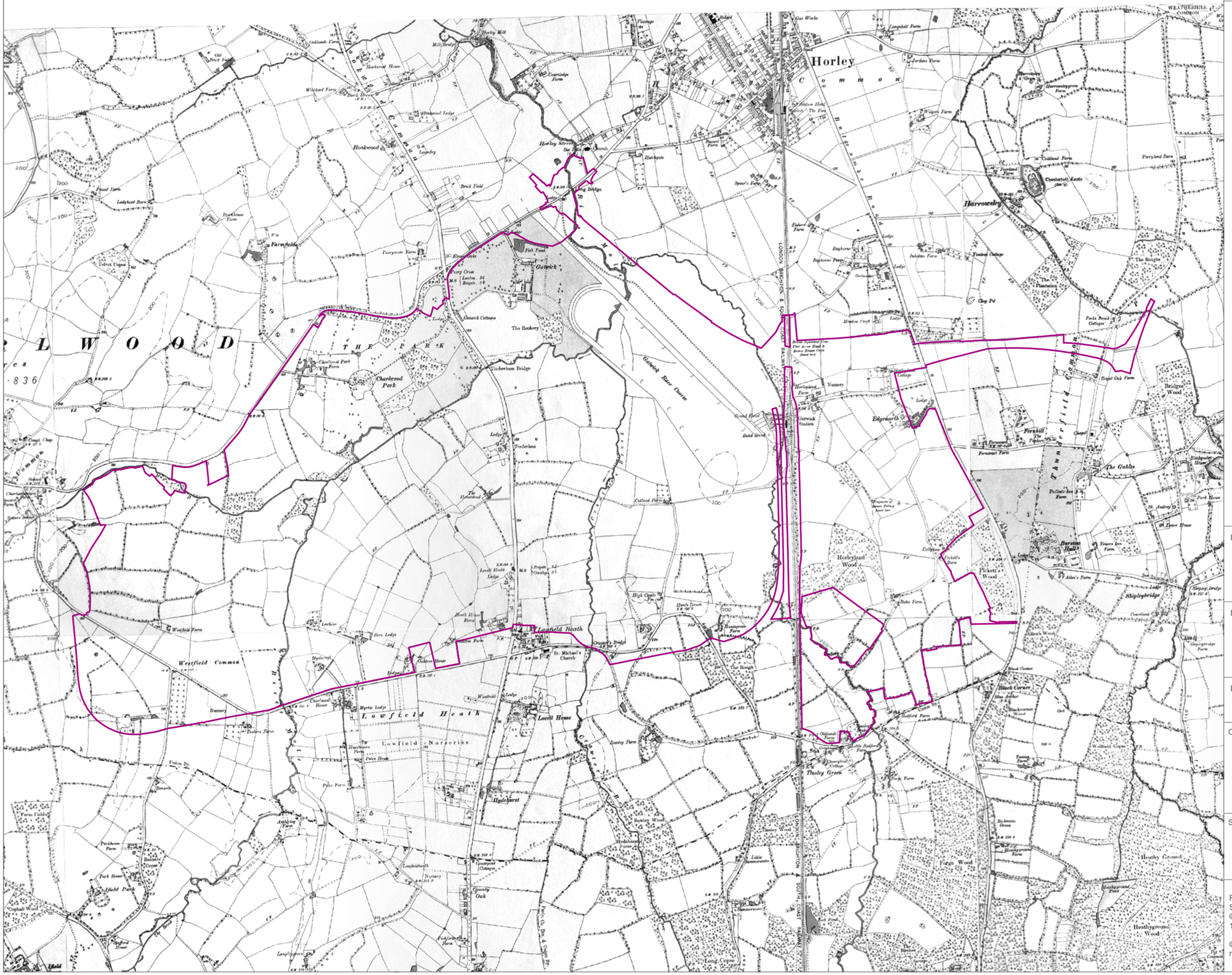
0 200 400 800 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0244-06.mxd

YOUR LONDON AIRPORT
Gatwick

KEY

Project Site Boundary (PEIR)



DOCUMENT

Preliminary Environmental Information Report
Appendix 7.6.1

DRAWING TITLE

2nd edition OS 6" (to the mile) map – 1897

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 4.1.3	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:20,000

0 200 400 800 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0245-06.mxd

YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)
- 1km buffer from Project Site Boundary
- County Boundary

Character Type

- Airfields
- Ancient Semi-natural
- Assarts
- Expansion - other
- Expansion - suburbs
- Extraction
- Formal Enclosure (planned/private)
- Formal parkland
- Historic dispersed
- Informal Fieldscapes
- Informal parkland
- Market Gardens/Allotments
- Motorway junctions (large areas of)
- Non-historic isolated
- Other Industry
- Plantations
- Ponds
- Processing
- Regenerated
- Replanted Ancient Semi-Natural
- Sports fields
- Stations & Sidings

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Historic Landscape Characterisation – Character type (Sussex)

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 4.1.4	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:25,000

0 250 500 1,000 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0187-08.mxd

YOUR LONDON AIRPORT
Gatwick

KEY

- Project Site Boundary (PEIR)
- 1km buffer from Project Site Boundary
- County Boundary

Subtype

- 19th century and later parkland and large designed gardens
- 19th century plantations (general)
- Assarted pre-1811 woodland
- Common edge/roadside waste settlement (post-1811 & pre-1940 extent)
- Industrial complexes and factories
- Large irregular assarts with wavy or mixed boundaries
- Large regular fields with straight boundaries (parliamentary enclosure type)
- Major sports fields and complexes
- Medieval (mottes and baileys; ring works)
- Medium regular fields with straight boundaries (parliamentary enclosure type)
- Medium to large regular fields with wavy boundaries (late medieval to 17th/18th century enclosure)
- Motorway junctions
- Other commons and greens
- Post 1811 & pre-1940 settlement (small scale)
- Post-1811 & pre-1940 settlement - medium estates
- Post-1811 fishponds, hatchery complexes, 'natural' ponds and lakes
- Post-1940 luxury estates
- Post-1940 small to medium estates
- Regenerated secondary woodland on farmland - not plantations
- Regular settlement with paddocks post-1940
- Scattered settlement with paddocks (post-1811 & pre-1940 extent)
- Sewage works/water treatment
- Small rectilinear fields with wavy boundaries
- Small regular fields with straight boundaries (parliamentary enclosure type)
- Smaller designed gardens
- Studs and horse paddocks
- Variable size, semi-regular fields with straight boundaries (parliamentary enclosure type)
- Village or hamlet (pre-1811 extent)

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Historic Landscape Characterisation – Character subtype (Surrey)

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 4.1.5	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:25,000

0 250 500 1,000 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0188-08.mxd

YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)
- 3km buffer from Project Site Boundary
- Scheduled Monument
- Grade I Listed Building
- Grade II* Listed Building
- Grade II Listed Building
- Conservation Area

Zone of Theoretical Visibility

- Existing airport visible, no new visibility
- New elements visible
- Both new and existing elements visible

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Designated Heritage Assets within 3km of the Project site boundary and within the ZTV

DATE

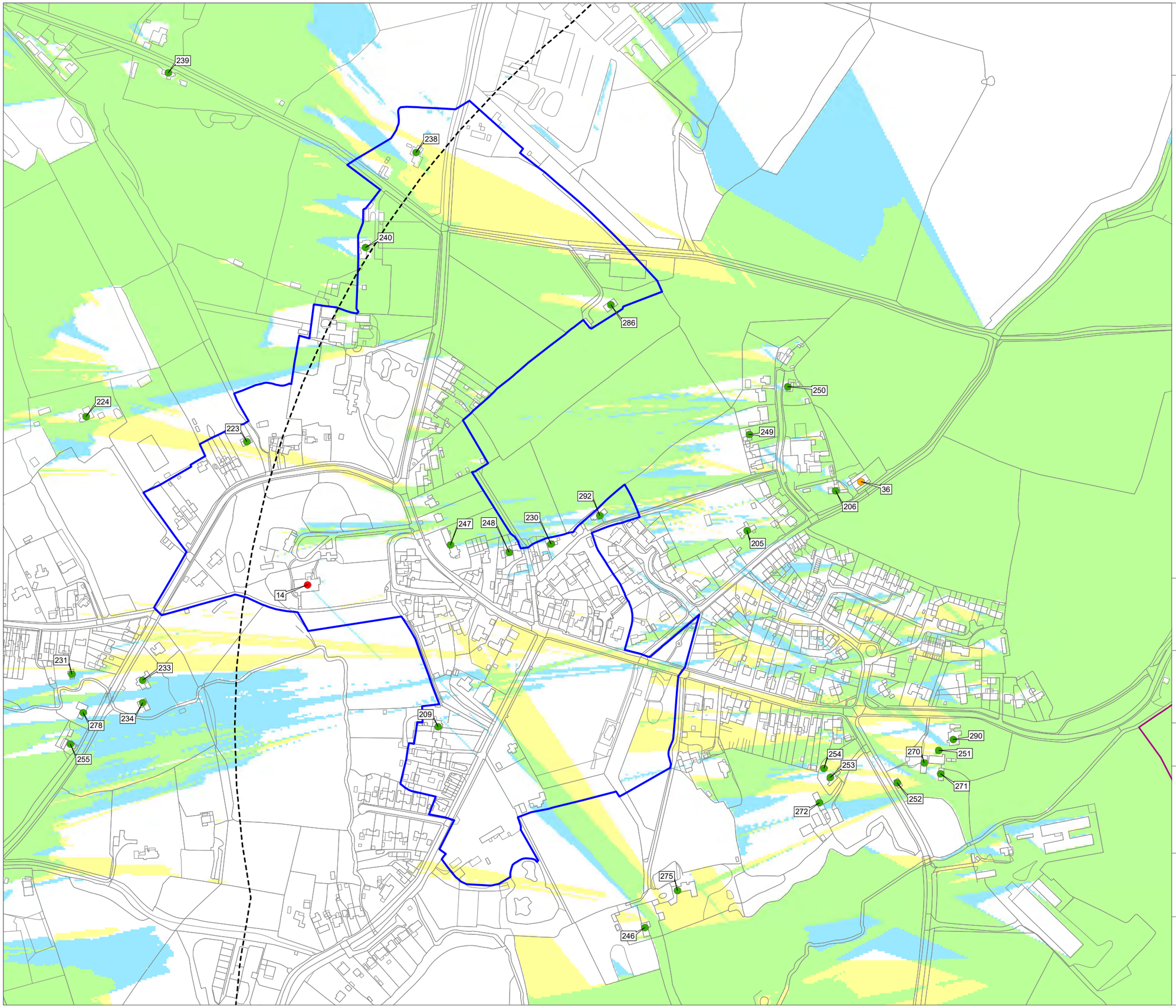
September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 5.2.1	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:40,000

0 500 1,000 2,000 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0235-09.mxd



YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)
- 1km buffer from Project Site Boundary
- Grade I Listed Building
- Grade II* Listed Building
- Grade II Listed Building
- Conservation Area

Zone of Theoretical Visibility

- Existing airport visible, no new visibility
- New elements visible
- Both new and existing elements visible

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Designated Heritage Assets at Charlwood in relation to the ZTV

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 5.2.2	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:4,000

0 12.5 25 50 75 100 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0238-09.mxd

YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)
- Noise footprint with a predicted decrease of 1dB or more
- Noise footprint with a predicted increase of 1dB or more
- Scheduled Monument
- Grade II* Listed Building
- Grade II Listed Building
- Conservation Area

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Predicted 2032 >1 dB Noise Change Footprints – All Designated Heritage Assets

DATE

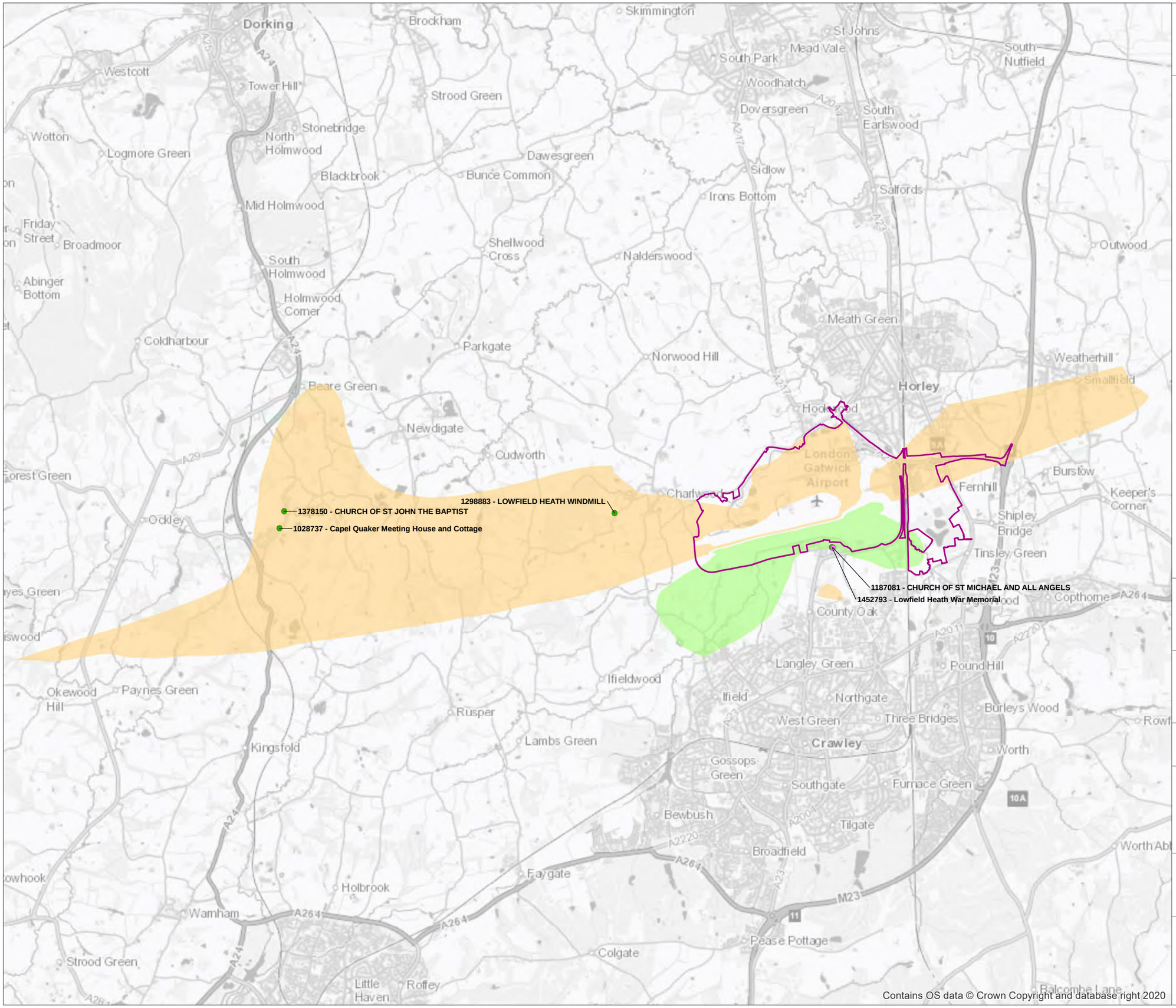
September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 5.4.1	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:65,000

0 500 1,000 2,000 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0528-02.mxd



YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)
- Noise footprint with a predicted decrease of 1dB or more
- Noise footprint with a predicted increase of 1dB or more
- Grade II* Listed Building
- Grade II Listed Building

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Predicted 2032 >1 dB Noise Change Footprints – Noise-Sensitive Designated Heritage Assets

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 5.4.2	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:65,000

0 500 1,000 2,000 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0496-04.mxd

YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)
- Previous Archaeological Works
- Archaeological & Geo-archaeological Test Pits (2001)
- Archaeological Trench / Excavation

Excavation Area
Long Term Block Car Park (2002)
Gatwick NWZ (2008)
Stockpile Area (2002)
Gatwick NWZ (2002)
Compound & Stands Development (2001)
Concrete Batcher Plant (2002)

GTP1 GTP2 GTP3 GTP4 GTP5 GTP6 GTP7 GTP8 GTP9 GTP10 GTP11
TP1 TP2 TP3 TP4 TP5 TP6 TP7

DOCUMENT
Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE
The Gatwick North West Zone Archaeological Results

DATE
September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.1	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: RM

SCALE @ A3 1:5,000

0 25 50 100 150 200 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0218-08.mxd

YOUR LONDON AIRPORT Gatwick

KEY

Project Site Boundary (PEIR)

Intervention
Late Bronze Age
Medieval
Undated

Red line boundary
Proposed development

New evaluation trench
Previous evaluation/excavation
Archaeological feature
Area of made ground

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

The Gatwick North West Zone Archaeological Results - details

DATE

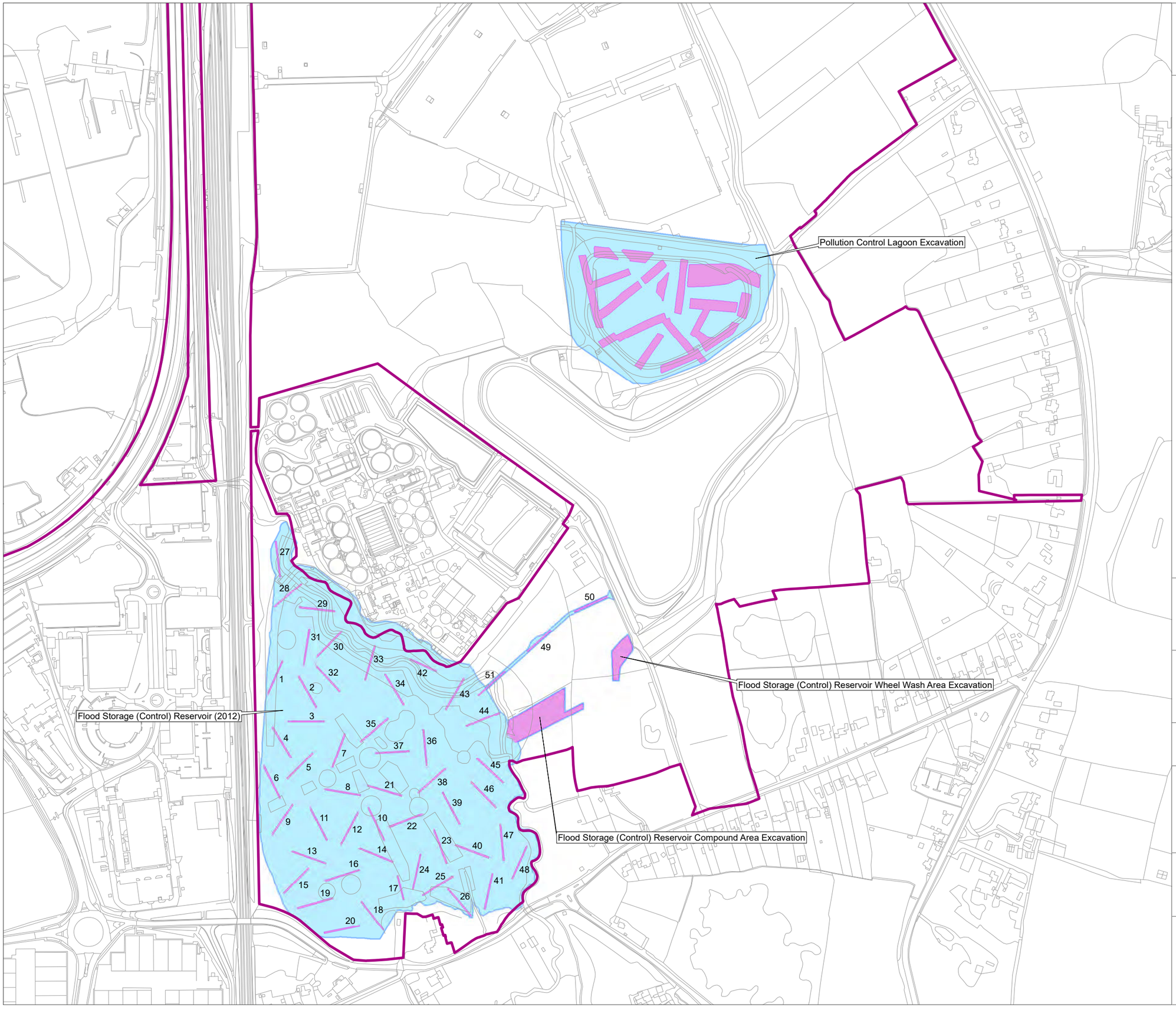
September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.2	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: RM

SCALE @ A3 1:1,500

0 5 10 20 30 40 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0259-07.mxd



YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)
- Previous Archaeological Works
- Archaeological Trench / Excavation

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

The Pollution Control Lagoon and Flood Storage (Control) Reservoir Archaeological Results

DATE

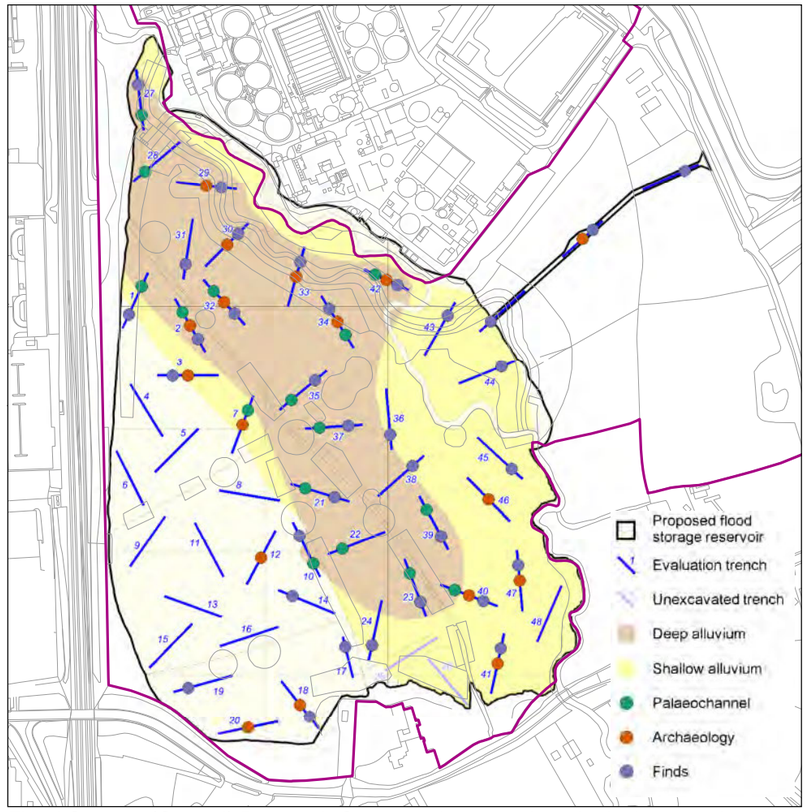
September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.3	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: RM

SCALE @ A3 1:5,000

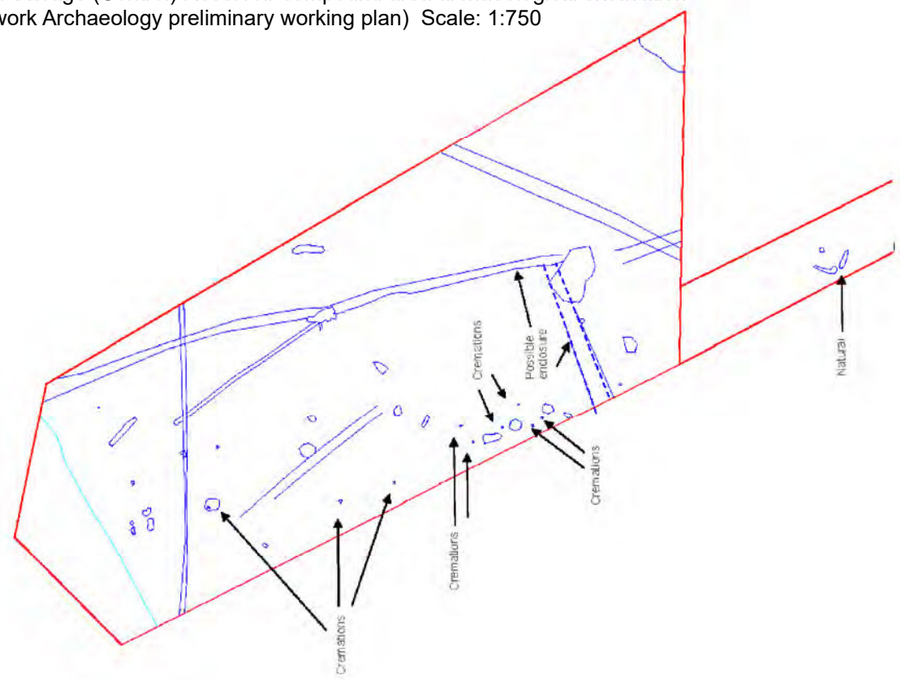
0 25 50 100 150 200 m

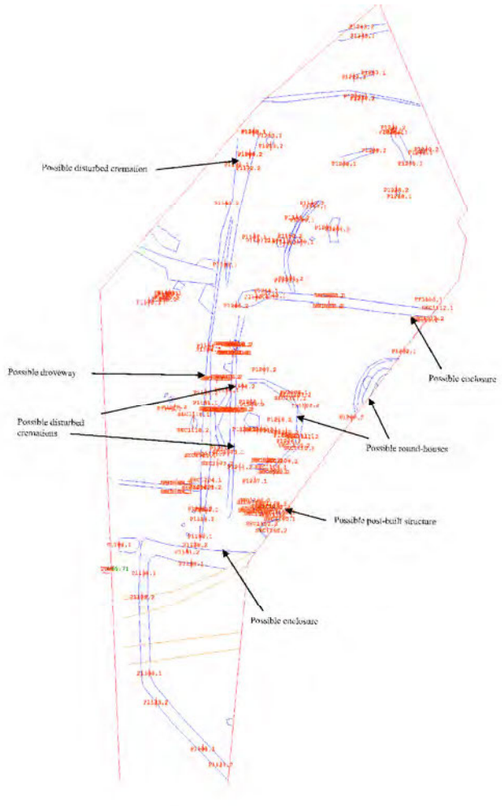
O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0219-08.mxd



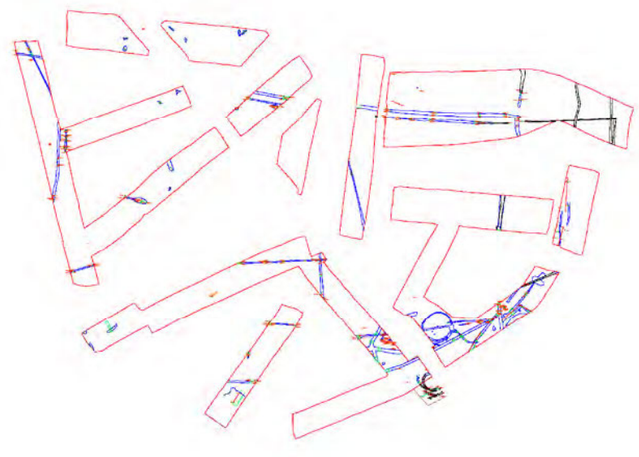
Flood Storage (Control) Reservoir Compound area archaeological excavation (Network Archaeology interim working plan) Scale: 1:5,000

Flood Storage (Control) Reservoir compound area archaeological excavation (Network Archaeology preliminary working plan) Scale: 1:750





Flood Storage (Control) Reservoir 'wheel wash' area archaeological excavation (Network Archaeology preliminary working plan)
Scale: 1:500



Pollution Control Lagoon (Network Archaeology interim working plan)
Scale: 1:2,500

YOUR LONDON AIRPORT Gatwick

KEY

Project Site Boundary (PEIR)

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

The Pollution Control Lagoon and Flood Storage (Control) Reservoir Archaeological Results - details

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.4	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 As Shown

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0183-07.mxd

Plan 1: Phase 1 flint distribution plan showing potential areas of intense activity

Plan 1: Phase 2 flint distribution plan

YOUR LONDON AIRPORT Gatwick

KEY

Project Site Boundary (PEIR)

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

The Flood Storage (Control) Reservoir Mesolithic Flint Density Plots

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.5	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 As Shown

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0184-07.mxd

YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)
- 1km buffer from Project Site Boundary
- Features Noted During Walkover

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Walkover Observations Plan

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.6	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:25,000

0 250 500 1,000 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0181-08.mxd

YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)
- 1km buffer from Project Site Boundary
- Former bomb craters
- Cut features
- Linear features (likely drainage)
- Former field boundaries
- Area of recently removed buildings
- Area discussed in text
- Palaeochannels
- Unknown military or garden features

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Results of Aerial Photographic Study

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.7	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:25,000

0 250 500 1,000 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0185-08.mxd

YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)

Geophysical Survey Areas

- Area A
- Area B
- Area C
- Area D
- Area F
- Area H
- Area I

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Locations of 2019 Geophysical Survey Areas

DATE

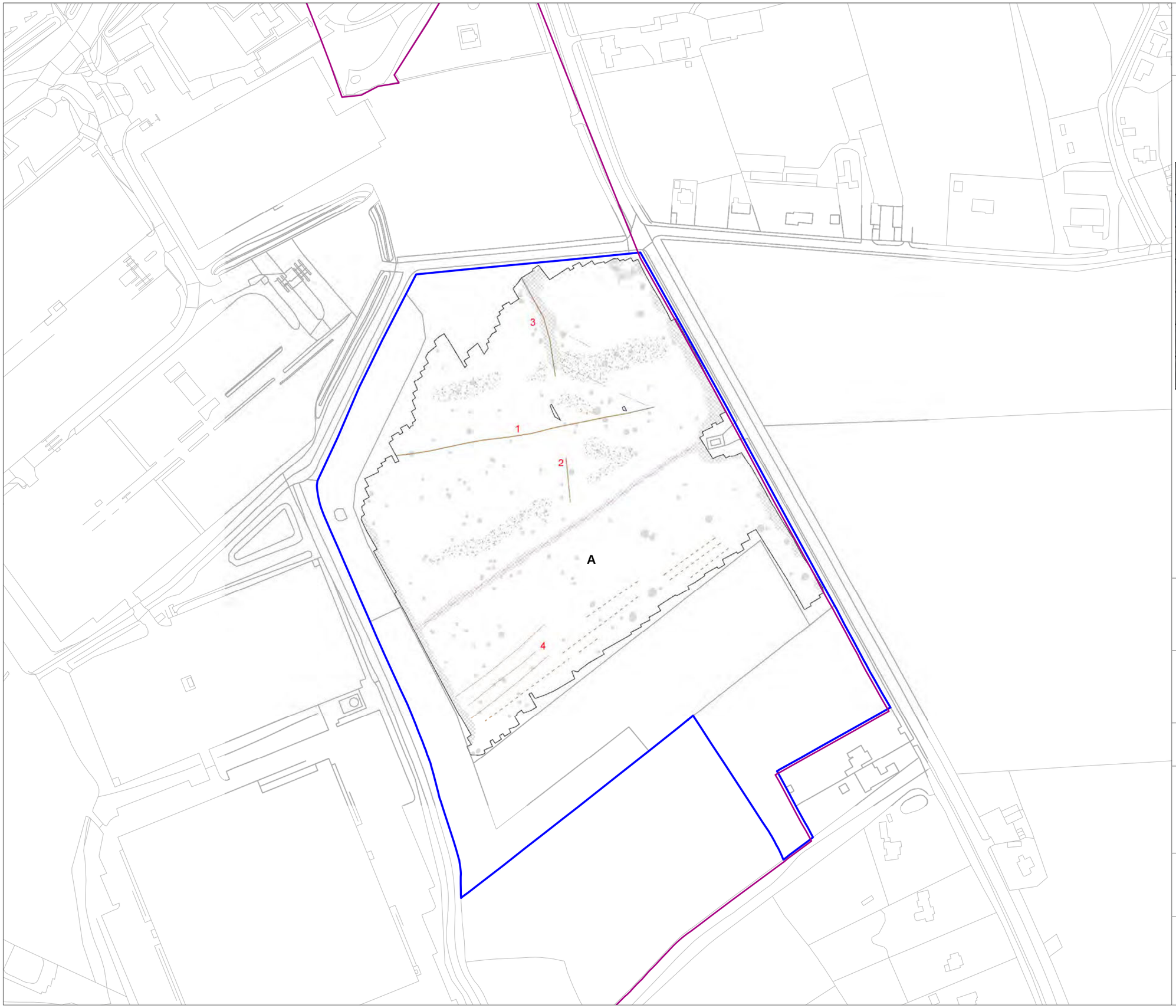
September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.8	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:20,000

0 250 500 1,000 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0157-10.mxd



YOUR LONDON AIRPORT Gatwick

KEY

Project Site Boundary (PEIR)

2019 Geophysical Survey Areas

KEY	
	Former field boundary (corroborated)
	Agriculture (plough)
	Land drain
	Magnetic disturbance
	Possible service / drain
	Ferrous (discrete / zone)

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Interpretation of Geophysical Survey - Area A

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.9	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:2,500

0 10 20 40 60 80 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0280-06.mxd

YOUR LONDON AIRPORT Gatwick

KEY

Project Site Boundary (PEIR)

2019 Geophysical Survey Areas

KEY	
	Possible archaeology (discrete anomaly / trend)
	Uncertain Origin (trend)
	Former field boundary (corroborated)
	Former field boundary (conjectural)
	Agriculture (ridge and furrow)
	Agriculture (plough)
	Natural (e.g. geological / pedological)
	Magnetic disturbance
	Ferrous (discrete / zone)

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Interpretation of Geophysical Survey - Areas B, C, D & H

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.10	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:2,500

0 10 20 40 60 80 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0281-06.mxd

F

YOUR LONDON AIRPORT Gatwick

KEY

Project Site Boundary (PEIR)

2019 Geophysical Survey Areas

KEY	
	Uncertain Origin (discrete anomaly / trend)
	Agriculture (plough)
	Possible service / track
	Magnetic disturbance
	Strong magnetic disturbance - made ground
	Ferrous (discrete / zone)

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Interpretation of Geophysical Survey - Area F

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.11	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:2,500

0 10 20 40 60 80 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0282-06.mxd

YOUR LONDON AIRPORT Gatwick

KEY

Project Site Boundary (PEIR)

2019 Geophysical Survey Areas

KEY	
	Former haul road / access track (zone / discrete)
	Magnetic disturbance
	Strong magnetic disturbance - made ground
	Ferrous (discrete / zone)

15

I

14

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Interpretation of Geophysical Survey - Area I

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.12	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:2,500

0 10 20 40 60 80 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0284-06.mxd

YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)

Archaeological Potential

- High
- Medium
- Low
- Low, but potential for Palaeochannels

DOCUMENT

Preliminary Environmental Information Report Appendix 7.6.1

DRAWING TITLE

Predictive Modelling of Zones of Archaeological Potential

DATE

September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 6.3.13	For PEIR Issue
	DRAWN BY: MP	PM / CHECKED BY: MR

SCALE @ A3 1:20,000

0 200 400 800 m

O:\11055 Gatwick - Genesis\Tech\Drawings\11055-0186-10.mxd

Annex 1

Gazetteer of Historic Environment Resources

Site No	Record Type	HE List Entry / Original Ref	Name	SchedDate	AmendDate	NGR	Source	Grade	Description	MonType	Distance from site (km)	sort by type	Previous (G2) ref
1	SM	1005815	Warren furnace			TQ 34758 39318	Historic England				5	1	
2	SM	1009754	Moated site at Ewhurst Place	1992-02-26		TQ 25883 37538	Historic England				3	1	1000
3	SM	1011583	Moated site at Peaknab Manor	1976-07-15	1994-05-18	TQ 24016 34803	Historic England				5	1	
4	SM	1012464	Medieval moated site at Ifield Court	1968-10-24	1991-06-19	TQ 24662 38379	Historic England				3	1	1001
5	SM	1012789	Medieval moated site. Cudworth Manor	1990-05-02		TQ 21152 41826	Historic England				5	1	
6	SM	1013014	Medieval or Early Post-medieval Tannery. Scotchman's Coo	1979-06-07	1990-10-17	TQ 29647 44489	Historic England				3	1	
7	SM	1013348	Thunderfield Castle medieval moated site	1981-10-09	1991-04-29	TQ 29996 42582	Historic England				1	1	1002
8	SM	1013770	Moated site and associated earthworks on Pound Hill. 700m	1949-04-13	1992-12-18	TQ 29430 37252	Historic England				3	1	
9	SM	1018681	Medieval settlement remains 100m south east and 150m so	1998-08-07		TQ 29095 39584	Historic England				1	1	1003
10	LBI	1029981	OLIVWOOD POST MILL	1958-06-11		TQ 32770 45551	Historic England	I			5	2	
11	LBI	1187108	PARISH CHURCH OF ST MARGARET	1983-02-23		TQ 24703 37576	Historic England	I			3	2	1004
12	LBI	1187114	THE PARISH CHURCH OF ST NICHOLAS	1957-10-28		TQ 30194 36196	Historic England	I			5	2	
13	LBI	1204775	CHURCH OF ST BARTHOLEMEW	1958-06-11		TQ 31240 41296	Historic England	I			1	2	1005
14	LBI	1248610	CHURCH OF SAINT NICHOLAS	1966-11-11		TQ 24050 41111	Historic England	I			1	2	1006
15	LBI	1298879	FRIENDS' MEETING HOUSE	1948-06-21		TQ 25243 37911	Historic England	I			3	2	1007
16	LBI	1378035	CHURCH OF ST BARTHOLOMEW	1966-11-11		TQ 27633 42758	Historic England	I			1	2	1008
17	LBII*	1025535	CRABBET PARK	1962-09-27		TQ 30666 37365	Historic England	II*			3	3	
18	LBII*	1025536	THE TENNIS COURT AND ORANGERY AT CRABBET PAR	1983-05-11		TQ 30547 37363	Historic England	II*			3	3	
19	LBII*	1028716	HAY BARN TO SOUTH OF HOME FARM HOUSE	1966-11-11	1998-10-02	TQ29684/0707	Historic England	II*			5	3	
20	LBII*	1028717	OLD BARN AT HOME FARM	1987-09-29		TQ 20700 40712	Historic England	II*			5	3	
21	LBII*	1029963	CRULLINGS AND SMALLFIELD PLACE	1958-06-11	1984-04-25	TQ3266943168	Historic England	II*			3	3	
22	LBII*	1187079	ROWLEY FARMHOUSE	1948-06-21		TQ 27944 39634	Historic England	II*			1	3	512
23	LBII*	1187080	CHARLWOOD HOUSE	1966-11-11		TQ 26326 39856	Historic England	II*			1	3	502
24	LBII*	1187081	CHURCH OF ST MICHAEL AND ALL ANGELS	1948-06-21	1983-02-23	TQ 27419 40102	Historic England	II*			1	3	511
25	LBII*	1187086	NATIONAL WESTMINSTER BANK	1948-06-21	1983-02-23	TQ 26827 36771	Historic England	II*			5	3	
26	LBII*	1187088	THE GEORGE HOTEL	1948-06-21		TQ 26728 36603	Historic England	II*			5	3	
27	LBII*	1187090	CHARLWOOD PARK FARMHOUSE	1966-11-11	1983-02-23	TQ 26169 41593	Historic England	II*			1	3	1009
28	LBII*	1187092	FWHURST PLACE	1948-06-21	1983-02-23	TQ 25869 37519	Historic England	II*			3	3	1010
29	LBII*	1187103	GATWICK MANOR INNHYDERS HALL	1948-06-21	1983-02-23	TQ 27124 39332	Historic England	II*			1	3	508
30	LBII*	1204768	BURSTOW LODGE	1958-06-11	1999-11-08	TQ 31471 44189	Historic England	II*			3	3	
31	LBII*	1207420	THE ANCIENT PRIORS /MINTERS RESTAURANT A LOUI	1948-06-21	1983-02-23	TQ 26788 36580	Historic England	II*			5	3	
32	LBII*	1207683	MEETING HOUSE COTTAGE	1948-06-21	1983-02-23	TQ 25235 37908	Historic England	II*			3	3	1011
33	LBII*	1248380	THE MANOR HOUSE	1966-11-11		TQ 24099 41317	Historic England	II*			1	3	1012
34	LBII*	1248602	HIGHWORTH FARMHOUSE	1966-11-11		TQ 23086 42594	Historic England	II*			3	3	
35	LBII*	1268327	THE BEEHIVE (FORMER COMBINED TERMINAL AND CO	1998-08-19		TQ 28577 39808	Historic England	II*			1	3	514
36	LBII*	1277978	PROVIDENCE CHAPEL	1983-04-07		TQ 24662 41225	Historic England	II*			3	3	1013
37	LBII*	1298875	PARISH CHURCH OF ST JOHN THE BAPTIST	1948-06-21		TQ 26868 36540	Historic England	II*			5	3	
38	LBII*	1354912	ROWFANT HOUSE	1957-10-28	1983-05-11	TQ 32490 37147	Historic England	II*			5	3	
39	LBII*	1377549	CHURCH OF ST MARY THE VIRGIN	1958-06-11	1984-04-25	TQ 33685 44349	Historic England	II*			5	3	
40	LBII*	1377560	COGMANS FARM HOUSE	1958-06-11		TQ 32480 44571	Historic England	II*			5	3	
41	LBII*	1378119	PARK HOUSE FARM HOUSE	1987-09-29		TQ 21716 44326	Historic England	II*			5	3	
42	LBII*	1378140	HOME FARM HOUSE AND NOS 1 AND 2 COTTAGES	1966-11-11	1998-10-02	TQ 20660 40742	Historic England	II*			5	3	
43	LBII	1025533	EAST COTTAGEFARTHINGS	1983-05-11		TQ 34233 37930	Historic England	II			5	4	
44	LBII	1025534	SMUGGLERS COTTAGE	1983-05-11		TQ 34195 39899	Historic England	II			5	4	
45	LBII	1025537	WORTH HALL	1983-05-11		TQ 32026 36164	Historic England	II			5	4	
46	LBII	1025539	THE FIRS	1983-05-11		TQ 33506 39132	Historic England	II			5	4	
47	LBII	1025540	CHELSEA COTTAGE	1983-05-11		TQ339738378	Historic England	II			5	4	
48	LBII	1025565	TYE COTTAGE	1983-05-11		TQ 32448 39243	Historic England	II			3	4	
49	LBII	1025570	LEY HOUSE	1957-10-28	1983-05-11	TQ 31308 37527	Historic England	II			3	4	
50	LBII	1026952	LAMBS COTTAGES	1971-09-02		TQ 21967 36769	Historic England	II			5	4	
51	LBII	1026953	OLD CHELLOWS	1959-09-22	1980-11-28	TQ 21807 36458	Historic England	II			5	4	
52	LBII	1026954	HILL HOUSE	1959-09-22	1980-11-28	TQ22737/38122	Historic England	II			4	4	1014
53	LBII	1026956	VENTERS LODGE	1959-09-22		TQ 21672 37616	Historic England	II			5	4	
54	LBII	1026984	POCKNEYS FARMHOUSE	1980-11-28	1982-01-28	TQ 23680 38120	Historic England	II			3	4	1015
55	LBII	1028673	BARN AT DENE FARM APPROXIMATELY 5 METRES TO S	1989-09-25		TQ 23825 46135	Historic England	II			5	4	
56	LBII	1028674	BARN APPROXIMATELY 40 METRES TO THE SOUTH OF	1989-09-25		TQ 24072 46254	Historic England	II			5	4	
57	LBII	1028675	BARN AT DENE FARM APPROXIMATELY 150 METRES T(	1990-07-09		TQ 23761 46195	Historic England	II			5	4	
58	LBII	1028676	DENE FARMHOUSE	1990-07-09		TQ 23812 46148	Historic England	II			5	4	
59	LBII	1028713	BARN AT BLANKS FARM	1987-09-29		TQ 21555 43358	Historic England	II			5	4	
60	LBII	1028714	HALFORRIDGE FARM HOUSE	1987-09-29		TQ 21901 43364	Historic England	II			5	4	
61	LBII	1028715	CUDWORTH MANOR	1966-11-11		TQ 21132 41828	Historic England	II			5	4	
62	LBII	1028725	OLD BEAM BROOK	1987-09-29		TQ 21490 42292	Historic England	II			5	4	
63	LBII	1028726	BOOTHLANDS FARM HOUSE	1987-09-29		TQ 21832 40143	Historic England	II			5	4	
64	LBII	1028727	OAKLANDS PARK FARM HOUSE	1975-10-06		TQ 21782 39350	Historic England	II			5	4	
65	LBII	1028728	MARELANDS FARM BARN	1986-10-24		TQ 20118 40009	Historic England	II			5	4	
66	LBII	1028750	HERON'S HEAD FARM HOUSE	1986-08-07		TQ 22313 45009	Historic England	II			5	4	
67	LBII	1028752	SHEEPCOTE COTTAGE	1987-09-29		TQ 23062 45117	Historic England	II			5	4	
68	LBII	1028961	JOBS FARM COTTAGES	1989-05-24		TQ 30006 45774	Historic England	II			5	4	
69	LBII	1028962	HONEYSUCKLE COTTAGES	1991-10-18		TQ 28010 43976	Historic England	II			3	4	1016
70	LBII	1028982	HIGH HOUSE	1966-11-11		TQ 27651 42787	Historic England	II			1	4	1017
71	LBII	1028983	BARN 10 YARDS NORTH OF YE OLDE SIX BELLS	1984-04-26		TQ 27599 42807	Historic England	II			1	4	1018
72	LBII	1028984	BARNES TOMB 8 YARDS WEST OF WEST END OF CHU	1984-04-26		TQ 27613 42742	Historic England	II			1	4	1019
73	LBII	1028985	BILLINGSLEY TOMB 10 YARDS WEST OF SOUTH AISLE	1984-04-26		TQ 27615 42739	Historic England	II			1	4	1020
74	LBII	1028986	TURNER TOMB 8 YARDS NORTH OF CHURCH OF ST RA	1984-04-26		TQ 27623 42776	Historic England	II			1	4	1021
75	LBII	1028987	INHOLMS FARM HOUSE	1984-04-26		TQ 29524 42223	Historic England	II			1	4	1022
76	LBII	1028988	YEW TREE COTTAGE	1984-04-26		TQ29684/2178	Historic England	II			1	4	1023
77	LBII	1028989	YEW TREES	1966-11-11		TQ 27987 44005	Historic England	II			3	4	1024
78	LBII	1028990	BARN 50 YARDS SOUTH OF GREAT LAKES FARM	1984-04-26		TQ 29216 44423	Historic England	II			3	4	
79	LBII	1028991	THE ORCHARD COTTAGE	1973-07-03		TQ 27104 43461	Historic England	II			1	4	1025
80	LBII	1028992	FISHERSFISHERS FARM HOUSE	1984-04-26		TQ 28837 42343	Historic England	II			1	4	1026
81	LBII	1028993	CHESWICK FARM HOUSE	1984-04-26		TQ 27220 44565	Historic England	II			3	4	
82	LBII	1028994	JORDANS	1984-04-26		TQ 29338 43219	Historic England	II			3	4	1027
83	LBII	1028995	AXES FARM HOUSE	1984-04-26		TQ 29688 46515	Historic England	II			5	4	
84	LBII	1028996	THE CAMBRIDGE HOTEL	1973-10-30		TQ 28384 44724	Historic England	II			5	4	
85	LBII	1028997	GRANARY BARN 15 YARDS SOUTH OF CRUTCHFIELD F	1972-02-07	1984-04-26	TQ 25948 44172	Historic England	II			3	4	
86	LBII	1028998	STUMBLE HOLE FARMHOUSE	1984-04-26		TQ 24169 46018	Historic England	II			5	4	
87	LBII	1028999	BARN 5 YARDS SOUTH EAST OF DEAN FARM HOUSE	1984-04-26		TQ 28733 46952	Historic England	II			5	4	
88	LBII	1029000	HORSEHILLS FARMHOUSE	1984-04-26		TQ 25151 44201	Historic England	II			3	4	
89	LBII	1029002	LITTLE FINCHES	1984-04-26		TQ 26689 46902	Historic England	II			5	4	
90	LBII	1029003	CHRISTMAS CLOSECHRISTMAS FARM HOUSE	1984-04-26		TQ 29096 46241	Historic England	II			5	4	
91	LBII	1029022	RINGLEY OAK COTTAGE	1984-04-26		TQ 27900 42947	Historic England	II			1	4	1028
92	LBII	1029866	LITTLE LAKE FARM HOUSE	1973-02-22		TQ 29986 44868	Historic England	II			3	4	
93	LBII	1029876	WOOLBOROUGH FARM HOUSE	1973-02-22		TQ 30719 45782	Historic England	II			5	4	
94	LBII	1029880	WESTERNMOST BARN AT GLEN FARM	1989-11-24		TQ3481442690	Historic England	II			5	4	
95	LBII	1029904	WILMOTS FARM HOUSE	1984-04-25		TQ 33004 44582	Historic England	II			5	4	
96	LBII	1029936	SEPTEMBER COTTAGE	1984-04-25		TQ 35440 43216	Historic England	II			5	4	
97	LBII	1029937	CHITHURST FARM HOUSE	1958-06-11		TQ 33744 42184	Historic England	II			5	4	
98	LBII	1029938	Barn approximately 10 metres north east of Church Farm Hc	1984-04-25	1988-04-28	TQ 33692 44404	Historic England	II			5	4	
99	LBII	1029939	CHERRY GARDENS	1984-04-25		TQ 33426 40949	Historic England	II			3	4	
100	LBII	1029941	LITTLE BROOK FARMHOUSE	1984-04-25		TQ 35175 42307	Historic England	II			5	4	
101	LBII	1029943	HORNECOURT MANOR FARM HOUSE	1984-04-25		TQ 33842 45013	Historic England	II			5	4	
102	LBII	1029945	WHITEWOOD HOUSE FARM HOUSE	1973-03-22		TQ 34237 44596	Historic England	II			5	4	
103	LBII	1029955	TEIZERS FARM HOUSE	1984-04-25		TQ 30335 40651	Historic England	II			1	4	518
104	LBII	1029956	MANOR COTTAGE	1984-04-25		TQ 31847 43535	Historic England	II			3	4	
105	LBII	1029957	BARN 25 YARDS SOUTH WEST OF BURSTOW LODGE	1984-04-25	1999-11-08	TQ 31502 44149	Historic England	II			3	4	
106	LBII	1029958	DODD TOMB 8 YARDS SOUTH EAST OF CHANCEL	1984-04-25		TQ 31264 41292	Historic England	II			1	4	1029
107	LBII	1029960	ALLINGHAM FARM HOUSE	1984-04-25		TQ 32239 40295	Historic England	II			3	4	1030
108	LBII	1029962	WASP WELL	1984-04-25		TQ 32145 45551	Historic England	II			5	4	
109	LBII	1029964	BARN 2 YARDS TO NORTH OF ROOKERY FARM HOUSE	1984-04-25		TQ 31429 44901	Historic England	II			5	4	
110	LBII	1029965	THE COTTAGE	1984-04-25		TQ3256244745	Historic England	II			5	4	
111	LBII	1039928	SIMMONDS COTTAGE	1993-11-23		TQ 31538 39427	Historic England	II			3	4	1031
112	LBII	1039935	BARN TO EAST OF POPLARS PLACE	1987-11-26		TQ 33603 39032	Historic England	II			5	4	
113	LBII	1039978	THE FARMHOUSE PUBLIC HOUSE	1994-01-14		TQ 28970 44056	Historic England	II			3	4	
114	LBII	1039979	LANDEN'S	1994-12-02		TQ 27054 44383	Historic England	II			3	4	
115	LBII	1067594	GRANARY TO NORTH WEST OF DENE FARMHOUSE	1990-07-09		TQ 23793 46173	Historic England	II			5	4	
116	LBII	1067613	OLD POUND COTTAGE	1980-11-28	1982-01-28	TQ 23782 37259	Historic England	II			3	4	1032
117	LBII	1119778	FARM BUILDING AT EDOLPHS APPROXIMATELY 50 MET	1998-06-19		TQ 24378 42399	Historic England	II			3	4	1033
118	LBII	1178256	HUTCHINS	1984-04-26		TQ 27894 43993	Historic England	II			3	4	1034
119	LBII	1178287	GREAT LAKES FARM HOUSE	1984-04-26		TQ2921244472	Historic England	II			3	4	
120	LBII	1178293	TANYARD FARM HOUSE	1984-04-26		TQ 29299 44057	Historic England	II			3	4	
121	LBII	1178299	THE COTTAGE	1984-04-26		TQ 27060 43518	Historic England	II			1	4	1035
122	LBII	1178302	PRIESTLANDS	1984-04-26		TQ 27779 43606	Historic England	II			1	4	1036
123	LBII	1178334	OAKDENE	1984-04-26	2007-10-19	TQ 29311 46501	Historic England	II			5	4	
124	LBII	1180097	THE MILL HOUSE HOTEL	1984-04-26		TQ2814746754	Historic England	II			5	4	
125	LBII	1180117	DEAN FARMHOUSE	1984-04-26		TQ 28709 46960	Historic England	II			5	4	
126	LBII	1180151	LONESOME FARMHOUSE	1984-04-26		TQ 26704 46717	Historic England	II			5	4	
127	LBII	1180381	NALDRETTS FARMHOUSE	1980-11-28		TQ 24070 38978	Historic England	II			3	4	1037
128	LBII	1180389	OAK LODGE	1980-11-28		TQ 23896 38170	Historic England	II			3	4	1038
129	LBII	1180434	PETER'S COTTAGE	1959-09-22		TQ 21935 38423	Historic England	II			5	4	
130	LBII	1180468	IFIELD MILL HOUSE	1974-05-01	1980-11-28	TQ 24375 36405	Historic England	II			5	4	1039
131	LBII	1180646	PEAR TREE HOUSE, CRABBET PARK	1983-05-11		TQ 30617 37379	Historic England	II			3	4	
132	LBII	1182679	POPLARS PLACE	1957-10-28		TQ 33590 39033	Historic England	II			5	4	
133	LBII	1187072	EDGEWORTH HOUSE	1983-02-23		TQ 29266 41359	Historic England	II			1	4	522
134	LBII	1187073	WING HOUSE	1983-02-23		TQ 29304 41333	Historic England	II			1	4	521
135	LBII	1187074	GREEN LANE OLD COTTAGE	1960-02-11		TQ 29877 36641	Historic England	II			5	4	
136	LBII	1187075	GARDEN WALL AND ENTRANCE TO WORTH TRAINING (	1983-02-23		TQ 29751 36904	Historic England	II			3	4	
137	LBII	1187076	OAKFIELD COTTAGE	1983-02-23		TQ 29733 37077	Historic England	II			3	4	
138	LBII	1187077	BIDLEYS	1983-02-23		TQ 29726 37637	Historic England	II			3	4	1040
139	LBII	1187078	BLACKWATER COTTAGE	1983-02-23		TQ 29224 36404	Historic England	II			5	4	
140	LBII	1187082	OLD COTTAGE	1983-02-23		TQ 29811 41243	Historic England	II			1	4	519
141	LBII	1187083	HAZELWICK GRANGE	1948-06-21	1983-02-23	TQ 28364 37762	Historic England	II			3	4	1041
142	LBII	1187084	39, HIGH STREET	1983-02-23		TQ 26777 36536	Historic England	II			5	4	
143	LBII	1187087	34 AND 36, HIGH STREET	1983-02-23		TQ 26736 36529	Historic England	II			5	4	
144	LBII	1187089	BLACKDOG COTTAGE	1983-02-23		TQ 27345 37445	Historic England	II			3	4	1042
145	LBII	1187091	CHEALS GARDEN CENTRE	1948-06-21	1983-02-23	TQ 25752 35699	Historic England	II			5	4	
146	LBII	1187093	BRIDGE OVER MOAT AT EWHURST PLACE	1983-02-23		TQ 25848 37507	Historic England	II			3	4	1043
147	LBII	1187094	60 AND 62, IFIELD ROAD	1948-06-21		TQ 26796 36641	Historic England	II			5	4	
148	LBII	1187095	OLD MARTYRS	1960-02-11	1983-02-23	TQ 26847 38389	Historic England	II			3	4	1044
149	LBII	1187096	FINCHES COTTAGE	1983-02-08		TQ 25465 38160	Historic England	II			3	4	1045
150	LBII	1187097	OLD INN COTTAGE	1983-02-23		TQ 25323 37942	Historic England	II			3	4	1046
151	LBII	1187098	LANGLEY GRANGE	1948-06-21	1983-02-23	TQ 25642 38259	Historic England	II			3	4	1047
152	LBII	1187099	THE OLD HOUSE	1983-02-23		TQ 26931 37966	Historic England	II			3	4	1048
153	LBII	1187100	JORDANS	1948-06-21		TQ 26927 38084	Historic England	II			3	4	1049
154	LBII	1187101	SYCAMORE HOUSE	1983-02-08		TQ 26973 39033	Historic England	II			1	4	
155	LBII	1187102	FIR TREE COTTAGE	1983-02-23		TQ 26931 37652	Historic England	II			3	4	1050
156	LBII	1187104	SPIKEMEAD FARMHOUSE	1983-02-23		TQ2634839591	Historic England	II			1	4	503
157	LBII	1187105	BROOKSIDE	1983-02-23		TQ 29235 39776	Historic England	II			1	4	516
158	LBII	1187106	THE OLD RECTORY	1948-06-21	1983-02-23	TQ 24795 37799	Historic England	II			3	4	1051
159	LBII	1187107	TURKS CROFT	1960-02-11		TQ 24725 36759	Historic England	II			3	4	1052
160	LBII	1187109	HARROW COTTAGEOLD PLOUGH COTTAGEPLOUGH IN	1983-02-23		TQ 24783 37608	Historic England	II			3	4	1053
161	LBII	1187110	OLDLANDS FARMHOUSE	1972-02-07		TQ 29021 39660	Historic England	II			1	4	515
162	LBII	1187111	CHERRY TREE COTTAGE	1948-06-21		TQ 28882 39513	Historic England	II			1	4	1054
163	LBII	1187112	THE TWEED	1948-06-21	1983-02-23	TQ 24913 38097	Historic England	II			3	4	1055
164	LBII	1187113	TOOVIES FARMHOUSE	1983-10-25		TQ 29996 39497	Historic England	II			1	4	1056
165	LBII	1187115	STREET HOUSE	1957-10-28		TQ 30171 36247	Historic England	II			5	4	
166	LBII	1187116	CAXTONS	1978-03-17		TQ 30273 36845	Historic England	II			5	4	
167	LBII	1187117	CROWN POST BARN TO EAST OF ROWLEY FARM HOUS	1986-09-05		TQ 27985 39632	Historic England	II			1	4	513
168	LBII	1187118	10, IFIELD ROAD	1992-08-06		TQ 26665 36566	Historic England	II			5	4	
169	LBII	1191822	IVYHOUSE FARM HOUSE	1975-10-06		TQ 21899 39398	Historic England	II			5	4	
170	LBII	1191866	MYERS PLACE	1973-05-15	1987-09-29	TQ 20187 40091	Historic England	II			5	4	
171	LBII	1191861	NEWHOUSE FARM HOUSE	1987-09-29		TQ 20123 40176	Historic England	II			5	4	
172	LBII	1194820	STUMBLEHOLME FARMHOUSE	1980-11-28	1982-01-28	TQ2787736952	Historic England	II			5	4	1057
173	LBII	1204412	GAYHOUSE	1984-04-25		TQ 33209 45568	Historic England	II			5	4	
174	LBII	1204767	BROADBRIDGE FARM HOUSE	1984-04-25		TQ 31417 42202	Historic England	II			1	4	1058
175	LBII	1204784	BURSTOW COURT	1984-04-25		TQ 31228 41348	Historic England	II			1	4	1059
176	LBII	1204793	STONELANDS FARM HOUSE	1984-04-25		TQ 31723 39633	Historic England	II			3	4	1060
177	LBII	1204801	ROUGH BEECH	1984-04-25		TQ3270642933	Historic England	II			3	4	
178	LBII	1204808	GREENMEADS FARM HOUSE	1984-04-25		TQ 31138 45732	Historic England	II			5	4	
179	LBII	1204827	KEEPERS COTTAGE	1984-04-25		TQ 32185 40979	Historic England	II			3	4	1061
180	LBII	1204852	GREEN FARM HOUSE	1984-04-25		TQ3218842944	Historic England	II			3	4	
181	LBII	1204873	ROOKERY FARM HOUSE	1984-04-25		TQ 31442 44887	Historic England	II			5	4	
182	LBII	1205020	BRANFORD WELLS	1984-04-25		TQ 35316 43605	Historic England	II			5	4	
183	LBII	1205048	CHURCH FARMHOUSE	1984-04-25		TQ 33681 44380	Historic England	II			5	4	
184	LBII	1205054	HORNE HOUSE FARMHOUSE	1984-04-25		TQ 33771 43993	Historic England	II			5	4	
185	LBII	1207387	LITTLE ORCHARDS	1982-03-24		TQ 28436 39058	Historic England	II			1	4	1062
186	LBII	1207485	ROSCOPRIC G A INSURANCE BROKERS LIMITED	1981-09-29		TQ 26850 36960	Historic England	II			3	4	1063
187	LBII	1207575	GOFFS MANOR	1960-02-11		TQ 26113 36119	Historic England	II			5	4	
188	LBII	1207630	IFIELD WATER MILL	1948-06-21	1983-02-23	TQ 24509 36446	Historic England	II			5	4	1065
189	LBII	1207650	MICHAELMAS COTTAGE	1983-02-23		TQ 25151 38004	Historic England	II			3	4	1066
190	LBII	1207671	UPPER PRESTWOOD FARMHOUSE	1983-02-23		TQ 23473 39649	Historic England	II			3	4	1067
191	LBII	1207719	MOUNTING BLOCK IN FORECOURT OF FRIENDS MEETI	1983-02-23		TQ 25245 37900	Historic England	II			3	4	1068
192	LBII	1207831	RADFORD FARMHOUSE	1983-02-23		TQ 29261 39782	Historic England	II			1	4	517

193	LBII	1207872	ST MARGARET'S COTTAGE	1983-02-23		TQ 24832 37290	Historic England	II		3	4	1069
194	LBII	1207886	TINSLEY FARMHOUSE	1983-02-22	1983-02-23	TQ 29274 39664	Historic England	II		1	4	1070
195	LBII	1207927	THE VICARAGE	1983-02-23		TQ 24770 37576	Historic England	II		3	4	1071
196	LBII	1240231	BONWYCKE PLACE	1982-01-28		TQ 23485 37738	Historic England	II		3	4	1072
197	LBII	1240234	GARDEN GATE, OVERTHROW AND SIDE RAILINGS TO \	1982-01-28		TQ2296306941	Historic England	II		5	4	1073
198	LBII	1240235	BARN TO NORTH OF STUMBLEHOLME FARMHOUSE	1982-01-28		TQ 22956 36986	Historic England	II		5	4	1074
199	LBII	1240236	GRANARY TO WEST OF STUMBLEHOLME FARMHOUSE	1982-01-28		TQ2293136947	Historic England	II		5	4	1075
200	LBII	1240237	CATTLE SHED TO SOUTH WEST OF STUMBLEHOLME F/	1982-01-28		TQ 22943 36896	Historic England	II		5	4	1076
201	LBII	1246873	BARN EAST OF STUMBLEHOLE FARMHOUSE	2001-03-26		TQ 24229 46046	Historic England	II		5	4	
202	LBII	1248291	GREENINGS	1966-11-11	1983-04-07	TQ 22547 41643	Historic England	II		3	4	
203	LBII	1248292	BARN APPROXIMATELY 30 METRES TO NORTH OF GRE	1983-04-07		TQ 22546 41679	Historic England	II		3	4	
204	LBII	1248293	BEGGARS COTTAGEFAST) ANDS	1983-04-07		TQ 23106 41914	Historic England	II		3	4	1077
205	LBII	1248295	HARROW HOUSE	1966-11-11		TQ 24536 41171	Historic England	II		1	4	1078
206	LBII	1248298	CHAPEL FARMHOUSE	1983-04-07		TQ 24634 41215	Historic England	II		1	4	1079
207	LBII	1248320	BROOK COTTAGEBROOKSIDE	1983-04-07		TQ 23631 41091	Historic England	II		3	4	1080
208	LBII	1248323	YE OLDE BAKEHOUSE	1983-04-07		TQ 24255 40836	Historic England	II		1	4	1081
209	LBII	1248325	MYTTEN CROFT	1983-04-07		TQ 24194 40954	Historic England	II		1	4	1082
210	LBII	1248327	VINTNERS WELLS	1983-04-07		TQ 24195 40940	Historic England	II		1	4	1083
211	LBII	1248354	LITTLE DOLBY	1983-04-07		TQ 24136 40772	Historic England	II		1	4	1084
212	LBII	1248356	MYRTLE FARMHOUSE	1983-04-07		TQ2402843381	Historic England	II		3	4	
213	LBII	1248357	FINCHES	1973-03-13	1983-04-07	TQ 24047 43960	Historic England	II		3	4	1085
214	LBII	1248359	THE MORGANS	1966-11-11		TQ 24213 43249	Historic England	II		3	4	1078
215	LBII	1248364	CHANTESLUER	1983-04-07		TQ 23408 43895	Historic England	II		5	4	
216	LBII	1248368	WELL HOUSE APPROXIMATELY 5 METRES TO THE NOR	1983-04-07		TQ 23395 43906	Historic England	II		5	4	
217	LBII	1248381	BARN AT CHANTESLEUR FARM	1983-04-07		TQ 23429 43896	Historic England	II		5	4	
218	LBII	1248396	CHARLWOOD PLACE	1966-11-11		TQ 24351 41832	Historic England	II		3	4	1086
219	LBII	1248404	WATER PUMP APPROXIMATELY 5 METRES TO SOUTH \	1983-04-07		TQ2453643254	Historic England	II		3	4	
220	LBII	1248408	SPENCERS	1983-04-07		TQ 25029 42523	Historic England	II		3	4	1087
221	LBII	1248410	LAUREL COTTAGE	1983-04-07		TQ 24053 41271	Historic England	II		1	4	1088
222	LBII	1248414	BRISTOW COTTAGE	1983-04-07		TQ 24002 41789	Historic England	II		3	4	1089
223	LBII	1248443	SPRING COTTAGE	1983-04-07		TQ 23983 41269	Historic England	II		3	4	1090
224	LBII	1248444	PAGEWOOD HOUSE	1983-04-07		TQ 23805 41297	Historic England	II		3	4	1091
225	LBII	1248454	POVEY CROSS HOUSE	1983-04-07		TQ 26733 42176	Historic England	II		1	4	1092
226	LBII	1248455	WESTLANDS FARMHOUSE	1983-04-07		TQ 26330 43059	Historic England	II		3	4	1093
227	LBII	1248463	HOOKWOOD HOUSE INCLUDING ATTACHED GARDEN \	1966-11-11		TQ 26468 43234	Historic England	II		3	4	1094
228	LBII	1248464	HOOKWOOD COTTAGE	1983-04-07		TQ 26387 43375	Historic England	II		3	4	1095
229	LBII	1248465	THE HOPPS	1983-04-07		TQ 26459 43711	Historic England	II		3	4	1096
230	LBII	1248466	TUDOR COTTAGE	1983-04-07		TQ 24319 41156	Historic England	II		1	4	1097
231	LBII	1248503	PRIMROSE COTTAGE	1973-03-13		TQ 23789 41012	Historic England	II		3	4	1098
232	LBII	1248504	THE GLOVERS	1983-04-07	1984-02-22	TQ 23496 41053	Historic England	II		3	4	1099
233	LBII	1248533	TANYARD	1983-04-07		TQ 23868 41006	Historic England	II		3	4	1100
234	LBII	1248535	BARN AT TANYARD	1983-04-07		TQ 23868 40981	Historic England	II		3	4	1101
235	LBII	1248537	WESTLANDS	1983-04-07		TQ 22522 39914	Historic England	II		3	4	1102
236	LBII	1248578	RINGERS	1973-03-13	1983-04-07	TQ 23877 40813	Historic England	II		3	4	1103
237	LBII	1248598	ROUNDABOUT COTTAGE	1983-04-07		TQ 23906 43586	Historic England	II		3	4	
238	LBII	1248599	DOMMERS	1983-04-07		TQ 24170 41589	Historic England	II		3	4	1104
239	LBII	1248600	STAN HILL	1973-07-03		TQ 23896 41677	Historic England	II		3	4	1105
240	LBII	1248601	STAGGERS AVON	1983-04-07		TQ 24114 41484	Historic England	II		1	4	1106
241	LBII	1248608	HOVELS AT HIGHWORTH FARMHOUSE	1983-04-07		TQ 23062 42652	Historic England	II		3	4	
242	LBII	1248609	BARN AT HIGHWORTH FARM ABOUT 40 METRES TO NC	1983-04-07		TQ 23046 42637	Historic England	II		3	4	
243	LBII	1248622	STONE CAUSEWAY IN CHURCHYARD OF ST NICHOLAS	1983-04-07		TQ 24041 41094	Historic England	II		1	4	1107
244	LBII	1248623	THE COTTAGE	1966-11-11	1983-04-07	TQ 24160 41114	Historic England	II		1	4	1108
245	LBII	1248624	TEMPLE BAR HOUSE	1983-04-07		TQ 24185 41094	Historic England	II		1	4	1109
246	LBII	1248625	BARN ABOUT 50 METRES TO THE SOUTH WEST OF TIF	1983-04-07		TQ 24423 40732	Historic England	II		1	4	1110
247	LBII	1248637	HUNTS	1983-04-07		TQ 24208 41155	Historic England	II		1	4	1111
248	LBII	1248638	SUN COTTAGE	1983-04-07		TQ 24273 41147	Historic England	II		1	4	1112
249	LBII	1248639	MORES	1983-04-07		TQ 24539 41277	Historic England	II		1	4	1113
250	LBII	1248640	SWAN COTTAGE	1983-04-07		TQ 24581 41330	Historic England	II		1	4	1114
251	LBII	1248647	GRANARY AT CHARLWOOD PLACE FARM APPROXIMAT	1983-04-07		TQ 24748 40928	Historic England	II		1	4	1115
252	LBII	1248648	CARTSHED AT CHARLWOOD PLACE FARM	1983-04-07		TQ 24702 40882	Historic England	II		1	4	1116
253	LBII	1248649	SPICERS	1972-02-07	1983-04-07	TQ 24628 40898	Historic England	II		1	4	1117
254	LBII	1248662	SPICERS FARM GRANARY	1972-02-07	1983-04-07	TQ 24621 40908	Historic England	II		1	4	1118
255	LBII	1248653	BARN AT ROBINS FARM APPROXIMATELY 40 METRES T	1989-09-25		TQ 23788 40935	Historic England	II		3	4	1119
256	LBII	1250212	THE LYNCHGATE TO CHURCHYARD OF THE PARISH CH	1957-10-28		TQ 30159 36235	Historic England	II		5	4	
257	LBII	1250219	TOLL HOUSE	1983-02-23		TQ 30048 36293	Historic England	II		5	4	
258	LBII	1250230	HEATHY GROUND FARMHOUSE	1992-03-10		TQ 29817 39065	Historic England	II		1	4	1120
259	LBII	1253608	CATT'S COTTAGE	1988-11-21		TQ 29302 43826	Historic England	II		3	4	
260	LBII	1253611	THE OLD COTTAGE	1990-08-07		TQ 27529 45204	Historic England	II		3	4	
261	LBII	1253622	WRAYS	1994-01-05		TQ 25799 44211	Historic England	II		3	4	
262	LBII	1253627	WAILLY	1994-12-02		TQ 28421 44276	Historic England	II		3	4	
263	LBII	1253638	PICKETTS COTTAGE	1992-11-26		TQ 29180 45695	Historic England	II		5	4	
264	LBII	1257998	KINNERSLEY MANORSOUTH BANKTHE MANOR HOUSE	1997-02-06		TQ 26359 46192	Historic England	II		5	4	
265	LBII	1261682	STATION GOODS SHED	1993-05-27		TQ 28640 42970	Historic England	II		1	4	1121
266	LBII	1261718	BIRCHWOOD COTTAGE	1993-02-18		TQ 28136 43242	Historic England	II		1	4	1122
267	LBII	1263375	1 AND 2, IFIELD ROAD	1984-04-25		TQ 26730 36570	Historic England	II		5	4	
268	LBII	1263390	FROGSHOLE FARMHOUSE	1983-10-25		TQ 29776 36049	Historic England	II		5	4	
269	LBII	1277798	ELM COTTAGE	1983-04-07		TQ 24248 41138	Historic England	II		1	4	1123
270	LBII	1277799	BARN AT CHARLWOOD PLACE FARM APPROXIMATELY	1983-04-07		TQ 24739 40914	Historic England	II		1	4	1124
271	LBII	1277800	STABLING AT CHARLWOOD PLACE FARM APPROXIMA1	1983-04-07		TQ 24750 40902	Historic England	II		1	4	1125
272	LBII	1277802	SPICERS FARM BARN	1972-02-07	1983-04-07	TQ 24616 40870	Historic England	II		1	4	1126
273	LBII	1277823	BARN AT HIGHWORTH FARM ABOUT 20 METRES TO NC	1983-04-07		TQ 23077 42633	Historic England	II		3	4	
274	LBII	1277824	LYCHGATE	1983-04-07		TQ 24042 41086	Historic England	II		1	4	1128
275	LBII	1277829	TIFTERS	1983-04-07		TQ 24459 40773	Historic England	II		1	4	1129
276	LBII	1277864	WESTLANDS FARMHOUSE	1983-04-07		TQ 22399 39831	Historic England	II		3	4	1130
277	LBII	1277887	THE LOCK UP	1972-02-07	1983-04-07	TQ 24306 41102	Historic England	II		1	4	1131
278	LBII	1277888	ROBINS	1966-11-11	1983-04-07	TQ 23802 40970	Historic England	II		3	4	1132
279	LBII	1277889	HILLANDS	1983-04-07		TQ 22714 40051	Historic England	II		3	4	1133
280	LBII	1277900	PAGEWOOD COTTAGE	1983-04-07		TQ 23934 41240	Historic England	II		3	4	1134
281	LBII	1277903	HOOKWOOD MANOR	1983-04-07		TQ 26560 42804	Historic England	II		1	4	1135
282	LBII	1277904	WOODLANDS FARMHOUSE	1973-03-13	1983-04-07	TQ 26122 43780	Historic England	II		3	4	1136
283	LBII	1277911	STABLE ABOUT 10 METRES TO NORTH OF HOOKWOOI	1983-04-07		TQ 26444 43249	Historic England	II		3	4	1137
284	LBII	1277915	THE COTTAGE	1983-04-07		TQ 24241 41609	Historic England	II		1	4	1138
285	LBII	1277918	BRITTLEWARE FARMHOUSE	1966-11-11		TQ 24550 43267	Historic England	II		3	4	
286	LBII	1277920	SPOTTERS	1983-04-07		TQ 24385 41421	Historic England	II		1	4	1139
287	LBII	1277922	CATTLE SHELTER	1983-04-07		TQ 23952 41088	Historic England	II		3	4	1140
288	LBII	1277936	FULLBROOK COTTAGE	1983-04-07		TQ 24026 40461	Historic England	II		1	4	1141
289	LBII	1277937	RICKETTSWOOD FARMHOUSE	1983-04-07		TQ 23070 43348	Historic England	II		5	4	
290	LBII	1277955	CHARLWOOD PLACE FARMHOUSE	1983-04-07		TQ 24764 40940	Historic England	II		1	4	1142
291	LBII	1277957	WEAVERS COTTAGES	1973-03-13		TQ 24149 40814	Historic England	II		1	4	1143
292	LBII	1277979	OLD ROSEMARY COTTAGES	1983-04-07	1996-08-23	TQ 24373 41188	Historic England	II		1	4	1144
293	LBII	1277982	TWO STACKS	1983-04-07		TQ 23756 41174	Historic England	II		3	4	1145
294	LBII	1279522	CHURCH COTTAGE	1983-02-23		TQ 24744 37606	Historic England	II		3	4	1146
295	LBII	1279535	NEWSTEAD LODGE	1983-02-23		TQ 24842 37923	Historic England	II		3	4	1147
296	LBII	1279557	POLES ACRE BARN	1983-02-23		TQ2637839396	Historic England	II		1	4	504
297	LBII	1279697	FREEMAN HARDY AND WILLISSMITH BROS	1983-02-23		TQ 26736 36572	Historic England	II		5	4	
298	LBII	1279715	BREWERY SHADES INN	1948-06-21	1983-02-23	TQ 26805 36714	Historic England	II		5	4	
299	LBII	1279757	COUNTY OAK COTTAGE	1983-02-23		TQ2667339047	Historic England	II		1	4	506
300	LBII	1279766	JOHN PENFOLD LTD	1981-07-23		TQ 26771 36495	Historic England	II		5	4	
301	LBII	1280860	QUARRY FARM HOUSE	1984-04-25		TQ 35522 41934	Historic England	II		5	4	
302	LBII	1280875	OLD COTTAGE	1984-04-25		TQ 32834 45151	Historic England	II		5	4	
303	LBII	1280983	OLD HALL FARM HOUSE	1984-04-25		TQ 32586 44654	Historic England	II		5	4	
304	LBII	1281032	HOOK HOUSE FARMHOUSE	1984-04-25		TQ 32684 45944	Historic England	II		5	4	
305	LBII	1284412	SHEPHERD'S FARMHOUSE	1983-05-11		TQ 33625 38711	Historic England	II		5	4	
306	LBII	1284416	WESTLANDS	1983-05-11		TQ 33739 38113	Historic England	II		5	4	
307	LBII	1284441	RUSHMORE COTTAGE	1983-05-11		TQ 30796 36820	Historic England	II		5	4	
308	LBII	1284465	SNOWHILL COTTAGES	1983-05-11		TQ 34573 39812	Historic England	II		5	4	
309	LBII	1285457	LITTLE VENTORSVENTERS	1959-09-22	1980-11-28	TQ 21518 37748	Historic England	II		5	4	
310	LBII	1285492	PUTTICKS COTTAGES	1959-09-22		TQ 21855 36682	Historic England	II		5	4	
311	LBII	1286901	CHAFFOLDS FARM HOUSE	1987-09-29		TQ 20522 38639	Historic England	II		5	4	
312	LBII	1286925	STURTWOOD FARM HOUSE	1966-11-11		TQ 21481 42888	Historic England	II		5	4	
313	LBII	1286929	BARN TO NORTH OF BOOTHLANDS FARM HOUSE	1987-09-29		TQ 21848 40191	Historic England	II		5	4	
314	LBII	1287053	GROVE FARM HOUSE	1987-09-29		TQ 23510 45284	Historic England	II		5	4	
315	LBII	1295037	COLLENDEAN FARM HOUSE	1984-04-26		TQ 24659 43997	Historic England	II		3	4	
316	LBII	1295049	BARN 40 YARDS SOUTH WEST OF DEAN FARM HOUSE	1984-04-26		TQ 29677 46895	Historic England	II		5	4	
317	LBII	1295066	LADYLAND FARM HOUSE	1984-04-26		TQ 27513 45489	Historic England	II		3	4	
318	LBII	1295082	CRUTCHFIELD FARM HOUSE	1972-02-07		TQ 25922 44192	Historic England	II		3	4	
319	LBII	1295115	THE OLD HOUSE	1972-02-07		TQ 27136 43609	Historic England	II		1	4	1148
320	LBII	1295120	FISHERS COTTAGETHE BARN	1984-04-26		TQ 28814 42359	Historic England	II		1	4	1149
321	LBII	1295125	CINDERFIELD	1973-03-13		TQ 27560 45013	Historic England	II		3	4	
322	LBII	1295137	BENHAM FARM ANNEXEBENHAMS FARMHOUSEBENHAI	1972-02-07		TQ 28275 44070	Historic England	II		3	4	1150
323	LBII	1298870	ANTIQUE CENTREHILLSIDE KENNELS	1983-02-23		TQ 29738 37114	Historic England	II		3	4	
324	LBII	1298873	OAK COTTAGE	1983-02-23		TQ 26694 38879	Historic England	II		3	4	1151
325	LBII	1298874	LILAC COTTAGE	1983-02-23		TQ 29917 41375	Historic England	II		1	4	520
326	LBII	1298876	WHITE HART HOTEL	1983-02-23		TQ 26796 36649	Historic England	II		5	4	
327	LBII	1298877	OFFICES OF THE CRAWLEY BOROUGH COUNCIL HOUS	1948-06-21		TQ 26825 36839	Historic England	II		5	4	
328	LBII	1298878	THE OLD FOX HOUSE	1983-02-23		TQ 23499 39648	Historic England	II		3	4	1152
329	LBII	1298880	APPLE TREE FARM	1983-02-08		TQ 25488 38050	Historic England	II		3	4	1153
330	LBII	1298881	LANGLEY GREEN FARMHOUSE	1983-02-23		TQ 26150 38434	Historic England	II		3	4	1154
331	LBII	1298882	JORDANS SOCIAL CLUB	1983-02-23		TQ 26922 38121	Historic England	II		3	4	1155
332	LBII	1298883	LOWFIELD HEATH WINDMILL	1966-11-11	1983-02-23	TQ2748140725	Historic England	II		1	4	510
333	LBII	1298884	BARN AT GATWICK MANOR	1948-06-21	1983-02-23	TQ 27146 39377	Historic England	II		1	4	509
334	LBII	1298885	ST BARBE COTTAGE	1983-02-23		TQ2642239243	Historic England	II		1	4	505
335	LBII	1298886	BROOK COTTAGE	1983-02-23		TQ 24619 36723	Historic England	II		3	4	1156
336	LBII	1298887	RAILWAY SIGNAL BOX	1983-02-23		TQ 26738 36364	Historic England	II		5	4	
337	LBII	1298888	TABLE TOMB TO GEORGE AND MARY HUTCHINSON IN	1983-02-23		TQ 24679 37575	Historic England	II		3	4	1157
338	LBII	1298889	K6 TELEPHONE KIOSK PAIR ON ISLAND SITE	1988-05-13		TQ 26771 36619	Historic England	II		5	4	
339	LBII	1298908	WORTH TRAINING CENTRE	1983-02-23		TQ 29760 36926	Historic England	II		5	4	
340	LBII	1298909	OAKFIELD LODGE	1983-02-23		TQ 29726 37058	Historic England	II		3	4	
341	LBII	1354186	OLD BONNETTS COTTAGE	1980-11-28		TQ 25333 39362	Historic England	II		1	4	501
342	LBII	1354208	RED GABLES	1980-11-28		TQ 24134 39115	Historic England	II		3	4	1158
343	LBII	1354209	PETER'S FARMHOUSE	1959-09-22		TQ 22032 38197	Historic England	II		5	4	
344	LBII	1354210	LOWER PRESTWOOD FARMHOUSE	1980-11-28		TQ 23146 38687	Historic England	II		3	4	1159
345	LBII	1354211	Chowles Barn	1980-11-28		TQ 21756 37461	Historic England	II		5	4	
346	LBII	1354887	COPTHORNE HOTEL	1983-05-11		TQ 31293 38700	Historic England	II		3	4	1160
347	LBII	1354890	ROWFANT MILL	1983-05-11		TQ 31568 37744	Historic England	II		3	4	
348	LBII	1354908	ROWFANT MILL HOUSE	1983-05-11		TQ 31570 37778	Historic England	II		3	4	
349	LBII	1354911	GRANARY TO THE SOUTH OF POPLARS PLACE	1983-05-11		TQ 33596 38986	Historic England	II		5	4	
350	LBII	1356637	BARN AT DENE FARM APPROXIMATELY 50 METRES SO	1990-07-09		TQ 23831 46096	Historic England	II		5	4	
351	LBII	1372057	OLD BELL HOUSEOLD MILL HOUSEWISTERIA COTTAGE	1994-01-05		TQ 27075 43422	Historic England	II		1	4	1161
352	LBII	1372077	LARGE BARN TO SOUTH WEST OF POPLARS PLACE	1987-11-26		TQ 33574 38986	Historic England	II		5	4	
353	LBII	1377550	BAKERS BARN	1984-04-25		TQ 33734 44355	Historic England	II		5	4	
354	LBII	1377552	EAST PARK FARMHOUSE	1980-06-16		TQ 35106 41738	Historic England	II		5	4	
355	LBII	1377561	TWYNERS CROFT	1976-03-16		TQ 31190 43404	Historic England	II		3	4	1162
356	LBII	1377562	BARN 5 YARDS NORTH WEST OF HOOK HOUSE FARM I	1984-04-25		TQ 32374 45816	Historic England	II		5	4	
357	LBII	1377563	STONEHOUSE FARM HOUSE	1984-04-25		TQ 31390 46320	Historic England	II		5	4	
358	LBII	1377564	THE OLD FARMHOUSE	1958-06-11		TQ 32001 45588	Historic England	II		5	4	
359	LBII	1377574	PARADISE COTTAGE	1984-04-25		TQ 33020 43991	Historic England	II		5	4	
360	LBII	1378000	MONKS COTTAGE	1984-04-26		TQ 28029 44007	Historic England	II		3	4	1163
361	LBII	1378001	LANGSHOTT MANOR	1984-04-26		TQ 29544 43971	Historic England	II		3	4	
362	LBII	1378002	VULCAN COTTAGE	1984-04-26		TQ 28396 42818	Historic England	II		1	4	1164
363	LBII	1378003	GRANARY 5 YARDS WEST OF DEAN FARM HOUSE	1984-04-26		TQ 28698 46944	Historic England	II		5	4	
364	LBII	1378004	FLAXFIELAND	1984-04-26		TQ 27496 46185	Historic England	II		5	4	
365	LBII	1378005	STARLINGS	1984-04-26		TQ 29880 46148	Historic England	II		5	4	
366	LBII	1378014	FORGE COTTAGE	1984-04-26		TQ 28421 44266	Historic England	II		3	4	
367	LBII	1378023	PICKETTS FARM HOUSE	1966-11-11		TQ 29207 45911	Historic England	II		5	4	
368	LBII	1378024	SAWPIT, ANDERSON'S BUILDERS YARD	1991-10-18		TQ 28002 43960	Historic England	II		3	4	1165
369	LBII	1378025	32 AND 34, BRIGHTON ROAD	1993-04-27		TQ2797543069	Historic England	II		1	4	
370	LBII	1378034	YE OLDE SIX BELLS	1966-11-11		TQ 27609 42787	Historic England	II		1	4	1166
371	LBII	1378036	FLINT TOMB 8 YARDS SOUTH WEST OF CHURCH OF S1	1984-04-26		TQ 27621 42732	Historic England	II		1	4	1167
372	LBII	1378037	COLDLANDS FARM HOUSE	1984-04-26		TQ 30012 42702	Historic England	II		1	4	1168
373	LBII	1378038	LYNFORD	1984-04-26		TQ 29051 44018	Historic England	II		3	4	1169
374	LBII	1378118	BARN TO REAR OF GROVE FARM HOUSE	1987-09-29		TQ2351945273	Historic England	II		5	4	
375	LBII	1378138	BLANKS FARM HOUSE	1987-09-29		TQ 21569 43331	Historic England	II		5	4	
376	LBII	1378139	BARN TO RIGHT OF HALESBRIDGE FARM HOUSE	1987-09-29		TQ 21952 43333	Historic England	II		5	4	
377	LBII	1378144	ROLLS FARM HOUSE	1987-09-29		TQ 22058 41521	Historic England	II		3	4	
378	LBII	1378145	MARELANDS	1987-09-29		TQ 20063 39890	Historic England	II		5	4	
379	LBII	1378175	LITTLE MYNTHURST FARM HOUSE	1972-02-07		TQ 23612 44594	Historic England	II		5	4	
380	LBII	1390488	IVYHOUSE FARM BARN	2003-01-13		TQ 21929 39360	Historic England	II		5	4	
381	LBII	1392317	FRIARY CHURCH OF ST FRANCIS AND ST ANTHONY	2007-10-25		TQ 26951 36453	Historic England	II		5	4	
382	LBII	1392429	Ridley's Court (former stables to Worth Park)	2008-02-27		TQ 29697 37960	Historic England	II		3	4	1170
383	LBII	1392579	Pulhamite rockery at Milton Mount Gardens (former Worth P	2008-05-01		TQ 29692 38125	Historic England	II		3	4	1171
384	LBII	1392580	Pulhamite rock islet in lake at Milton Mount Gardens (former	2008-05-01		TQ 29369 38299	Historic England	II		3	4	1172
385	LBII	1392581	Fountain and pond basin at Milton Mount Gardens (former W	2008-05-01		TQ2954138084	Historic England	II		3	4	1173
386	LBII	1393329	HEATHERWOOD SOUTH AND HEATHERWOOD WEST (F	2009-06-16		TQ 33918 38029	Historic England	II		5	4	

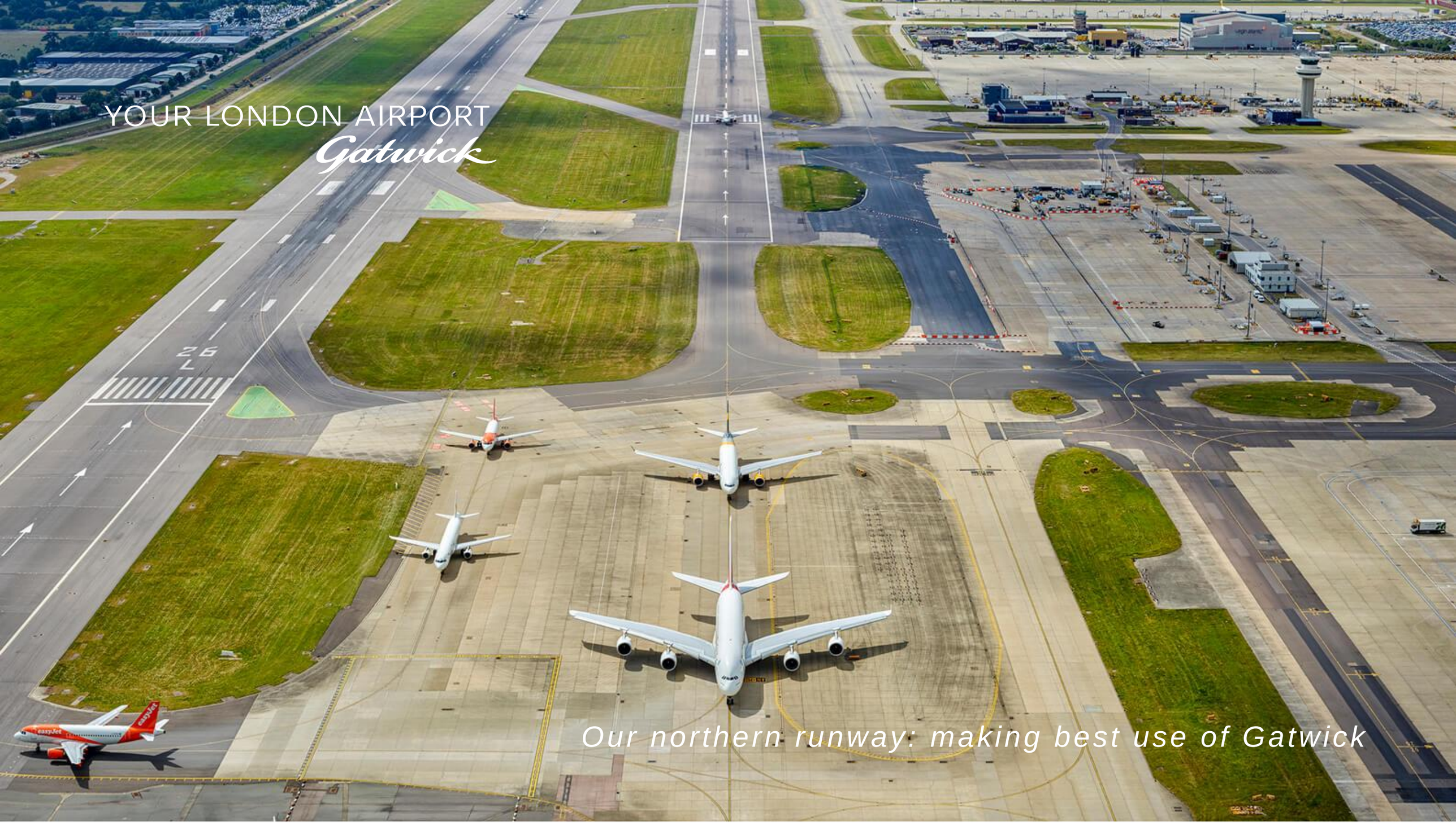
387	LBII	1403249	Church of St John the Baptist with adjacent war memorial	2011-09-26		TQ3195546021	Historic England	II		5	4	
388	LBII	1439234	Lowfield Hall	2017-02-22		TQ2630439811	Historic England	II		1	4	
389	LBII	1452793	Lowfield Heath War Memorial	2018-01-09		TQ2739840111	Historic England	II		1	4	
390	LBII	1457234	Boer War Memorial Lychgate. Church of St Bartholomew. H	2018-09-18		TQ2769742692	Historic England	II		1	4	
391	LBII	1457872	Horley War Memorial	2018-09-06		TQ2790643541	Historic England	II		1	4	
392	LBII	1459067	War Memorial Lych Gate. Emmanuel Church. Sidlow	2018-09-18		TQ2589446922	Historic England	II		5	4	
393	CA		High Street	1986-11-01	1996-10-01		Crawley BC			5	5	
394	CA		Forestfield and Shrublands	1996-10-15			Crawley BC			5	5	
395	CA		Worth	1987-03-01			Crawley BC			5	5	
396	CA		Ifield	1981-09-01			Crawley BC			3	5	
397	CA		Charlwood	1974-03-26	1997-06-18		Mole Valley DC			1	5	297
398	CA		Massetts Road, Horley	2003-05-21	2005-03-15		Reigate and Banstead BC			1	5	296
399	CA		Outwood	1990-08-16			Tandridge DC			5	5	
400	CA		Burstow	1990-08-16			Tandridge DC			1	5	294
401	CA		Rusper	1976-11-26			Horsham DC			5	5	
402	CA		Dvers Almshouses	1996-10-15			Crawley BC			3	5	
403	CA		Sunnymead Flats	1997-06-01			Crawley BC			3	5	
404	CA		St Peter's, Ifield Road	1996-01-01	2004-05-01		Crawley BC			5	5	
405	CA		Brighton Road, Southgate	2009-03-25	2013-04-03		Crawley BC			5	5	
406	CA		Church Road, Horley	1970-02-24	2009-06-10		Reigate and Banstead BC			1	5	295
407	CA		Cross Oak Lane, Salfords	1990-12-13			Reigate and Banstead BC			5	5	
408	LLB		Windmill - Ifield				West Sussex HER		Ifield Mills (flour) on Ifield Green.{1} This was a postmill which had been moved from Cox's Hill, Surrey and was demolished in 1898. The old beam engine formerly in an adjoining building and used in conjunction with the mill is now in the Science Museum, where it was taken in 1928, and is said to be the smallest of its type in the country. Only the three storied round house remains.{2} No remains.{3} The windmill is shown on the 1841 Tithe Map of Ifield and its site is shown on OS 1874 6' map and on 1910 25' map, possibly slightly to the SE of location at 1 above (possibly TQ 2504 3786). Crawley locally listed building.	3	6	
409	LLB		The Cottage in the Wood, Balcombe Road, Crawley - Historic Building Information				West Sussex HER		The Cottage in the Wood occupies the site of a derelict gamekeeper's cottage. It was built between 1931-3, designed by Blunden Shadbolt (1879-1949), an Arts-and-Crafts architect known for his convincing historicist buildings, which often incorporated fabric from older structures. Crawley locally listed building	1	6	
410	LLB		BURSTOW HALL, Antlands Lane, Burstow				Surrey HER		Large Victorian house, divided into three houses. Crawley locally listed building	1	6	
411	LLB		Bolthods Cottage, Hathersham Close, Horley				Surrey HER		Tandridge locally listed building. Boltholds Cottage, 17th century, Hall House; NMR ref 516521 - House, built in the mid 16th century.	3	6	
412	LLB		Rede Hall, 122 Redehall Road, Smallfield				Surrey HER		Tandridge locally listed building. Rede Hall is of two storeys plus attic and is basically square in plan. The building is rendered and colourwashed. There are decorative string courses of terra cotta panels. The windows have round and pointed gothic arches with drip moulds above. There is a three storey tower on the south west corner. This had a spire-type roof in 1900 but is now a castellated turret. The roofs are slate in plain and fishscale patterns and are steeply pitched. There are decorative barges on the gable ends and there are two rendered stacks. On the front of the building the figure of an angel holds a shield with the date 1874. Most of the existing building dates from this time when it replaced the remains of an older building which originally occupied the moated site	3	6	
413	LLB		Rectory, Church Road, Burstow				Surrey HER		Tandridge locally listed building. Burstow Rectory was apparently built by John Flamstead in the sixteenth century when he was rector of the parish (and also acting as the First Astronomer Royal at Greenwich Observatory). There are later additions and alterations. Burstow Rectory has been since divided into two properties: The Rectory and Bartlemy	1	6	269
414	LLB		Bartlemy, Church Road, Burstow				Surrey HER		Tandridge locally listed building. Bartlemy previously formed part of The Rectory, Burstow. NMR ref 516522 - Bartelmy House, c. 1720	1	6	270
415	LLB		Anns Villa, Copthorne Bank, Copthorne				Surrey HER		Tandridge locally listed building. This tall three storey house is sited on the east side of the highway well back from the frontage. It is of simple rectangular plan with (tarnished) white colour-washed brickwork with stucco quoining and gauged flat arch wood casement windows. The low pitch slated roof has a chimney stack in each gable and apart from a single storey leanto on the north, the house is entirely symmetrical. The entrance doorway has a moulded stucco surround, the door being panelled and having a semi-circular fanlight with radial glazing bars. There is a modern prefabricated flat roof garage on the north and later outbuildings at rear	3	6	
416	LLB		Old Forge Cottage, Keepers Corner, Burstow				Surrey HER		Tandridge locally listed building. Old Forge Cottage may date from the first half of the 19th century with a later Victorian porch and possibly earlier outbuildings. The walls are of white colourwashed stucco, lined to imitate masonry and the roof has modern plain tiling. The windows are wood casements - some with glazing bars - and the porch has coloured glass in leaded lights of ornamental pattern	3	6	
417	LLB		Cherry Tree Inn, Copthorne Bank, Copthorne				Surrey HER		Tandridge locally listed building. The Northern portion with its twin double (low) pitched slate covered roofs with central valley gutter, white painted weatherboard cladding on brick plinth and wood sliding casement windows with glazing bars, together with chimney breast and stack on its northern gable end, probably stems from the 18th century. On the south is a late Edwardian brick built cross wing with plain tiled roof and sash windows with vertical glazing bars, whilst on its front elevation is a 'modern' single storey flat roofed extension and lean-to which partially masks 18th century portion	3	6	
418	LLB		Yew Cottage, 13 Wheelers Lane, Smallfield, Horley				Surrey HER		Tandridge locally listed building. 17th century with later additions. Yew Cottage, appears to date from the 19th century, is of two storeys, built in flemish-bond brick with dark headers and has gabled roof slates. The main part has a stack at both ends and has four vertical sliding sash windows set symetrically about a central door. To the west part is another with a separate roof, with a stack at the north-end but which extends further to the south. This part has tile hanging on the first floor	3	6	
419	LLB		Barn north of Allingham Farm, Copthorne Bank, Copthorne. NMR ref 516520				Surrey HER		Tandridge locally listed building. A 2 bay barn with opposing double doors. The high doors face the farmyard. A stable adjoins. Probably 19th century.	3	6	
420	LLB		Redehall Lodge, 132 Redehall Road, Smallfield				Surrey HER		Tandridge locally listed building. Sited on the west side of Redehall Road and originally related to Redehall slightly to the west, but now in separate ownership, the 'Lodge' is clearly Victorian in character and one of the better examples of the period. The original entrance gates and flanking railings to the Hotel still exist with their griffin piers, but now lead only to the lodge whose front is on the road boundary. The single storey building appears to be basically terra cotta faced (cement painted) with ornamental buff terra cotta tile course at cill level, label moulds over the wood casement windows with their diamond leaded lights and a steeply pitched tile roof with crested ridges whose gables have elaborate and varied ornamental barge boards. The eaves have moulded brackets and the all wood open entrance porch has elaborate uprights. There are also two bay windows. Some flat roofed additions occur at rear	3	6	
421	LLB		Brook Cottage, Antlands Lane, Shipley Bridge				Surrey HER		Tandridge locally listed building. Brook Cottage of two storeys and rectangular in pl	1	6	277
422	LLB		Brook Farm, Antlands Lane, Shipley Bridge				Surrey HER		Tandridge locally listed building. Brook Farm is larger and later in date than the ad	1	6	278
423	LLB		Chequers Hotel, Horley Row				Reigate & Banstead LLB		Reigate & Banstead locally listed building. Medieval Hall House. Two bays remain within much extended hotel	3	6	
424	LLB		1 Pullcotts Farm Cottages				Crawley LLB		Crawley Locally Listed Building. This three-bay house has polychromatic brickwork at ground-floor level and tile-hanging in various styles above. The windows are all original sashes, but the roof and entrance doors have been modernised	1	6	523
425	LLB		Poplars				Crawley LLB		Crawley Locally Listed Building. This is a three-bay detached house with ground-floor bay windows flanking an open porch at ground-floor level and three evenly spaced windows above. No original windows survive from its mid-19th-century construction, but the slate roof has not been altered	1	6	524
426	LLB		Royal Oak House				Crawley LLB		Crawley Locally Listed Building. Dating from the 1880s, this villa-style detached house has stuccoed walls and a partly jettied upper storey. The sash windows are original, and one of the side windows is a bay. A small cottage, possibly older, stands next to the house	1	6	525
427	LLB		Gatwick House				Crawley LLB		Crawley Locally Listed Building. Since its conversion into offices, this building has been extended several times in various styles, but the original 11-bay country house of 1876 survives. It is a concrete-faced Gothic Revival two-storey structure with a castellated parapet and tower. To the rear are 19th-century red-brick and 20th-century Neo-Georgian sections	1	6	526
428	LLB		Touchwood Chapel				Crawley LLB		Crawley Locally Listed Building. This was built in 1885 and was described in 1911 as a Baptist chapel in Burstow parish (of which Fernhill was an outlying settlement until boundary changes brought it into West Sussex). It has become a house, the red-brick walls have been painted and the windows have been modernised, but the slate roof remains from the original building	1	6	527
429	LLB		Gatwick Manor Lodge				Crawley LLB		Crawley Locally Listed Building. The medieval Gatwick Manor survives and is a Grade II* listed building, but nothing remains of its old estate or associated buildings except this former lodge, on the other side of Gatwick Airport at Povey Cross. A single-storey structure with bargeboarded gables, purple glazed brickwork and external stonework, it also retains its tiled roof and mullioned windows.	1	6	531
430	LLB		Newbridge and Zell Cottages				Crawley LLB		Crawley Locally Listed Building. These 18th-century buildings have been altered, but remain as examples of early artisan accommodation in the rural areas around Crawley. Original features include the slate roof and the weatherboarded upper storevs.	1	6	532
431	LLB		Greyhound Cottage				Crawley LLB		Crawley Locally Listed Building. This is a two-storey house attributed to either the 1780s or a few decades later. The upper storey is hung with red clay tiles; below that are stock bricks which have now been painted. The bargeboarded porch is not original, and no old windows survive.	1	6	533
432	LLB		Greyhound Inn (Public House)				Crawley LLB		Crawley Locally Listed Building. The centuries-old Sussex tradition of marble-playing on Good Friday was reintroduced at this pub in Tinsley Green, one of the old centres of the game, and it now hosts the British and World Marbles Championship. The 1930s building combines the Neoclassical and Arts and Crafts styles. A round, conical-roofed projecting entrance bay is fronted by a Doric-columned arcade with a balcony on top.	1	6	534
433	LLB		The Open Door				Crawley LLB		Crawley Locally Listed Building. The two-storey house faces Balcombe Road and has red brickwork, weatherboarding and a slate-tiled roof. It dates from the late 18th century	1	6	535
434	LLB		Parsons Pig Public House				Crawley LLB		Crawley Locally Listed Building. A Premier Inn hotel has been built in the grounds of this pub on the Balcombe Road, but it retains its late-19th-century appearance. The architectural style is Arts and Crafts, as demonstrated by the timber-framed gable ends, tile-hanging and large chimneys. The brick-built ground floor has an entrance porch.	1	6	536
435	LLB		Rose Cottage				Crawley LLB		Crawley Locally Listed Building. This late-19th-century detached house on the Balcombe Road has a double-pitched roof with a chimney in the "valley". The ground floor is of red brick; between this and the first-floor tile-hanging is a brick string-course with dentil decoration.	1	6	537

436	LLB	55-59 Grattons Drive		Crawley LLB	Crawley Locally Listed Building. Now a terrace of three houses, this "architecturally impressive" painted brick building was originally part of a farm. Decorative features include brick string-courses and dentils, a shingled and spire-capped central tower and rows of clay ridge tiles in front of the roof.	3	6	
437	LLB	Deerswood Court		Crawley LLB	Crawley Locally Listed Building. Deerswood was a farm and partly 15th-century timber-framed mansion southeast of Ifield village. Demolished in the 1950s, it was replaced in 1961–62 by a development of 99 flats set in three-storey blocks around the old grounds (in which a pergola survives). Architects K.H. Saunders and E.M. Bourne were responsible. Various traditional materials were used, such as clay tiles and variegated brickwork.	3	6	
438	LLB	Malvern Cottage and the Old Post Office		Crawley LLB	Crawley Locally Listed Building. These semi-detached cottages have been dated to the 1890s. One was originally Ifield village's post office, which gives the building additional historic significance. There are bay windows at ground-floor level, and the quoins are picked out in a different shade of brickwork.	3	6	
439	LLB	Oak House		Crawley LLB	Crawley Locally Listed Building. This is a detached villa-style house of the late 19th century, with sash windows flanking a central entrance bay which features a projecting gabled porch. The building is red-brick throughout.	3	6	
440	LLB	The Royal Oak		Crawley LLB	Crawley Locally Listed Building. One of two old inns in Ifield village (The Plough is the other), this building dates from the mid-19th century or earlier. Ironstone is the main building material, unusually for the Crawley area, but there are red-brick quoins and string-courses. Original features include the side chimneys and the casement windows, but the main façade is dominated by a 1960s extension.	3	6	
441	LLB	Brooklands		Crawley LLB	Crawley Locally Listed Building. The council describes this as "a little altered late Victorian villa". The detached house stands on Rectory Lane by Ifield Green and has red stock brick walls with red fishscale tiles to the gable ends. The building also retains its old sash windows with mullions.	3	6	
442	LLB	Barn Theatre		Crawley LLB	Crawley Locally Listed Building. This stands near St Margaret's Church, the ancient parish church. It is 17th- or 18th-century and is attached to some brick and tile stables. In 1973, both structures were converted into the Ifield Barn Theatre and were connected by a porch that "detracts" from the overall appearance. The building has a capacity of 85 and also holds exhibitions.	3	6	
443	LLB	Rectory Farmhouse		Crawley LLB	Crawley Locally Listed Building. This "large and handsome" house of the 1860s stands behind St Margaret's Church. It has red brickwork, a slate roof and a central entrance porch which is characteristic of its era	3	6	
444	LLB	Horley Fire Station		Reigate & Banstead LLB	1903. (Reigate & Banstead DC)	1	6	563
445	LLB	137 to 143 Albert Road. Horley		Reigate & Banstead LLB	(Reigate & Banstead DC)	1	6	571
446	LLB	3 (the Old Bakehouse), Bakehouse Road, Horley		Reigate & Banstead LLB	17C former chapel and bakehouse. (Reigate & Banstead DC) NMR ref 1496270 - Former General Baptist chapel opened in 1760 but closed in 1791 when the congregation moved to Nutfield. The building was then subdivided , one half becoming a bakehouse. Now a single dwelling of two storeys. Brick walls below but tile-hung above. roof h	3	6	
447	LLB	5 Bakehouse Road. Horley		Reigate & Banstead LLB	e19C. (Reigate & Banstead DC)	3	6	
448	LLB	1 Balcombe Gardens. Horley		Reigate & Banstead LLB	1924 by Blunden Shadbolt. (Reigate & Banstead DC)	1	6	549
449	LLB	114 Balcombe Road. Horley		Reigate & Banstead LLB	Granite Setts 1930. (Reigate & Banstead DC)	1	6	550
450	LLB	125 Balcombe Road. Horley		Reigate & Banstead LLB	c1900. (Reigate & Banstead DC)	1	6	553
451	LLB	129 Balcombe Road. Horley		Reigate & Banstead LLB	c1900. (Reigate & Banstead DC)	1	6	554
452	LLB	Little Manor Cottage, Little Manor, Little Manor Lawn & Hatch End, Horley		Reigate & Banstead LLB	formerly Bayhorne 18C. Location uncertain. (Reigate & Banstead DC)	3	6	
453	LLB	Granary to east of Bayhorne Farmhouse, Horley		Reigate & Banstead LLB	location uncertain. m19C stone staddles. (Reigate & Banstead DC)	1	6	546
454	LLB	The Air Balloon, Horley		Reigate & Banstead LLB	PH, formerly The Thorns and The Game Bird, I18C. (Reigate & Banstead DC)	1	6	570
455	LLB	Stoney Way, Horley		Reigate & Banstead LLB	location uncertain. Periwinkle stone path formerly to Court Lodge 16C. (Reigate & Banstead DC)	1	6	569
456	LLB	Pear Tree Cottage, Haroldslea Drive, Horley		Reigate & Banstead LLB	location not known. Pear Tree Cottage (18C) and former coach house to west (m19C, Gothic, weatherboard). (Reigate & Banstead DC)	1	6	547
457	LLB	Small barn, Haroldslea Drive, Horley		Reigate & Banstead LLB	location not known. Now a pigeon shed, to north of Harrowsley Bungalow (I17C). (Reigate & Banstead DC)	1	6	548
458	LLB	34 and 36 High Street. Horley		Reigate & Banstead LLB	e19C. (Reigate & Banstead DC)	1	6	564
459	LLB	51 High Street, Horley		Reigate & Banstead LLB	I19C Wealden sandstone, former bank. (Reigate & Banstead DC)	3	6	
460	LLB	Offices. outbuildings & works to west of Chequers Hotel. Horley Row. Horley		Reigate & Banstead LLB	18C or earlier. (Reigate & Banstead DC)	3	6	
461	LLB	53 (Yew Tree Cottage) Lee Street. Horley		Reigate & Banstead LLB	I17C: location approximate. (Reigate & Banstead DC)	1	6	573
462	LLB	27 Massetts Road. Horley		Reigate & Banstead LLB	16C remodelled. (Reigate & Banstead DC)	1	6	561
463	LLB	Coopers Lodge, Massetts Road, Horley		Reigate & Banstead LLB	location unknown. 1904. (Reigate & Banstead DC)	1	6	560
464	LLB	Wilger's Farmhouse, Silverlea Gardens, Horley		Reigate & Banstead LLB	I19C Blue headers. (Reigate & Banstead DC) NMR Ref 516151 - late 18th century house	3	6	
465	LLB	Barn & outbuildings to NE of Wilger's Farmhouse. Silverlea Gardens. Horley		Reigate & Banstead LLB	m18C. (Reigate & Banstead DC)	3	6	
466	LLB	Cart shed to north of Wilger's Farm barn. Silverlea Gardens. Horley		Reigate & Banstead LLB	I18C. (Reigate & Banstead DC)	3	6	
467	LLB	Barn to south of Harrowsley Green Farmhouse. Smallfield Road. Horley		Reigate & Banstead LLB	I17C. (Reigate & Banstead DC)	3	6	
468	LLB	123 Smallfield Road. Horley		Reigate & Banstead LLB	1924 by Blunden Shadbolt. (Reigate & Banstead DC)	3	6	
469	LLB	Former Albert Brewery, including Brewery Tower, Station Road, Horley		Reigate & Banstead LLB	I19C. (Reigate & Banstead DC)	3	6	
470	LLB	Chantry House, Vicarage Lane. Horley		Reigate & Banstead LLB	1853. (Reigate & Banstead DC)	1	6	572
471	LLB	88 and 90 (The Foresters Arms PH) Victoria Road. Horley		Reigate & Banstead LLB	c.1812. (Reigate & Banstead DC)	1	6	562
472	LLB	4 Victoria Road. Horley		Reigate & Banstead LLB	1930 granite setts. (Reigate & Banstead DC)	1	6	551
473	LLB	Horley Station, Station Road, Horley		Reigate & Banstead LLB	1905. (Reigate & Banstead DC) NMR Ref 501601 - Railway station on the London and Brighton Main Line, opened in 1841.	1	6	552
474	LLB	140 Victoria Road. Horley		Reigate & Banstead LLB	approx location. I18C. (Reigate & Banstead DC)	1	6	568
475	LLB	Cast iron mile post outside 7 Church Walk, Brighton Road, Horley		Reigate & Banstead LLB		1	6	
476	LLB	Haroldslea House and Westharrows. Haroldslea Drive. Horley		Reigate & Banstead LLB	C19	1	6	
477	LLB	13 Massets Road. Horley		Reigate & Banstead LLB	1925 former cinema	1	6	
478	ANA Red	Iron Ore Industry and Medieval Moated Site. Rusper	2016-02-16	West Sussex HER		1	7	
479	ANA Red	Chalwood House Medieval Moated Site. Crawley	2015-03-10	West Sussex HER		1	7	
480	ANA Red	Parkhouse Farm Medieval Moated Site. Crawley		West Sussex HER		1	7	
481	ANA Red	Site of Lowfield Heath Windmill. Crawley	2016-02-17	West Sussex HER		1	7	
482	ANA Red	Medieval Moated Site. Gatwick Manor Inn. Crawley		West Sussex HER		1	7	
483	ANA Red	Medieval Iron Working and Settlement Site. Tinsley Green. Crawley		West Sussex HER		1	7	
484	ANA Red	Site of an Iron Age Cremation Cemetery, Tinsley Green, Crawley	2016-02-17	West Sussex HER		1	7	
485	ANA Red	Roman Occupation. Balcombe Road. Crawley		West Sussex HER		1	7	
486	ANA Red	Mine Pits to the West of Gatwick Airport. Crawley		West Sussex HER		1	7	
487	ANA Red	Bronze Age Settlement to the North of Gatwick Airport. Crawley		West Sussex HER		1	7	
488	ANA Amber	The Beehive. Gatwick Airport. Crawley	2016-02-17	West Sussex HER		1	7	
489	ANA Red	The Church of St Michael and All Angels. Lowfield Heath. Crawley	2016-02-17	West Sussex HER		1	7	
490	ANA Red	Toovies Farm Medieval Earthworks. Crawley	2016-02-17	West Sussex HER		1	7	
491	CSAI	Medieval Moated Site or fish ponds. Povey Cross. Charlwood		Surrey HER	Related Monuments: 868	1	7	
492	AHAP	Medieval moated site. stock enclosure or fish pond. Povev Cross (associated with CSAI MV033)		Surrey HER	Related Monuments: 868	1	7	
493	AHAP	Charlwood Historic Core including St Nicholas' 11th century church		Surrey HER	Related Monuments: 862, various	1	7	
494	AHAP	Charlwood Green Historic Core		Surrey HER	Related Monuments: various	1	7	
495	CSAI	Thunderfield Castle. Medieval Ring and Bailey. or Medieval Moated Site. Horley		Surrey HER	Related Monuments: 873	1	7	
496	AHAP	Medieval Manor and possible Medieval Moated Site. Court Lodge Farm. Horley		Surrey HER	Related Monuments: 869	1	7	
497	AHAP	St Bartholemew's 14th century Church. Horley		Surrey HER	Related Monuments: 870. various	1	7	
498	AHAP	Prehistoric occupation/burial site. Horley		Surrey HER	Related Monuments: 867, 2460-1	1	7	
499	AHAP	possible Medieval Moated Site, Ringley Oak Cottage, Horley		Surrey HER	Related Monuments: 4560. 9952.	1	7	
500	CSAI	Medieval Moated site at Burstow Rectory		Surrey HER	Related Monuments: 1297	1	7	
501	AHAP	Medieval Moated site. Burstow Rectory (associated with CSAI TA029 and CSAI TA135)		Surrey HER	Related Monuments: 1297	1	7	
502	AHAP	Medieval Mound at Toonoth. Church Lane. Burstow		Surrey HER	Related Monuments: 1299	1	7	
503	CSAI	Medieval Moated Site. Burstow Court Lodge Farm		Surrey HER	Related Monuments: 1292	1	7	
504	BLD	16th-Century moated manor house. Court Lodge Farm. Burstow		Surrey HER	Remains of a 16th-Century homestead moat around 'Old Court'.	MANOR HOUSE: HOMESTEAD: 1	8	
505	MON	St Bartholemew's Church. Burstow		Surrey HER		CHURCH: CHURCH 1	8	
506	MON	Site of 14th-Century house and moat, Burstow Rectory, Burstow		Surrey HER	Very small moat, waterfilled and in good condition. Excavations carried out in 1964 revealed a building and pottery suggesting 14th-Century occupation.	MOAT; MANOR HOUSE; SITE 1	8	171
507	MON	12th/13th-Century homestead site and possible glasshouse, Topnotch, Church Lane, Burstow		Surrey HER	A mound excavated in 1937, yielding 12th/13th-Century pottery, an iron object, a portion of a crucible, and glass.	MOUND; HOMESTEAD; GLASS 1	8	172
508	MON	Mesolithic site and flint finds. Horley		Surrey HER		SITE: SITE 1	8	215
509	FS	Early Bronze Age barbed and tanged arrowhead. Haroldslea. Horley		Surrey HER	Early Bronze Age arrowhead struck from red/brown flint.	SITE: SITE 1	8	216
510	MON	Medieval field boundaries and features: Court Lodge School, Horley		Surrey HER	Trial trench evaluation by Surrey County Archaeological Unit revealed two medieval ditches, possibly early field boundaries, and an undated hearth and gully	FIELD BOUNDARY; DITCH 1	8	220
511	BLD	No. 2 Rosemary Cottages. Charlwood		Surrey HER		HOUSE: HOUSE 1	8	
512	PRK	THUNDERFIELD CASTLE GARDENS/PARK. Horley		Surrey HER		GARDEN: PARK 1	8	256
513	MON	MILESTONE. Brighton Road. opposite St Bartholomew's Church. Horley		Surrey HER		MILESTONE: MILESTONE 1	8	261
514	MON	World War Two aircraft crash site: Horley		Surrey HER		AIRCRAFT CRASH SITE 1	8	263
515	MON	World War Two Aircraft Crash: Smallfield		Surrey HER		AIRCRAFT CRASH SITE 1	8	264
516	MON	Aircraft Crash: Horley		Surrey HER		AIRCRAFT CRASH SITE 1	8	265
517	BLD	Burstow Rectory, Church Road, Burstow		Surrey HER		HOUSE; VICARAGE 1	8	
518	BLD	Bartlemy House. Church Road. Burstow		Surrey HER		HOUSE: VICARAGE 1	8	
519	BLD	Brook Cottage, Antlands Lane, Shipley Bridge		Surrey HER		HOUSE 1	8	
520	BLD	Brook Farm, Antlands Lane. Shipley Bridge		Surrey HER		HOUSE: FARMHOUSE 1	8	
521	MON	Linear features, probably 17th Century, land north of Tanyard Farm, Horley		Surrey HER	A number of linear features revealed by an archaeological evaluation, most probably drainage and/or boundary ditches dating to the Post Medieval period. Two of the ditches produced small quantities of Late Bronze Age and Late Iron Age pottery.	LINEAR FEATURE; DRAINAGE 1	8	279
522	BLD	REGENT CINEMA. Horley		Surrey HER		CINEMA: SUPERMARKET 1	8	
523	BLD	OLD CINEMA (DEMOLISHED). Massetts Road. Horley		Surrey HER		CINEMA 1	8	
524	MON	War Memorial. St Marv the Virgin Church. Holmbury St Marv		Surrey HER		WAR MEMORIAL 1	8	
525	MON	War Memorial. St Bartholomews. Horley		Surrey HER		WAR MEMORIAL 1	8	
526	MON	War Memorial. Brighton Road. Horley		Surrey HER		WAR MEMORIAL 1	8	
527	MON	War Memorial. Horley Parish Church. Horley		Surrey HER		WAR MEMORIAL 1	8	
528	MON	War Memorial. St Bartholomews Church. Burstow		Surrey HER		WAR MEMORIAL 1	8	
529	MON	War Memorial. St Bartholomews Church. Burstow		Surrey HER		WAR MEMORIAL 1	8	
530	MON	War Memorial. St Bartholomews Church. Burstow		Surrey HER		WAR MEMORIAL 1	8	
531	MON	War Memorial. St Nicholas Church. Charlwood		Surrey HER		WAR MEMORIAL 1	8	
532	BLD	The Half Moon Public House. Charlwood		Surrey HER		PUBLIC HOUSE 1	8	
533	BLD	Haroldslea House. Haroldslea Drive. Horley		Surrey HER		HOUSE 1	8	
534	MON	10 Soiers Farm Close. Horley.		Surrey HER		PLAQUE 1	8	
535	BLD	Butternut. Charlwood.		Surrey HER		HOUSE 1	8	
536	BLD	Felbrook Cottage. Charlwood.		Surrey HER		HOUSE 1	8	
537	BLD	Half Moon Inn. Charlwood.		Surrey HER		HOUSE: PUBLIC HOUSE 1	8	
538	BLD	Kingswhim. Charlwood.		Surrey HER		HOUSE 1	8	
539	BLD	The Coach House. Burstow		Surrey HER		COACH HOUSE: HOUSE 1	8	
540	FS	Flint Arrowheads. Horley		Surrey HER		FINDSPOT 1	8	181
541	FS	Bronze Roman Coins. Horley		Surrey HER		FINDSPOT 1	8	182
542	MON	Charlwood Windmill: Brick Base Of Smock Mill		Surrey HER		WINDMILL: SMOCK MILL 1	8	190
543	BLD	HORLEY MILL. Horley		Surrey HER		WATERMILL: WATERMILL: WA 1	8	192
544	MON	No 35 Munition Store. Horley		Surrey HER		BUILDING: MUNITION HOUSE 1	8	
545	MON	Possible Medieval moated site. Ringley Oak (Picketts Farm). Horley		Surrey HER		MOAT 1	8	197
546	MON	Narrow ditches - possible field boundaries: Former Court Lodge School, Horley		Surrey HER	A number of narrow ditches, probably field boundaries of perhaps Medieval date, recorded during a watching brief in 1994	LINEAR FEATURE; FIELD SYST 1	8	199
547	MON	Medieval pottery: Former Court Lodge School. Horley		Surrey HER		SITE 1	8	200
548	MON	Negative evidence: Ye Olde Six Bells public house, Horley		Surrey HER	A watching brief on limited groundworks revealed no features of archaeological significance.	SITE; SITE 1	8	201
549	FS	19th century features. Land adjacent to the High Street. Lumley Road and Albert Road. Horley		Surrey HER		SITE 1	8	204
550	MON	Site of former Farmfield Hospital. Farmfields. near Horley		Surrey HER		HOSPITAL: SITE 1	8	205
551	BLD	Charlwood Place Farm. Charlwood		Surrey HER		HOUSE: FARMHOUSE 1	8	
552	MON	NODAL POINT		Surrey HER	ANTI INVASION DEFENCE SITE : NODAL POINT	NODAL POINT 1	8	209
553	MON	Late Iron Age burial urn, Horley		Surrey HER	A "British" burial urn, probably of Late Iron Age origin, found south of Horley station in 1839-40.	FINDSPOT 1	8	159
554	MON	Povey Cross: possible moated enclosure and fish trap, Horley Street		Surrey HER	Small sub-rectangular moated enclosure, water-filled and in fair condition. It was formerly connected with the river from the south corner and may have been used as a fish trap.	MOAT; ENCLOSURE; MOAT; FI 1	8	160
555	MON	12th-century manor and homestead moat. Court Lodge Farm. Horley		Surrey HER		MOAT: UNASSIGNED: MANOR 1	8	161
556	MON	St Bartholemews Church. Horley		Surrey HER		CHURCH: CHURCH: CHURCH 1	8	162
557	MON	"Thunderfield Castle" medieval ring and bailey castle		Surrey HER		MOAT: CASTLE: RINGWORK: E 1	8	
558	MON	Site of Farmstead (unnamed) Historic Farmstead. Crawley		West Sussex HER		FARMSTEAD 1	8	129
559	MON	Site of Farmstead (unnamed) Historic Farmstead. Crawley		West Sussex HER		FARMSTEAD 1	8	129
560	MON	Forge Farm Historic Farmstead. Crawley		West Sussex HER		FARMSTEAD 1	8	
561	MON	Hairbrains Farm Historic Farmstead. Crawley		West Sussex HER		FARMSTEAD 1	8	
562	MON	Hairbrains Farm Historic Farmstead. Crawley		West Sussex HER		FARMSTEAD 1	8	
563	MON	Site of Heath House Farm Historic Farmstead. Crawley		West Sussex HER		FARMSTEAD 1	8	

564	MON	Site of Heath House Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
565	MON	Site of High Castle Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD: L SHAPE PLAN	1	8	
566	MON	Site of High Castle Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD: L SHAPE PLAN	1	8	
567	MON	Archeological Evaluation Report. Land to the East of London Road. Crawley.	West Sussex HER		LINEAR FEATURE: BOUNDARY	1	8	
568	MON	Gatwick Lower Mole Flood Storage Reservoir: Archaeological Investigation	West Sussex HER		TREE THROW: PIT: DITCH: PAI	1	8	
569	MON	Site of Huntsgreen Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
570	MON	Site of Hydecroft Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
571	MON	Hydehurst Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
572	NEG	Archaeological Evaluation Report. Land South of Hydehurst Lane. Northgate. Crawley	West Sussex HER		Negative Evidence	1	8	
573	MON	Site of Larkins Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
574	MON	Site of Larkins Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
575	BLD	Little Radford Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD: FARMHOUSE: L	1	8	
576	BLD	Little Radford Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD: FARMHOUSE: L	1	8	
577	MON	Little Tapsen (Tapsen Inn Farm) Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
578	MON	Gatwick Airport: Proposed Hotel. Edgeworth Site. Buckingham Gate. Crawley	West Sussex HER		BOUNDARY DITCH: RUBBISH F	1	8	
579	MON	Littleoark Farm Historic Farmstead. Rusper	West Sussex HER		FARMSTEAD	1	8	
580	MON	Gatwick Airport. North West Zone Project Gatwick Airport: Archaeological Evaluation Report	West Sussex HER		LINEAR FEATURE	1	8	
581	MON	Land at Forge Wood. Tinsley Green. Crawley - Archaeological Investigations	West Sussex HER		PIT: PIT: GULLY: POST HOLE: D	1	8	
582	MON	Site of Oaktree Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
583	MON	Site of Oaktree House Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
584	MON	Oldlands Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
585	MON	Radford Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
586	MON	Rowley Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
587	MON	Site of Historic Outfarm North East of Lovell Farm. Crawley	West Sussex HER		OUTFARM	1	8	
588	MON	Site of Historic Outfarm West of Taskers Farm. Crawley	West Sussex HER		OUTFARM	1	8	
589	MON	Parkhouse Farm Historic Farmstead. Rusper	West Sussex HER		FARMSTEAD	1	8	
590	MON	Site of Pickett's Barn Historic Outfarm. Crawley	West Sussex HER		OUTFARM	1	8	
591	MON	Pleasance (Poles Farm) Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
592	MON	Riverington Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
593	MON	Site of Poles Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
594	BLD	Rose Cottage Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD: FARMHOUSE	1	8	
595	MON	Site of Summersvere Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
596	MON	Gatwick Airport R2 Heritage Assessment: Lidar Analysis - Overview Record	West Sussex HER		ARCHAEOLOGICAL FEATURE	1	8	
597	BLD	Taskers Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD: FARMHOUSE	1	8	
598	BLD	Tinslow Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD: FARMHOUSE	1	8	
599	MON	Toovies Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
600	MON	Site of Westfield Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	
601	MON	Site of Yard South East of Fern Lodge. Crawley	West Sussex HER		OUTFARM	1	8	
602	MON	Yard South West of Amberley Farm. Crawley	West Sussex HER		OUTFARM	1	8	
603	MON	Palaeochannel. Crawley	West Sussex HER		PALAEOCHANNEL	1	8	
604	MON	Field Boundary on the Crawley-Rusper boundary	West Sussex HER		FIELD BOUNDARY	1	8	
605	MON	Field Boundary. Crawley	West Sussex HER		FIELD BOUNDARY: DITCH	1	8	
606	MON	Field Boundary. Crawley	West Sussex HER		FIELD BOUNDARY: DITCH	1	8	
607	MON	Palaeochannel. Crawley	West Sussex HER		PALAEOCHANNEL	1	8	
608	MON	Palaeochannel. Crawley	West Sussex HER		PALAEOCHANNEL	1	8	
609	MON	Palaeochannel. Crawley	West Sussex HER		PALAEOCHANNEL	1	8	
610	MON	Palaeochannel. Crawley	West Sussex HER		PALAEOCHANNEL	1	8	
611	MON	Bank or Field Boundary. Crawley	West Sussex HER		FIELD BOUNDARY: BANK (EAR	1	8	
612	MON	Cultivation Remains. Crawley	West Sussex HER		CULTIVATION MARKS	1	8	
613	MON	Palaeochannel. Crawley	West Sussex HER		PALAEOCHANNEL	1	8	
614	MON	Area of possible Ridge and Furrow. Crawley	West Sussex HER		RIDGE AND FURROW	1	8	
615	MON	Palaeochannel. Crawley	West Sussex HER		PALAEOCHANNEL	1	8	
616	MON	Field Boundary. Worth	West Sussex HER		FIELD BOUNDARY: BANK (FAR	1	8	
617	MON	Field Boundary. Rusper	West Sussex HER		FIELD BOUNDARY: BANK (EAR	1	8	
618	MON	Area of possible Ridge and Furrow. Rusper and Crawley	West Sussex HER		RIDGE AND FURROW	1	8	
619	MON	Field Boundaries or Drainage Ditches. Crawley	West Sussex HER		FIELD BOUNDARY: BANK (EAR	1	8	
620	MON	Oval Enclosure. Crawley	West Sussex HER		OVAL ENCLOSURE: BANK (EAF	1	8	
621	MON	Field Boundary. Crawley	West Sussex HER		FIELD BOUNDARY	1	8	
622	MON	Square Enclosure. Crawley	West Sussex HER		ENCLOSURE: EARTHWORK	1	8	
623	MON	Sub-Rectangular Enclosure. Crawley	West Sussex HER		ENCLOSURE: BANK (EARTHW	1	8	
624	MON	Area of possible Ridge and Furrow. Crawley	West Sussex HER		CULTIVATION MARKS: RIDGE A	1	8	
625	MON	Enclosure or Field Boundary. Rusper and Crawley	West Sussex HER		ENCLOSURE: FIELD BOUNDA	1	8	
626	MON	Earthwork or Ditch. Crawley	West Sussex HER		EARTHWORK: DITCH	1	8	
627	MON	Land East of Balcombe Road. Crawley - Archaeological Investigations	West Sussex HER		PIT: PIT: POST HOLE: BOUNDA	1	8	
628	MON	Croo mark - south of Brook Farm	West Sussex HER		MACULA: ENCLOSURE	1	8	5
629	MON	Croomark building - Brookside	West Sussex HER		BUILDING PLATFORM	1	8	11
630	MON	Placename - Brick Mead	West Sussex HER		BRICKWORKS	1	8	12
631	PLA	Placename - Windmill Field	West Sussex HER		SITE	1	8	13
632	MON	Placename - Pit Meadow	West Sussex HER		MINE	1	8	14
633	MON	Placename - Pit Croft	West Sussex HER		MINE	1	8	15
634	PLA	Placename - Kiln Field	West Sussex HER		SITE	1	8	16
635	MON	Banio enclosure - Brook Farm	West Sussex HER		ENCLOSURE	1	8	17
636	MON	Archaeoloaical Intervention - Charlwood House	West Sussex HER		PIT	1	8	20
637	MON	Archaeoloaical Intervention - Heathy Ground Farmhouse	West Sussex HER		SITE	1	8	21
638	NEG	Gatwick Manor Hotel. London Road. Crawley	West Sussex HER		Negative Evidence	1	8	22
639	MON	Gatwick Manor Inn	West Sussex HER		MOAT: HOUSE	1	8	23
640	MON	Ifield	West Sussex HER		MINE	1	8	26
641	MON	Placename - Mingell Close	West Sussex HER		MINE	1	8	29
642	MON	Placename - Forge Wood	West Sussex HER		IRONSTONE WORKINGS: BANI	1	8	32
643	MON	Tinslev Forge	West Sussex HER		IRONSTONE WORKINGS: PON	1	8	33
644	MON	Brick Mead	West Sussex HER		IRONSTONE WORKINGS	1	8	34
645	MON	Kiln	West Sussex HER		IRONSTONE WORKINGS	1	8	36
646	FS	Bronze Age Sword - Charlwood	West Sussex HER		FINDSPOT	1	8	41
647	MON	Medieval Settlement Remains near Oldlands Farm. Tinsley Green	West Sussex HER		SETTLEMENT: HOLLOW WAY:	1	8	
648	MON	Crawley N.E. Sector Development - Medieval Activity	West Sussex HER		HOUSE PLATFORM: PIT: GULL	1	8	45
649	MON	Crawley N.E. Sector Development - Platform	West Sussex HER		PLATFORM	1	8	46
650	MON	Crawley N.E. Sector Development - Boundary Bank	West Sussex HER		BOUNDARY BANK	1	8	47
651	MON	Crawley N.E. Sector Development - Furnace Pond	West Sussex HER		FURNACE POND	1	8	48
652	FS	Crawley N.E. Sector Development - Slag	West Sussex HER		FINDSPOT	1	8	49
653	MON	Crawley N.E. Sector Development - Boundary Bank	West Sussex HER		BOUNDARY BANK	1	8	50
654	MON	Crawley N.E. Sector Development - Gully	West Sussex HER		GULLY	1	8	51
655	MON	Crawley N.E. Sector Development - Boundary Bank	West Sussex HER		BOUNDARY BANK	1	8	52
656	MON	Crawley N.E. Sector Development - Ditch/slag	West Sussex HER		DITCH	1	8	53
657	MON	Lime Kiln - Trench 21	West Sussex HER		LIME KILN	1	8	54
658	MON	Crawley N.E. Sector Development - Boundary Bank	West Sussex HER		BOUNDARY BANK	1	8	55
659	FS	Crawley N.E. Sector Development - Slag	West Sussex HER		FINDSPOT	1	8	56
660	MON	Crawley N.E. Sector Development - Pond	West Sussex HER		POND	1	8	57
661	MON	Tinslev Green Trench 6	West Sussex HER		POST HOLE	1	8	58
662	FS	Tinslev Green - Trench 10	West Sussex HER		FINDSPOT	1	8	59
663	FS	Tinslev Green Evaluation. Trench 15 Finds. Crawley	West Sussex HER		FINDSPOT	1	8	60
664	BLD	Forge Farm	West Sussex HER		FARM: TOWER: TOWER	1	8	61
665	MON	Toovies Farm. Crawley	West Sussex HER		FARM: AIRCRAFT CRASH SITE	1	8	
666	MON	Gatwick Airport North West Development - Late Bronze Age Settlement	West Sussex HER		DITCHED ENCLOSURE: PIT: PI	1	8	67
667	MON	Gatwick Airport North West Zone. Crawley - Bronze Age Ditch	West Sussex HER		DITCH	1	8	68
668	MON	Gatwick Airport. North West Zone Development. Crawley - Undated Linear Gullies	West Sussex HER		GULLY: GULLY	1	8	69
669	MON	Gatwick Airport. North West Zone Development	West Sussex HER		BOUNDARY DITCH: BOUNDAR	1	8	70
670	MON	Gatwick Airport. Car Park Z (west)	West Sussex HER		BOUNDARY DITCH: BOUNDAR	1	8	71
671	FS	Gatwick Airport Car Park Z	West Sussex HER		FINDSPOT: FINDSPOT	1	8	72
672	MON	Charlwood oark farm	West Sussex HER		FARM	1	8	73
673	MON	Heathy Ground Farm	West Sussex HER		POST HOLE	1	8	75
674	MON	Heathround Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD: U SHAPE PLAN: I	1	8	
675	MON	Heathround Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD: U SHAPE PLAN: I	1	8	
676	MON	Crawley N.E. Sector Development - Boundary Bank	West Sussex HER		BOUNDARY BANK	1	8	77
677	MON	Anti Aircraft - The Kentish Gun Belt	West Sussex HER		ANTI AIRCRAFT BATTERY	1	8	78
678	MON	Anti Aircraft - The Kentish Gun Belt - Tinslev Green	West Sussex HER		ANTI AIRCRAFT BATTERY	1	8	79
679	MON	Croomark Enclosure - Gatwick	West Sussex HER		ENCLOSURE	1	8	81
680	MON	Gatwick House	West Sussex HER		HOUSE: FISHPOND	1	8	84
681	BLD	Roval Observer Corps Monitoring Post (Cold War) - Crawley	West Sussex HER		ROYAL OBSERVER CORPS MC	1	8	89
682	MON	Earthwork	West Sussex HER		MOUND	1	8	90
683	MON	Site of Oaktree House. Crawley	West Sussex HER		PATH: HA HA: TRACKWAY: DIT	1	8	98
684	BLD	The Beehive - Gatwick Airport	West Sussex HER		AIR TERMINAL	1	8	
685	MON	Windmill - Gatwick Manor Inn	West Sussex HER		WINDMILL	1	8	100
686	NEG	Antlands Lane West. Shipley Bridge. Crawley. West Sussex: Archaeological Watching Brief	West Sussex HER		Negative Evidence	1	8	101
687	BLD	The Cottage in the Wood. Balcombe Road. Crawley - Historic Building Information	West Sussex HER		HOUSE: ENTRY: POST: INGLEN	1	8	103
688	MON	War Memorial within the grounds of St Michael and All Angels Church. Lowfield Heath	West Sussex HER		WAR MEMORIAL: CROSS	1	8	104
689	MON	Charlwood House and possible moat	West Sussex HER		HOUSE: MOAT	1	8	108
690	MON	Site of Allen's Farm Historic Outfarm. Crawley	West Sussex HER		OUTFARM: U SHAPE PLAN	1	8	110
691	MON	Site of Allen's Farm Historic Outfarm. Crawley	West Sussex HER		OUTFARM: U SHAPE PLAN	1	8	110
692	MON	Amberley Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	111
693	MON	Amberley Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	111
694	MON	Windmill - Lowfield Heath	West Sussex HER		WINDMILL	1	8	112
695	MON	Homestead Moat. Packhouse Farm. Crawley	West Sussex HER		MOAT	1	8	113
696	MON	Roman occupation - Horleyland	West Sussex HER		FINDSPOT	1	8	114
697	MON	Birchfield Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	118
698	MON	Brook Farm Historic Farmstead. Crawley	West Sussex HER		FARMSTEAD	1	8	121
699	MON	Brooklvn Farm (Bonnets) Historic Farmstead. Rusper	West Sussex HER		FARMSTEAD	1	8	122
700	MON	Brooklvn Farm (Bonnets) Historic Farmstead. Rusper	West Sussex HER		FARMSTEAD	1	8	122
701	EVT	An Archaeological evaluation of the proposed development at farmfields near Horlev	Surrev HER			1	9	167
702	EVP	A Preliminary archaeological assessment of proposed development at Farmfields Near Hookwood	Surrev HER			1	9	168
703	EVP	Archaeological Desk Based Assessment for the Land to the Rear of Hilton Cottages, Chiltern Cottages, The Li	Surrev HER			1	9	522
704	EVT	An Archaeological Watching Brief on proposed Development of Ye Olde Six Bells. Church Road. Horlev	Surrev HER			1	9	176
705	EVP	Archaeological Desk Based Assessment of land at Kennel Lane, Hookwood	Surrev HER			1	9	
706	EVP	Archaeological Desk Based Assessment of land at The Close. Horlev	Surrev HER			1	9	
707	EVP	Historv in Maps: Charlwood - A Parish on the Weald Clav	Surrev HER			1	9	177
708	EVT	An Archaeological Evaluation at the Former. Court Lodge School. Horlev. Surrev	Surrev HER			1	9	178
709	EVT	An Archaeological Watching Brief at the Former Court Lodge School. Horlev. Surrev	Surrev HER			1	9	179
710	EVP	A Preliminary Archaeological Assessment of the Proposed Extension to the car park of the Horlev Anderson Swi	Surrev HER			1	9	180
711	EVS	Observation of extension building and internal alterations of St Bartholomew's Church.	Surrev HER			1	9	
712	EVT	DENDROCHRONOLOGICAL ANALYSIS OF OAK TIMBERS FROM CHARLWOOD PLACE FARM, CHARLWO	Surrev HER			1	9	148
713	EVT	Dendrochronological analvsis of oak timbers from No. 2 Rosemary Cottages, Charlwood, Surrev, England	Surrev HER			1	9	153
714	DBA	Proposed New Hotel Gatwick Airport West Sussex	West Sussex HER		Ref: 91010.785.3	1	9	
715	DBA	A Desk Based Assessment of Q-Park. Gatwick Airport. West Sussex	West Sussex HER			1	9	
716	EVT	Proposed Immigration Removal Centre. Site of Oaktree House. Crawley	West Sussex HER		Ref: 91011.02	1	9	
717	DBA	An Archaeological Desk Based Assesment of Land at Charlwood Road. Crawley. West Sussex. RH10 9TQ	West Sussex HER		K2057	1	9	
718	EVT	Archeological Evaluation Report. Land to the East of London Road. Crawley.	West Sussex HER		ASE Report No: 2011309	1	9	
719	EVT	Gatwick Lower Mole Flood Storage Reservoir: Archaeological Investigations	West Sussex HER		Report No: 472	1	9	
720	EVT	Antlands Lane West. Shipley Bridge. Crawley - Archaeological Watching Brief	West Sussex HER			1	9	
721	EVT	Land South of Hydehurst Lane. Crawley - Evaluation	West Sussex HER		Project No. 6664	1	9	
722	DBA	Land off London Road. Crawley - Desk Based Assessment	West Sussex HER		CgMs Ref: CB/16122	1	9	
723	DBA	Gatwick Airport. Pollution Control Lagoon. Desk-Based Assessment & Field Reconnaissance	West Sussex HER		GAT 23	1	9	
724	EVT	Gatwick Airport: Proposed Hotel. Edgeworth Site. Buckingham Gate. Crawley	West Sussex HER		Report Ref: 91012.03	1	9	
725	DBA	Windmill Farm. Ifield - Desk-Based Assessment	West Sussex HER		Project No. 5626	1	9	
726	EVT	Gatwick Airport. North West Zone Project Gatwick Airport: Archaeological Evaluation Report	West Sussex HER		Report Ref: 92010.450	1	9	
727	EVT	Land at Forge Wood. Tinsley Green. Crawley Phase 1 and 3 - Archaeological Evaluation and Excavation	West Sussex HER			1	9	
728	EVS	Gatwick Airport R2 Heritage Assessment: LIDAR Analysis	West Sussex HER		AOC23373	1	9	
729	EVS	Lowfield Hall. Lowfield Heath. Crawley - Tree-Ring Analysis of Oak Timbers	West Sussex HER			1	9	
730	EVT	Spitfire 1A P9375 Crash at Toovies Farm. Crawley - Excavation	West Sussex HER			1	9	
731	EVT	Three Bridges Main - Smallfield 132 kV Overhead Tower Line Diversion at Toovies Farm. Crawley - Watching Br	West Sussex HER		Project Code: 1050064-SD-290518	1	9	
732	EVT	Land East of Balcombe Road. Crawley - Archaeological Investigations	West Sussex HER		Project Code: 160889	1	9	
733	EVT	Part Excav. Thames Valley Arch. Nov 95	West Sussex HER			1	9	
734	EVT	Part excav. TVAS. 1996	West Sussex HER			1	9	
735	EVS	Gatwick Airport Development (Balancing Pond North): Geophysical Survey	West Sussex HER			1	9	
736	EVT GEO	TINSLEY GREEN	NMR			1	10	367
737	EVT WAT	CHARLWOOD HOUSE	NMR			1	10	368
738	NMR BLD	CHARLWOOD AND HORLEY COTTAGE HOSPITAL	NMR		Cottage hospital built in 1873. Now in use as a hotel.	3	10	300
739	EVT EVA	COURT LODGE SCHOOL. HORLEY	NMR			1	10	369
740	EVT WAT	FORMER COURT LODGE SCHOOL	NMR			1	10	370
741	EVT EVA	HEATHY GROUND FARMHOUSE	NMR			1	10	371
742	EVT WAT	GATWICK MANOR HOTEL	NMR			1	10	372
743	NMR_BLD		NMR		A 19th or 20th century outside privy which ceased to be used in 1957. The hardwood frame stands on a brick sill, with the framing clad in oak and soft wood weatherboarding. The single hole seat board can be lifted off and the bucket can be reached from t	1	10	301
744	NMR_BLD	THE MOUNT FARMHOUSE	NMR		Three bay, timber framed, medieval house of which the centre bay was an open hall.The large timbers are good quality and medieval rafters run the whole width of the house.	3	10	302
745	NMR_BLD	YEW TREE COTTAGE	NMR		House built in the late 16th century. It appears to have been built as a pair of small cottages with brick external walls, but it has excellent reused joists and spine beams of c1600. Outshot, this is the kitchen, it is large enough to have an upstairs f	1	10	303

746	NMR	GATWICK AIRPORT	NMR	A major airport with a phase as a military airfield. Before the Second World War Gatwick was a private airport, it became a Royal Air Force fighter station during World War Two. Some military aircraft hangars (Bellman and Blister types) were added. After	1	10	304
747	EVT_EVA	NORTH-EAST SECTOR DEVELOPMENT SITE	NMR		1	10	373
748	EVT_EVA	CRAWLEY LEISURE PARK, LONDON ROAD	NMR		3	10	374
749	EVT_EVA	GATWICK MANOR HOTEL	NMR		1	10	375
750	EVT_EVA	IFIELD COURT MOAT	NMR		3	10	376
751	EVT_EVA	KILNMEAD/HIGH STREET JUNCTION	NMR		3	10	377
752	EVT_EXC	KILNMEAD/HIGH STREET JUNCTION	NMR		3	10	378
753	EVT_DBA	FARMFIELDS, NEAR HOOKWOOD	NMR		1	10	379
754	EVT_WAT	STUMBLEHOLME FARM, IFIELD	NMR		5	10	380
755	EVT_GEO	TINSLEY GREEN, CRAWLEY	NMR		1	10	381
756	EVT_EVA	LAND AT HORLEY	NMR		3	10	382
757	EVT_WAT	RIVER MOLE DIVERSION, GATWICK AIRPORT	NMR		1	10	383
758	NMR	LONDON AND BRIGHTON RAILWAY	NMR	The London - Brighton main line was authorised in in 1837 between Selhurst Farm (South of Norwood Junction), with branches to Shoreham, and Newhaven via Lewes. The engineer was John Urpeth Rastrick. Work started in July 1838, and the railway was opened i	1	10	305
759	NMR	THREE BRIDGES AND HORSHAM BRANCH RAILWAY	NMR	This was the first LBSCR line to penetrate the Sussex Weald, and ran from Three Bridges on the main London - Brighton Line to Horsham. Authorised in 1845, the 8.5 mile line opened in 1848. It later formed part of the Mid Sussex Line.	3	10	306
760	EVT_ARC	IFIELD STEAM MILL, OFF RUSPER ROAD	NMR		3	10	384
761	NMR_BLD	LOWFIELD HEATH WINDMILL	NMR	A post mill thought to date from 1762 was moved here in 1987 due to Gatwick airport expansion.	3	10	307
762	EVT_EVA	GATWICK AIRPORT (NW ZONE)	NMR		1	10	385
763	EVT_EVA	GATWICK AIRPORT (CAR PARK 7 WEST)	NMR		1	10	386
764	EVT_EXC	GATWICK AIRPORT, NORTH WEST ZONE CAR PARK	NMR		1	10	387
765	EVT_WAT	POUND HILL	NMR		3	10	388
766	EVT_SUR	POUND HILL	NMR		3	10	389
767	EVT_ENV	GATWICK AIRPORT: NORTH WEST ZONE STANDS	NMR		1	10	390
768	EVT_EVA	TINSLEY GREEN, CRAWLEY	NMR		1	10	391
769	EVT_WAT	APPLE TREE FARM, IFIELD GREEN	NMR	Site code: ALE05. Monitoring of contamination test-pitting recorded no significant archaeological activity. Information from OASIS Online Form. NMR microfilm Index PRN: 10001.	3	10	392
770	EVT_EVA	GATWICK AIRPORT NORTH WEST ZONE CONCRETE CRUSHER & BATCHER P	NMR		1	10	393
771	EVT_EVA	GATWICK AIRPORT NORTH WEST ZONE: PHASE 1	NMR		1	10	394
772	NMR		NMR	Site of a Second World War anti-aircraft gun tower South-West of Gatwick Airport.	1	10	308
773	NMR		NMR	Second World War roadblock [plotted from German aerial photograph]. On original course of Hathersham Lane near Weatherhill. site now obliterated by M23 motorway.	3	10	309
774	EVT_EVA	67 IFIELD ROAD, WEST GREEN	NMR	Five trenches excavated in advance of proposed residential development, recording large quantities of iron working slag, probably medieval in date, as well as undated features. Information from OASIS Online Form.	5	10	395
775	EVT_ARC	ROWLEY FARM, LOWFIELD HEATH	NMR	Site code: CRF06. Historic building recording of 16th century roof timbers in a later cow shed. Information from OASIS Online Form.	1	10	396
776	EVT_EVA	PERIMETER ROAD SOUTH, GATWICK AIRPORT	NMR	Site code: GIC07. Five trenches excavated on the site of a proposed Immigration Removal Centre recorded 18th century garden features belonging to Oakfield House. Information from OASIS Online Form.	1	10	397
777	NMR	KENTISH GUN BELT DIVER BATTERY B2	NMR	Site of a Second World War Diver Battery in the Kentish Gun Belt at Charlwood. It was armed with eight mobile 3.7-inch guns, which were progressively replaced with 3.7-inch Mark IIC guns, and manned by 132nd Mobile Regiment of the 57th Anti Aircraft Brig	3	10	310
778	NMR	KENTISH GUN BELT SINGLE GUN (DIVER) BATTERY (BRIDG	NMR	Site of a single gun (Diver) light anti aircraft emplacement and searchlight emplacement at Bridgham. This was armed with a 40mm gun, which was moved to an extant searchlight emplacement between 24th-26th June 1944, as part of the fourth deployment of 21	3	10	311
779	EVT_DBA	PROPOSED NEW HOTEL, GATWICK AIRPORT	NMR		1	10	398
780	EVT_EVA	GATWICK AIRPORT: EDGEWORTH SITE, BUCKINGHAM GATE	NMR	Site code: 91012. Thirteen evaluation trenches excavated in advance of proposed development. Post-medieval rubbish pits and two ditches were recorded. NMR Microfilm Index PRN: 10623.	1	10	399
781	NMR		NMR	A Second World War air raid shelter located in the garden of a private house that backs onto Gatwick Airport. It is a semi-sunken shelter constructed of brick with a concrete roof supported by wooden beams and two entrances. During the Second World War t	1	10	312
782	EVT_DBA	APPLE TREE FARM, IFIELD	NMR		3	10	400
783	NMR_BLD		NMR	Former General Baptist chapel opened in 1760 but closed in 1791 when the congregation moved to Nutfield. The building was then subdivided , one half becoming a bakehouse. Now a single dwelling of two storeys. Brick walls below but tile-hung above, roof h	3	10	313
784	NMR		NMR	Site of a Strict Baptist chapel built in 1847 in Lee Street, closed in 1881, and sice demolished. There is an adjacent burial ground.	1	10	314
785	NMR	WORTH PARK	NMR	A late 19th century landscape park which was originally part of a Medieval deer park. The park had been first landscaped by 1695, a map of this date shows the park and a large building situated within the park palisade. By 1840 the house is known as Wor	3	10	315
786	EVT_DBA	Q-PARK, GATWICK AIRPORT	NMR	DBA 2007	1	10	422
787	EVT_EXC	LAND OFF PEGLER WAY	NMR	Site code: PWC04/90. Excavation in advance of proposed development recorded medieval activity dating from the late 12th to 14th centuries. NMR Microfilm Index PRN: 13444.	3	10	401
788	NMR_BLD	SURREY AND SUSSEX CREMATORIUM	NMR	The Surrey and Sussex Crematorium was built in 1956 for the South London Cremation Company Ltd and is now (2011) owned by Dignity. The first of two crematoria designed by James Ralph (the second being Exeter Crematorium HOB UID 1523154), it was built by	1	10	316
789	EVT_WAT	BALCOMBE ROAD, HORLEY	NMR	Site code: BRH08. Monitoring of groundworks for a replacement sewer pipe recorded modern field drains only. Information from OASIS Online Form.	1	10	402
790	NMR	GOFFS PARK	NMR	A public park created in its present form during the 1950s. The origins of the park are uncertain but probably had its origins as parts of the estates to Goffs Park House and Goffs Manor. It contains areas of formal parkland. woodland. a lake and a rock	5	10	317
791	EVT_ARC	CINQUE PORT ARMS, 9 CLARENCE PLACE	NMR		3	10	403
792	NMR	SEARCHLIGHT BATTERY KY01 2	NMR	The site of Second World War searchlight battery no. KY01 2 at Charlwood. It was manned by 35 Searchlight Regiment RA under the command of 27th AA Brigade. The battery was operational by 21 July 1941. Searchlight sites typically comprised a small ring-di	3	10	318
793	EVT_EVA	LAND AT GATWICK AIRPORT	NMR	Evaluation trenching for the North-West Zone Project recorded undated linears and modern field drains.	1	10	404
794	EVT_EVA	LAND EAST OF LONDON ROAD	NMR	Thirty trenches excavated across three fields, recording possible Roman boundary/drainage ditches. Information from OASIS Online Form.	1	10	405
795	EVT_WAT	THE MANOR HOUSE	NMR	Watching Brief 1990. Post-medieval pottery	1	10	418
796	EVT_ARC	LITTLE DOLBY, IFIELD ROAD	NMR		1	10	406
797	EVT_ARC	THE OLD BAKEHOUSE	NMR		1	10	407
798	EVT_ARC	PAGEWOOD COTTAGE	NMR		3	10	408
799	EVT_ARC	HILLANDS FARMHOUSE	NMR		3	10	409
800	EVT_ARC	FULBROOK COTTAGE	NMR		1	10	410
801	NMR		NMR	Medieval ironworks and bloomery: Macehead found.	5	10	319
802	NMR		NMR	Byzantine Cross found at Rusper, presented to Lewes Castle Museum.	5	10	320
803	NMR		NMR	A Mesolithic flint site found by Berkensall and Hicks and designated by them as Tilgate 1-4. In addition to microliths, an unusual arrowhead was found.	3	10	321
804	NMR		NMR	Ifield Park	3	10	322
805	NMR		NMR	12th C Moated Manor House	1	10	323
806	NMR		NMR	Site of a fishpond, thought to the remains of a moat. Site of Gatwick. house and fishoond no longer extant.	1	10	324
807	NMR		NMR	Mesolithic flint working site, Early Bronze Age scraper found	3	10	325
808	NMR	OLD COURT	NMR	A 16th century moated manor house. Parts of moat/landscaping still extant, house is listed grade II (RPS 1059)	1	10	326
809	NMR_BLD	IFIELD WINDMILL	NMR	The reported site of a windmill.	3	10	327
810	NMR_BLD	IFIELD STATION	NMR	Railway station on the Three Bridges and Horsham branch line, built 1848.	3	10	328
811	NMR_BLD	GATWICK AIRPORT STATION	NMR	Railway station which commenced operation as Gatwick for the LBSCR in 1841. This station closed in 1876 but was reopened by the LBSCR in September 1891. It was renamed Gatwick Racecourse 1946 and finally Gatwick Airport on 27 May 1958. The first Gatwi	1	10	329
812	NMR_BLD	HORLEY STATION	NMR	Railway station on the London and Brighton Main Line, opened in 1841.	1	10	330
813	NMR_BLD	OLD COTTAGE	NMR	House, built between 1617 and 1629.	3	10	331
814	NMR_BLD	BUTTERNUT	NMR	A house of 1743 in Charlwood.	1	10	332
815	NMR_BLD	THE FORGE	NMR	Mid to late 18th century house.	1	10	333
816	NMR_BLD	FORGE COTTAGE	NMR	Early 17th century house, altered in the early 18th century.	3	10	334
817	NMR_BLD		NMR	A post medieval barn at Hillands.	3	10	335
818	NMR_BLD	KINGS WHIM	NMR	House, built in the early 18th century.	1	10	336
819	NMR_BLD		NMR	A 17th century barn at Wellands.	3	10	337
820	NMR_BLD	WILGERS	NMR	Late 18th century house.	3	10	338
821	NMR_BLD		NMR	Early 19th century barn at Allinaham Farm.	3	10	339
822	NMR_BLD		NMR	A 17th/18th century barn at Broadbridge Farm, later converted into a dwelling.	1	10	340
823	NMR_BLD	NEW HOUSE FARM	NMR	House, built in the 18th century.	3	10	341
824	NMR_BLD	RIVINGTON FARM	NMR	Farmhouse, built in the 18th century.	1	10	342
825	NMR	SHIPLEY BRIDGE FARM	NMR	House, built in the 15th century.	1	10	343
826	NMR_BLD		NMR	Late 17th century barn at Stonelands Farm.	3	10	344
827	NMR_BLD	LANGSHOT FARM	NMR	House, built before 1700.	3	10	345
828	NMR_BLD		NMR	Dairy at Inholms Farm, built circa 1800.	1	10	346
829	NMR_BLD		NMR	Post medieval barn at Inholms Farm.	1	10	347
830	NMR_BLD		NMR	Barn at Rolls Farm, built in the early to mid 18th century.	1	10	348
831	NMR_BLD		NMR	A barn built circa 1500, since 1901 converted to a dwelling, associated with the house known as Brookside.	1	10	349
832	NMR_BLD		NMR	A late 16th century barn at Ifield Court Farm.	3	10	350
833	NMR_BLD		NMR	A barn built in 1842 at Ifield Court Farm.	3	10	351
834	NMR_BLD		NMR	A shelter shed built before 1841 at Ifield Court Farm.	3	10	352
835	NMR_BLD		NMR	A dairy built between 1920 and 1930 at Ifield Court Farm	3	10	353
836	NMR_BLD	YEW TREE COTTAGE	NMR	A house built in 1736.	1	10	354
837	NMR_BLD	CHURCH OF SAINT RICHARD OF CHICHESTER	NMR	A modern, brick-built church, constructed in 1953 to 1954. The chancel occupies a square block with a glass-brick drum above and a large window set in an apse to the south. The nave lies to the west, in a lower, rectangular range of 3 bays, lit by tall,	3	10	355
838	NMR_BLD	YEW TREE COTTAGE	NMR	House, built in the 17th century.	1	10	356
839	NMR_BLD	GATWICK DAIRY FARM	NMR	A post medieval granary at Gatwick Dairy Farm.	1	10	357
840	NMR_BLD	UNITED REFORM CHURCH	NMR	Late 19th century church.	1	10	358
841	NMR_BLD	THE CHEQUERS HOTEL	NMR	Early 16th century house, converted to an inn in the mid 18th century and later used as a hotel.	3	10	359
842	EVT_EXC	IFIELD MILL	NMR	Excavation at Ifield water mill 1975-78	5	10	411
843	EVT_EXC	HEATHY GROUND	NMR	Excavation 1938-39. Mesolithic occupation and lithic working site	3	10	412
844	EVT_EXC	BURSTOW RECTORY	NMR	Excavation 1964. Medieval building and finds	1	10	413
845	EVT_EXC	TOPNOTCH, CHURCH LANE	NMR	Excavation 1937. Medieval enclosed settlement and industrial site	1	10	414

846	EVT_EXC		ST NICHOLAS' CHURCH			NMR		Excavation 1982.	1	10	415
847	EVT_EXC		CHARLWOOD			NMR		Excavation 1982-83. Mesolithic lithic working site	3	10	416
848	EVT_EXC		COURT LODGE FARM			NMR		Excavation 1966-67. Medieval and Post-medieval manor / moated site	1	10	417
849	EVT_WAT		ST BARTHOLOMEWS CHURCH			NMR		Watching Brief 1991. Inhumation	1	10	419
850	NMR_BLD					NMR		Smock mill, built circa 1800 and largely destroyed in 1897. The brick base is now incorporated into Mill Cottage.	1	10	360
851	NMR_BLD		THE COACH HOUSE			NMR		Coach house and stable with hay loft above, built of brick between 1870 and 1910. The building has been extended and converted into a house.	1	10	361
852	EVT_EXC		LOWFIELD HEATH			NMR		Excavation 1987. Minor excavation of foundations of 19th century windmill after roundhouse dismantled	1	10	420
853	EVT_EXC		TINSLEY GREEN			NMR		NMR 1002241 and 917055 - 1990 geophysical survey, which revealed forge site and three major areas of slag debris. Subsequent excavation of forge site.	1	10	421
854	NMR		CHARLWOOD PARK			NMR		Early 19th century house formerly known as Timberham Park. Charlwood Park was demolished to make way for Gatwick airport.	1	10	362
855	NMR		HORLEY STATION			NMR		Site of railway station built in circa 1855 and closed in 1967.	3	10	363
856	NMR					NMR		Mesolithic Chipping Floor	3	10	364
857	NMR					NMR		Bloomery site west of Gatwick Airport	1	10	365
858	NMR		CINDERY SEVENTEEN			NMR		Bloomery	3	10	366
859	BLD		Barn near Old Bonnetts Cottage			RPS			1	11	528
860	BLD		The Grove. Poles Lane. Lowfield Heath			RPS			1	11	529
861	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area B. Linear anomalies and possible double ditched track (?prehistoric/Romano-British)	1	12	
862	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area C. Possible curvilinear ditch/ enclosure (?prehistoric)	1	12	
863	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area H. Possible c.50 x 60 m oval enclosure and possible pit cluster with series of pits / internal features (?prehistoric / multi-period)	1	12	
864	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area C. Palaeo-channel of Man's Brook	1	12	
865	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area H. Linear feature	1	12	
865	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area D. Linear anomaly; possibly former field boundary?	1	12	
865	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area D. Linear anomaly; possibly former field boundary?	1	12	
866	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area C. Possible straight form furrows of post-medieval ridge & furrow (N-S)	1	12	
866	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area B. Possible straight form furrows of post-medieval ridge & furrow (E-W)	1	12	
867	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area C. Possible ridge & furrow (N-S) (in addition to E-W set)	1	12	
868	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area C. Faint curvilinear feature; corresponds with field boundary shown on Charlewood Tithe map	1	12	
868	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area B. Undated field boundaries and probable post-medieval field boundaries - shown on Charlewood Tithe map	1	12	
868	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area H. Undated field boundaries and probable post-medieval field boundaries - shown on Charlewood Tithe map	1	12	
869	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area C. Faint linear anomalies	1	12	
870	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area A. Linear anomaly, corresponds with former field boundary shown on historic mapping	1	12	
870	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area A. Linear anomaly, corresponds with former field boundary shown on historic mapping	1	12	
870	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area A. Linear anomaly, corresponds with former field boundary shown on historic mapping	1	12	
871	Geo		Geophysical Anomaly			Geophysical Survey 2019		2019 geophysical survey Area A. Series of parallel linear anomalies, most likely plough marks	1	12	
1001	RPG3	1001175	REIGATE PRIORY		TQ 24969 49732	Historic England	II		7.5	15	
1002	RPG2	1000158	GRAVETYE MANOR		TQ3613934129	Historic England	II*		10	15	
1003	RPG2	1000160	NYMANS		TQ 26538 29273	Historic England	II*		10	15	
1004	RPG2	1000189	WAKEHURST PLACE		TQ 33707 31221	Historic England	II*		10	15	
1005	RPG2	1000200	THE HIGH BEECHES		TQ 27612 30688	Historic England	II*		10	15	
1006	RPG3	1000326	STONEHURST		TQ 34807 31857	Historic England	II		10	15	
1007	RPG3	1001409	LOWER GATTON PARK		TQ7203052669	Historic England	II		10	15	
1008	RPG3	1001695	STANDEN		TQ 38896 35627	Historic England	II		10	15	
1009	RPG2	1000143	The Deedene (including Chart Park)	2012-06-19	TQ1749748734	Historic England	II*		15	15	
1010	RPG1	1000159	LEONARDSLEE		TQ2219626121	Historic England	I		15	15	
1011	RPG3	1000272	GREATHED MANOR		TQ 41334 42063	Historic England	II		15	15	
1012	RPG2	1000274	BORDE HILL		TQ 31891 26412	Historic England	II*		15	15	
1013	RPG3	1000305	KIDBROOKE PARK		TQ 41836 34124	Historic England	II		15	15	
1014	RPG3	1000306	HAMMERWOOD PARK		TQ 43971 38534	Historic England	II		15	15	
1015	RPG2	1000391	WOTTON HOUSE		TQ1219046865	Historic England	II*		15	15	
1016	RPG2	1000515	WYCH CROSS PLACE		TQ 41500 31547	Historic England	II*		15	15	
1017	RPG3	1001215	SLAUGHAM PLACE		TQ 26037 27847	Historic England	II		15	15	
1018	RPG3	1001279	SEDGWICK PARK		TQ 18328 26805	Historic England	II		15	15	
1019	RPG3	1000121	TITSEY PLACE		TQ 40402 54825	Historic England	II		20	15	
1020	RPG1	1000146	SHEFFIELD PARK		TQ4128823969	Historic England	I		20	15	
1021	RPG1	1000152	HEVER CASTLE		TQ 48246 45500	Historic England	I		20	15	
1022	RPG3	1000223	SQUERRYES COURT		TQ 43999 53447	Historic England	II		20	15	
1023	RPG2	1000230	BUCKHURST PARK		TQ4978934894	Historic England	II*		20	15	
1024	RPG2	1000263	CHARTWELL		TQ 45631 51776	Historic England	II*		20	15	
1025	RPG3	1000267	STONEWALL PARK		TQ 50430 42374	Historic England	II		20	15	
1026	RPG3	1000275	HEASELANDS		TQ 31140 22799	Historic England	II		20	15	
1027	RPG3	1000399	CHIDDINGSTONE CASTLE		TQ 49868 45083	Historic England	II		20	15	
1028	RPG3	1000519	KNEPP CASTLE		TQ 15681 21701	Historic England	II		20	15	
1029	RPG1	1000153	PENSHURST PLACE		TQ 53019 44868	Historic England	I		30	15	
1030	RPG1	1000156	MUNSTEAD WOOD		SU 98233 42652	Historic England	I		30	15	
1031	RPG1	1000183	KNOLE		TQ 54268 53872	Historic England	I		30	15	
1032	RPG3	1000202	HORSTED PLACE		TQ 48927 18431	Historic England	II		30	15	
1033	RPG3	1000232	NEWICK PARK		TQ 42140 19150	Historic England	II		30	15	
1034	RPG2	1000233	PENNS IN THE ROCKS		TQ 51784 34667	Historic England	II*		30	15	
1035	RPG2	1000234	PLUMPTON PLACE		TQ 36040 13498	Historic England	II*		30	15	
1036	RPG2	1000265	ERIDGE PARK		TQ 57533 34287	Historic England	II*		30	15	
1037	RPG3	1000266	CALVERLEY PARK AND CALVERLEY GROUNDS		TQ 58820 39298	Historic England	II		30	15	
1038	RPG3	1000294	RIVERHILL HOUSE		TQ 54271 51922	Historic England	II		30	15	
1039	RPG2	1000301	BURRIDGE LAKES		SU8756042420	Historic England	II*		30	15	
1040	RPG2	1000302	VANN		SU 98337 37474	Historic England	II*		30	15	
1041	RPG2	1000308	BUXTED PARK		TQ 48586 22863	Historic England	II*		30	15	
1042	RPG2	1000366	ROTHERFIELD HALL		TQ 54274 28981	Historic England	II*		30	15	
1043	RPG3	1000381	SOMERHILL		TQ 60720 44785	Historic England	II		30	15	
1044	RPG3	1000409	REDLEAF		TQ 52071 45316	Historic England	II		30	15	
1045	RPG2	1000933	GROOMBRIDGE PLACE		TQ 53430 37644	Historic England	II*		30	15	
1046	RPG2	1000934	HALL PLACE		TQ 54483 46991	Historic England	II*		30	15	
1047	RPG2	1000936	THE JAPANESE GARDEN, BITCHET WOOD		TQ 56764 54225	Historic England	II*		30	15	
1048	RPG2	1000937	LONG BARN		TQ 52667 50556	Historic England	II*		30	15	
1049	RPG2	1001174	ORCHARDS		SU 99351 43286	Historic England	II*		30	15	
1050	RPG3	1001178	FRANT COURT		TQ 58819 35224	Historic England	II		30	15	
1051	RPG2	1001214	LITTLE THAKEHAM		TQ 10922 15618	Historic England	II*		30	15	
1052	RPG3	1001280	SWAYLANDS		TQ 53343 42959	Historic England	II		30	15	
1053	RPG3	1001296	MABLEDON		TQ 57733 44648	Historic England	II		30	15	
1054	RPG3	1001475	HASCOMBE COURT		SU 99404 39963	Historic England	II		30	15	
1055	RPG3	1001629	PLINORLAN PARK		TQ 59867 38995	Historic England	II		30	15	
1056	RPG3	1001665	WOODBURY PARK CEMETERY		TQ 58491 40155	Historic England	II		30	15	
1057	RPG3	1001671	Westbrook	2019-05-29	SU 96169 44281	Historic England	II		30	15	
1058	RPG2	1001709	Glen Andred Garden		TQ 52896 35790	Historic England	II*		30	15	
1059	RPG1	1000162	PETWORTH HOUSE		SU9662722742	Historic England	I		40	15	
1060	RPG1	1000179	SCOTNEY CASTLE		TQ 68621 35296	Historic England	I		40	15	
1061	RPG3	1000203	HEATHFIELD PARK		TQ 59317 20876	Historic England	II		40	15	
1062	RPG3	1000235	FIRLE PLACE		TQ 47496 07474	Historic England	II		40	15	
1063	RPG3	1000257	BAYHAM ABBEY		TQ 64079 36608	Historic England	II		40	15	
1064	RPG2	1000307	GLYNDE PLACE		TQ 45756 09562	Historic England	II*		40	15	
1065	RPG3	1000349	PITSHILL AND THE MANOR OF DEAN		SU 94738 22770	Historic England	II		40	15	
1066	RPG2	1000938	MEREWORTH CASTLE		TQ 66811 52964	Historic England	II*		40	15	
1067	RPG3	1001207	BLACKDOWN PARK		SU9158628667	Historic England	II		40	15	
1068	RPG3	1001208	BURTON PARK		SU9683018113	Historic England	II		40	15	
1069	RPG2	1001210	COWDRAY HOUSE		SU9019622276	Historic England	II*		40	15	
1070	RPG3	1001272	WADHURST CASTLE		TQ 63346 31429	Historic England	II		40	15	
1071	RPG2	1001355	OXEN HOATH		TQ 63048 51683	Historic England	II*		40	15	
1072	RPG3	1001454	KING EDWARD VII HOSPITAL		SU 88004 24858	Historic England	II		40	15	
1073	RPG2	1001600	TICEHURST HOUSE HOSPITAL		TQ 67979 30437	Historic England	II*		40	15	
1074	RPG3	1435898	Peoer Harow Park		SU8304743873	Historic England	II		40	15	
1075	RPG3	1000734	BATEMANS		TQ 67069 23795	Historic England	II		50	15	
1076	RPG3	1000932	BEDGEBURY NATIONAL PINETUM		TQ 72070 33579	Historic England	II		50	15	
1077	RPG3	1001261	BRIGHTLING PARK		TQ 67084 20605	Historic England	II		50	15	
1078	RPG2	1000348	BROCKHURST		TQ 60667 37510	Historic England	II*		50	15	
1079	RPG3	1001447	STANMER PARK		TQ3266910501	Historic England	II		30	15	
1080	RPG2	1000161	PARHAM		TQ 06007 14232	Historic England	II*		40	15	
1081	RPG3	1001213	LAVINGTON PARK		SU9459316588	Historic England	II		40	15	
1082	RPG2	1000145	ASHBURNHAM PLACE		TQ 69715 14287	Historic England	II*		50	15	
1083	RPG1	1000157	GOODWOOD HOUSE		SU 88732 09606	Historic England	I		50	15	
1084	RPG2	1000190	WEST DEAN		SU8631211814	Historic England	II*		50	15	
1085	RPG2	1000231	HERSTMONCEUX CASTLE AND PLACE		TQ 64645 10713	Historic England	II*		50	15	
1086	RPG2	1000264	Linton Park		TQ7587649911	Historic England	II*		50	15	
1087	RPG2	1000304	HOLLYCOMBE HOUSE		SU 84985 29278	Historic England	II*		50	15	
1088	RPG3	1000339	BOUGHTON MONCHELSEA PLACE		TQ 77339 49870	Historic England	II		50	15	
1089	RPG3	1001481	MOTE PARK		TQ 77806 54849	Historic England	II		50	15	



Preliminary Environmental Information Report
Appendix 8.2.1 Summary of Local Planning Policy: Landscape, Townscape and Visual Resources

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 8.2.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the Summary of Local Planning Policy – Landscape, Townscape and Visual Resources.

2 Summary of Local Planning Policy

Policy	Summary
Adopted Policy	
Crawley 2030: Crawley Borough Local Plan 2015-2030 (2015)	
Policy CH2: Principles of Good Urban Design	The policy seeks *'To assist in the creation, retention or enhancement of successful places in Crawley, development proposals will be required to: respond to and reinforce locally distinctive patterns of development and landscape character'*.
Policy CH3: Normal Requirements of All New Development	This policy requires that there is appropriate analysis and understanding of the landscape and townscape and protection of important features, including views. Development should be of a high-quality design that relates positively to their surroundings. Proposals should provide a good standard of amenity and not cause unreasonable harm to amenity. Existing trees should be retained and where they are removed, new planting should be incorporated within the development.
Policy CH8: Important Views	The Local Plan defines two categories of views. The linear contained views are located within Crawley and do not extend across either landscapes or townscapes within the study area. Two of the identified long-distance views at Target Hill and Tilgate Park are relevant to this assessment as they are panoramas that theoretically include land at Gatwick Airport in the mid-distance. ▪ Target Hill: *'Views from the south-eastern side of the hill, from the vicinity of the junction of Hobbs Road and Edrich Road, to the north-east over the Broadfield Mosque, across the borough to the distant hills'.* ▪ Tilgate Park: *'Long distance view, northwards from the country park car park and the adjacent area of open space to the north, across Tilgate, Southgate and the town centre and beyond to Leith Hill, Box Hill and Colley Hill'*.
Policy CH9: Development Outside the Built-Up Area	This policy seeks to protect the *'attractive setting'* of Crawley. Six areas are defined within the Local Plan. Only the 'North East Crawley High Woodland Fringes' area is relevant to this assessment, covering the area of land, including Gatwick Airport, east of the railway. Particular requirements include avoid the loss of important views, reflect local character and distinctiveness, minimize the impact of lighting on intrinsically dark landscapes and ensure buildings and parking areas are not visually prominent;
Policy CH10: High Weald Area of Outstanding Natural Beauty	*'The council will conserve and enhance the natural beauty and setting of the High Weald AONB by having particular regard to the High Weald AONB Management Plan in determining development proposals affecting the AONB'*.
Policy ENV1: Green Infrastructure	This policy seeks to conserve and enhance Crawley's multi-functional green infrastructure which is afforded the highest protection in the Local Plan. *'Large proposals will be required to provide new and/or create links to green infrastructure where possible'*.
Reigate and Banstead Local Plan: Core Strategy, 2014	
Policy CS2: Valued landscapes and the natural environment	This policy seeks to protect and enhance the borough's green fabric including the countryside outside of the Surrey Hills AONB and urban green spaces and corridors. Development should seek to minimise impact on landscape character through appropriate siting and design.

Policy	Summary
Policy CS3: Green Belt	This policy seeks to maintain a robust and defensible Green Belt to ensure that the coherence of the green fabric is protected and future growth is accommodated in a sustainable manner.
Policy CS12: Infrastructure delivery	This policy seeks to *'Secure green infrastructure in line with its Green Infrastructure Strategy to include provision of new open space and/or improvements to existing open spaces, the provision of and/or improvements to links between open space, and measures to link new and existing developments with open space'*. If green space is lost *'equivalent or better provision in terms of quantity and quality, or some wider community benefits, will be made in a suitable location'*.
Reigate and Banstead Borough Development Management Plan 2018-2027 (2019)	
Policy NHE1 – Landscape Protection	The policy makes specific reference to the 'Gatwick Open Setting' as follows; *'Proposals for development between Horley and Gatwick Airport must ensure that a physical visual break is retained through the protection and intensification of existing tree/hedgerow belts and other landscape measures including a suitable and distinct landscape buffer to reinforce the identity and separateness of the settlement of Horley from Crawley and the airport, and have regard to the open setting of the airport consistent with adopted planning policies in adjoining areas'*. ▪ *'Respect the landscape character and landscape features of the locality* ▪ *Have particular regard for potential impacts on ridgelines, public views and tranquility, and the effects of light pollution* ▪ *Be of a design, siting and scale that is complementary to the landscape and surroundings* ▪ *Use appropriate building materials, particularly in terms of type and colour, to avoid the development appearing conspicuous in the landscape* ▪ *Demonstrate how opportunities have been taken to enhance the immediate and wider setting of the development'*.
Policy NHE3 – Protecting trees, woodland areas and natural habitats	The policy seeks to protect trees, woodland and hedgerows. If vegetation is lost this should be compensated for through replanting either on site or off site.
Policy NHE4 – Green/Blue infrastructure	This policy seeks to preserve and enhance existing infrastructure, and new development must increase access to multi-functional open space and incorporate new green/blue infrastructure which links to existing infrastructure and the countryside. Land within the application boundary is allocated within the Management Plan as the 'Riverside Green Chain'.
Mole Valley Core Strategy 2009	
Policy CS13 Landscape Character	This policy requires development to respect and enhance the local character of the landscape in which it is located. The natural beauty of the Surrey Hills AONB will be protected with particular focus on *'significant views, peace, tranquility and levels of artificial light'*. The policy seeks similar consideration for the protection of the area designated as Area of Great Landscape Value.
Policy CS 14 Townscape, Urban Design and the Historic Environment	This policy requires development to respect and enhance the local character of the townscape or landscape in which it is located. The policy states that *'Development must incorporate appropriate landscaping with particular attention to the use of trees and hedges native to the locality'*.
Mole Valley Local Plan 2000 (Saved policies)	
Policy ENV4 Landscape Character	This policy seeks to ensure development conserves the character of the local landscape and visual amenity through careful design and retention of existing vegetation.
Policy ENV22 General Development Control Criteria	This policy requires development to be of an appropriate design which does not significantly harm local amenity and retains attractive site features where possible to ensure the character of the locality is respected.
Policy ENV23 Respect for Setting	This policy requires development to respect its landscape or townscape setting through the use of appropriate design, protect visual amenity and the rural amenities of the Green Belt.
Policy ENV25 Landscape Design of New Developments	The policy states that development should demonstrate that a suitable landscape design is provided and that *'existing trees of significant public amenity value'* are retained.
Tandridge District Core Strategy 2008	
Policy CSP 18 Character and Design	The policy states that development will be required to respect the local landscape or townscape character and setting and retain important site features.

Policy	Summary
Policy CSP 21 Landscape and Countryside	The policy states that *'The character and distinctiveness of the District's landscapes and countryside will be protected for their own sake, new development will be required to conserve and enhance landscape character'*.
Tandridge Local Plan Part 2: Detailed Policies 2014 - 2029	
Policy DP7: General Policy for New Development	This policy seeks to ensure all development is of a high quality, conserves local landscape character, incorporates appropriate landscape proposals and retains important existing trees.
Policy DP10: Green Belt	This policy seeks to prevent inappropriate development in the Green Belt that would be harmful.
Mid Sussex District Plan 2014 – 2031	
Policy DP16: High Weald Area of Outstanding Natural Beauty	The policy states that *'Development on land that contributes to the setting of the AONB will only be permitted where it does not detract from the visual qualities and essential characteristics of the AONB, and in particular should not adversely affect the views into and out of the AONB by virtue of its location or design'*.
Mid Sussex District Local Plan 2004 (Saved policies)	
Policy CP1: Protection of the Countryside	The policy states that outside of built-up areas *'the plan area is classified as a Countryside Area of Development Restraint where the countryside will be protected for its own sake'*.
High Weald Area of Outstanding Natural Beauty Management Plan 2019 - 2024	
Objective OQ3	*'To develop and manage access to maximise opportunities for everyone to enjoy, appreciate and understand the character of the AONB while conserving its natural beauty'*.
Objective OQ4	*'To protect and promote the perceptual qualities that people value – aircraft noise – dark skies – scenic impact of intrusive development on valued views'*.
Surrey Hills Area of Outstanding Natural Beauty Management 2020 to 2025	
Policy RT3	*'Significant viewpoints and vistas will be identified, conserved and enhanced'.*
Policy P2	*'Development will respect the special landscape character of the locality, giving particular attention to potential impacts on ridgelines, public views and tranquility'.*
Policy P6	*'Development that would spoil the setting of the AONB, by harming public views into or from the AONB, will be resisted'*.
Kent Downs AONB Management Plan 2014-2019	
Sustainable Development Policy SD6	'*Activities to increase understanding of the importance and extent of tranquility, remoteness and 'dark night skies' within the Kent Downs and the factors that affect them, will be supported and pursued'*.
Sustainable Development Policy SD8:	'*Proposals which negatively impact on the distinctive landform, landscape character, special characteristics and qualities, the setting and views to and from the AONB will be opposed unless they can be satisfactorily mitigated'*
South Downs Local Plan 2014 to 2033	
Strategic Policy SD6: Safeguarding Views	*'The purpose of this policy is to ensure that development does not harm views or landmarks, to encourage conservation and enhancement of key view types and patterns, and to ensure development does not detract from the visual integrity, identity and scenic quality that are characteristic of the National Park.'*
Strategic Policy SD7: Relative Tranquility	*'The purpose of this policy is to ensure that development does not harm the relative tranquility of the National Park and to encourage the conservation and enhancement of positive tranquility factors.'*
Strategic Policy SD8: Dark Night Skies	*'The purpose of this policy is to ensure that development does not harm the quality of dark night skies. It also encourages enhancement of the dark night skies of the National Park, for the benefit of people and wildlife. The policy seeks to do this by ensuring that proposed lighting is necessary, and by reducing the unnecessary light spill that is often a result of poor design, in order to minimise the overall impact of light.'*
Strategic Policy SD23: Sustainable Tourism	*'The purpose of this policy is to foster the responsible and sustainable delivery of tourism and recreation development in accordance with the Sustainable Tourism Strategy.'*

Policy	Summary
Emerging Policy	
Draft Crawley Borough Local Plan 2021-2037	
Policy SD1: Presumption in Favour of Sustainable Development	*'When considering development proposals, the council will take a positive approach to approving development which is sustainable…. Development will be supported where it meets the strategic objectives including: … 2. Complements Crawley's character as a compact town within a countryside setting; … 4. Protects, enhances and creates opportunities for Crawley's unique Green Infrastructure.'*
Policy CL2: Making Successful Places: Principles of Good Urban Design	*To assist in the creation, retention and/or enhancement of successful places, applications must demonstrate that the form of new development has addressed the following Principles:* *1. Existing Character* *All new development must identify, respond to and be based upon a thorough understanding of the significance and distinctiveness of both the site and the wider area's existing character. All proposals should demonstrate they have considered the council's relevant character and heritage assessments as a starting point for the design assessment.* *For major applications, proposals must demonstrate and document how the components of existing rural/urban structure, movement patterns, individual landscape/built assets and topography have guided and directed the form of new development. Proposals must be dictated to and directed by these various elements, setting out a clear design vision which builds upon, protects, reinforces and enhances the existing character, while not preventing or discouraging appropriate innovation or change (such as increased densities).* *2. Effective Use of Land* *All new development must identify, test, determine and (where appropriate) embrace opportunities for increased density.* *3. Built Form, Layout and Movement* *In considering the layout, scale and arrangement of buildings or streets, all new development must:* *i. demonstrate how all the components and characteristics of place have been considered to create a well-designed proposal;* *ii. demonstrate how places are experienced and make connected places that are permeable for people and wildlife; and* *iii. optimise orientation, solar gain and aspect.* *Major applications must:* *a) ensure the proposed urban structure results in movement paths and corridors which are determined by where people want to go within and beyond the development, taking advantage of direct desire lines as much as possible;* *b) provide recognisable spaces and routes that are attractive, safe, uncluttered and which work effectively for all in society, including disabled and elderly people. Intersections and landmarks should be used and designed to help people find their way around and create places that are legible and easy to read;* *c) create continuous frontages onto streets and spaces enclosed by development which clearly define private and public areas and ensure streets, footpaths and open spaces are overlooked by buildings; and* *d) ensure movement corridors and the placing of new development take account of long distant vistas, landmarks, views into and out of adjoining areas, gateways to and between particular areas, and focal points. Illustrative tools, such as accurate 3D views modelling, should be used to show major proposals in relation to the existing setting/context, particularly from a street level perspective.*
Policy CL3: Movement Patterns, Layout and Sustainable Urban Design	*All development should seek to:* *1. Use land more efficiently and sustainably, integrate land uses and transport networks. It should build upon, connect to, enhance and extend sustainable movement, in turn maximising opportunities for compact development and sustainable travel and increased levels of sustainable transport modal share.* *2. Put people before traffic and encourage walking and cycling through establishing a layout of pathways which:* *i. Understand and respond to the wider borough pattern of movement, demonstrating how walking and cycling connections will enhance and integrate schemes with Crawley Town Centre, local centres, transportation hubs, schools and employment areas.* *ii. Connect new development to areas of rural open space and/or large urban areas of green open space and ensure new route alignments follow direct desire lines as much as possible allowing for through routes to be straight and direct, providing clear, legible and obvious linkages to adjoining areas.* *iii. Ensure that buildings are orientated to overlook movement corridors in order to provide passive supervision and safety.* *In addition to the above, larger schemes will be required to establish a development form based on sustainable compact layout and scale. These must:*

Policy	Summary
	a. Be planned and located adjacent to stations, stops or interchanges along existing segregated, high capacity, high frequent public transport corridors; and *b. Be designed and laid out to ensure future residents and users are within eight minute walking distance of such rail stations or bus stops.*
Policy CL5: Development Briefs and Masterplanning	*To support applications for significant developments or sites which could form part of wider development area, Development Briefs and/or Masterplans may be required to illustrate and describe how planning and design policies and principles will be implemented. Pre-application consultation should take place at the earliest opportunity. At concept design stage, Masterplans should provide indicative and flexible vision for future development form, urban design concepts and options. These should be informed by preliminary technical appraisals and viability testing.* *Masterplans must chart overall urban design guidance and intent, specifically:* *i. how a site or series of sites will be developed, implemented and phased;* *ii. setting out principles on matters of importance rather than prescribing design in detail.*
Policy CL6: Structural Landscaping	The identified areas of structural landscaping are not located within the ZTV or the study area and would not be affected by the proposals. Whilst the policy wording does not relate to the Gatwick Project the supporting explanatory text states *'Where limited or weak structural landscaping can be identified as a negative factor in the attractiveness of an area, opportunities will be sought to deliver enhancements as part of a development proposal'*.
Policy CL7: Important and Valued Views	The following types of Important Views identified on the Local Plan Map should be protected and/or enhanced and development proposals should not result in a direct adverse impact or lead to the erosion of these views: - Linear contained views - Long distance views - Valued Views More *'Area Character Assessments, when prepared, will further identify valued localised views. Where such work defines urban and landscape structure, the relationship between landscape, settlement and movement patterns, will be framed and founded upon both long distance and linear views. Views out of a site or place are as important as defining from where there are the most important views into a site. The visual impact of proposals affecting Important and Valued Views must be clearly and accurately demonstrated as part of the planning application submission, for example through the use of verified view montages and cross sections'.*
Policy CL8: Development Outside the Built-Up Area	*'To ensure that Crawley's compact nature and attractive setting is maintained, development should, inter alia, i. Be grouped where possible with existing buildings to minimise impact on visual amenity; ii. Identify existing character and key assets, landscape and built forms, and recognise the significant qualities of the area, including its grain, aspect, scale, natural resources, views, sense of space and tranquility to guide any new development; iii. Identify the strategic context of such settings and environments of the town and respond intelligently to the underlying landscape and environmental systems and form; iv. Maintain a loose-knit, low density rural character clearly differentiating it from development within the urban area; v. Be located to avoid the loss of important on-site views and off-site views towards important landscape features vi. Reflect local character and distinctiveness in terms of form, height, scale, plot shape and size, elevations, roofline and pitch, overall colour, texture and boundary treatment (walls, hedges, fences and gates).; vii. Minimise the impact of lighting to avoid blurring the distinction between urban and rural areas and in areas which are intrinsically dark to avoid light pollution to the night sky; viii. Ensure buildings and any external hard surfacing, parking areas, access roads and outdoor storage are not visually prominent in the landscape xi. Ensure access to the countryside is maintained and enhanced from Crawley's neighbourhoods.* *In addition to the above, all proposals must recognise the individual character and distinctiveness, and the role of the landscape character area or edge in which it is proposed as shown on the Local Plan Map, established by the Crawley Borough Council Landscape Character Assessment. Certain types of development may alter one or more important elements that make up a Character Area or Edge. This is acceptable if its overall character and role is not compromised and measures are taken to limit impacts through mitigation and enhancement where possible. This may be the strengthening of other elements of the area's character or general enhancement through increased biodiversity, green links and other mitigation measures as detailed in the Landscape Character Assessment. Proposals which alter the overall character of the area must demonstrate that the need for the development clearly outweighs the impact on landscape character and is in accordance with national and local policy. Mitigation and/or compensation will be sought in such cases where this can be proven. Applicants are advised to consider the enhancement opportunities identified in the Crawley Borough Landscape Character Assessment'.*

Policy	Summary
Policy CL9: High Weald Area of Outstanding Natural Beauty	*'The council will conserve and enhance the natural beauty and setting of the High Weald AONB by having particular regard to the High Weald AONB Management Plan in determining development proposals affecting the AONB. Where development is proposed close to, or within, the High Weald Area of Outstanding Natural Beauty, consideration of both the visual impacts on the intrinsic scenic qualities of the AONB and the impacts of its landscape character or features, must be provided within submitted landscape character assessments'.*
Strategic Policy DD1: Normal Requirements of All New Development	*Development proposals must use land efficiently and not unduly restrict the development potential of adjoining land, nor prejudice the proper planning and phasing of development over a wider area.*
Policy DD2: Inclusive Design	*Development proposals are required to achieve the highest standards of accessible and inclusive design possible.*
Strategic Policy DD4: Tree Replacement Standards	*Tree retention and provision needs to be accounted for at an early stage when designing the layout of new development. Following the completion of surveys and analysis of the site, consideration must be given to which trees are the most suitable for retention.*
Policy DD5: Aerodrome Safeguarding	*Development will only be supported if it is consistent with the continued safe operation of Gatwick Airport.*
Policy OS1: Open Space, Sport and Recreation	*Proposals that benefit the use of existing open space, sport and recreational spaces will be supported. However, proposals that remove or affect the continued use of existing open space, sport and recreational spaces will not be permitted unless:* *a) An assessment of the needs for open space, sport and recreation clearly show the site to be surplus to requirements; or* *b) The loss resulting from the proposed development would be replaced by equivalent or better provision in terms of quantity and quality in a suitable location; or* *c) The development is for alternative sports and recreational provision, the needs for which clearly outweigh the loss.* *Whilst a site may be surplus to requirements as open space it may still be of environmental or cultural value. The site's development may have unacceptable visual or amenity impact, or adversely affect its wider green infrastructure functions, including for climate change mitigation. Therefore, applicants should also carefully consider the character, landscape, biodiversity and other environmental policies in the Plan.*
Policy OS3: Rights of Way and Access to the Countryside	*Public Rights of Way will be protected by ensuring that development does not result in the loss of, or adversely affect, a Right of Way or other recreational route, unless a new route is provided of equal or better value.* *Unless it can be clearly shown that a Public Right of Way is unnecessary or not needed, proposals which result in the loss of a Public Right of Way must ensure re-provision of equal or better value.* *Proposals which detract from the character of a Right of Way or other type of recreational route must adequately mitigate the impacts or provide a new resource of equal or better value if this is not possible.* *This may include:* *i) the provision of safe and convenient links to nearby Rights of Way/recreational routes; and/or* *ii) new or upgraded existing Rights of Way to multi-functional routes which improve environmental functions and visual amenity to create benefits for a range of users, such as for Non-Motorised Users (walkers, cyclists, equestrians, individuals with disabilities and impairments) and motorised disability users on the urban fringe of the town, with connections both inward to the centre, and outward to the wider countryside.*
Strategic Policy GI1: Green Infrastructure	*Any growing urban area will place additional stress on the natural environment, including the aquatic environment. Crawley's multi-functional green infrastructure network will be conserved and enhanced through the following measures:* *i. Development which protects and enhances green infrastructure will be supported;* *ii. Development proposals should take a positive approach to designing green infrastructure, utilising the council's supplementary planning documents to integrate link and enhance the network of green assets;*

Policy	Summary
	iii. Development proposals which reduce, block or harm the functions of green infrastructure should be avoided. Any loss or impact will be required to be adequately justified, minimised, mitigated or, as a last resort, compensated for, to ensure the integrity of the green and blue infrastructure network is maintained; *iv. The strategic green infrastructure network is afforded the highest protection due to its high value from existing or identified potential multiple functions, for example as recreation, routeways, access to the countryside, wildlife and climate mitigation;* *v. Development proposals should maximise the opportunity to maintain and extend green infrastructure links to form a multi-functional network of open space, providing opportunities for walking and cycling, and connecting to the urban/rural fringe and the wider countryside beyond;* *vi. Cross-boundary matters relating to green infrastructure should be considered and incorporated at the early stage of an application* *vii. Large development proposals will be required to provide new and/or create links to green infrastructure as well as take into consideration the use of SuDS and methods that incorporate blue infrastructure into development designs to improve the visual amenity of the development, to account for Policy EP1 and to aid in reducing surface water run-off.* *viii. Householder developments and small non-residential extensions should take into account Policy EP2 and innovative solutions that incorporate green and blue infrastructure into designs at an early stage.* *ix.Where possible, Natural England's Accessible Natural Green Space Standard recommendations and the Woodland Trust's Woodland Access Standard should be used to assess a development proposal's location in relation to existing accessible natural green space and woodland. As a minimum, developments should seek to ensure new development proposals meet the Crawley local standards for natural greenspace set out in paragraphs 7.13 and 14.16 relating to quantity, accessibility, quality and value.*
Our Local Plan 2033 Tandridge District Council	
Policy TLP03: Green Belt	This policy seeks to prevent inappropriate development in the Green Belt that would be harmful.
Policy TLP32: Landscape Character Policy	The policy requires that development protects and enhances the character and qualities of the local landscape and key public views, retains important landscape features, protects the landscape setting and provides appropriate landscape mitigation.
TLP33: Surrey Hills and High Weald Areas of Outstanding Natural Beauty	The policy seeks to ensure that developments that influence the setting of the High Weald AONB would conserve and enhance special landscape character and safeguard public views out of and into the AONB.
Future Mole Valley 2018 to 2033 Consultation Draft Local Plan	
Policy EN1: Development in the Green Belt	This policy seeks to prevent inappropriate development in the Green Belt that would be harmful.
Policy EN4: Design and Character	The purpose of this policy is to promote an effective use of land, while ensuring that all development achieves consistent and high quality standards of design.
Policy EN8: Landscape Character	This policy seeks to protect the existing qualities of the landscape or enhance those characteristics that are recognised as defining the special character of the varied landscapes of Mole Valley.
Kent Downs Area of Outstanding Natural Beauty Draft for Consultation Management Plan 2020 - 2025	
Sustainable Development Policy SD6	The policy states that *'Activities to increase understanding of the importance and extent of tranquility, remoteness and 'dark night skies' within the Kent Downs will be pursued'.*
Sustainable Development Policy SD8	The policy states that *'Ensure proposals, projects and programmes do not negatively impact on the distinctive landform, landscape character, special characteristics and qualities, the setting and views to and from the AONB'.*

3 References

Crawley Borough Council (2015) Crawley 2030: Crawley Borough Local Plan 2015 – 2030.

Crawley Borough Council (2021) Crawley 2035: Draft Crawley Borough Local Plan 2021-2037, January 2021.

High Weald Joint Advisory Committee (2019) High Weald Area of Outstanding Natural Beauty Management Plan 2019 - 2024

Kent Downs AONB Unit (2014) Kent Downs Area of Outstanding Natural Beauty Management Plan 2014 – 2019

Kent Downs AONB Unit ((2020) Kent Downs Area of Outstanding Natural Beauty Draft for Consultation Management Plan 2020 - 2025

Mid Sussex District Council (2004) Mid Sussex District Local Plan 2004 (saved policies)

Mid Sussex District Council (2018) Mid Sussex District Plan 2014-2031

Mole Valley District Council (2000) Mole Valley Local Plan 2000 (saved policies)

Mole Valley District Council (2009) Mole Valley Core Strategy

Mole Valley District Council (2021) Future Mole Valley 2018 to 2033 Consultation Draft Local Plan

Reigate and Banstead Borough Council (2014) Reigate and Banstead Local Plan: Adopted Core Strategy

Reigate and Banstead Borough Council (2019) Reigate and Banstead Borough Development Management Plan 2018-2027

South Downs National Park Authority (2019) South Downs Local Plan 2014 to 2033. [Online] Available at: https://www.southdowns.gov.uk/planning/south-downs-local-plan_2019/local-plan/

Surrey Hills AONB Board (2020) Surrey Hills Area of Outstanding Natural Beauty Management 2020 to 2025

Tandridge District Council (2008) Tandridge District Core Strategy

Tandridge District Council (2014) Tandridge Local Plan Part 2: Detailed Policies 2014 – 2029

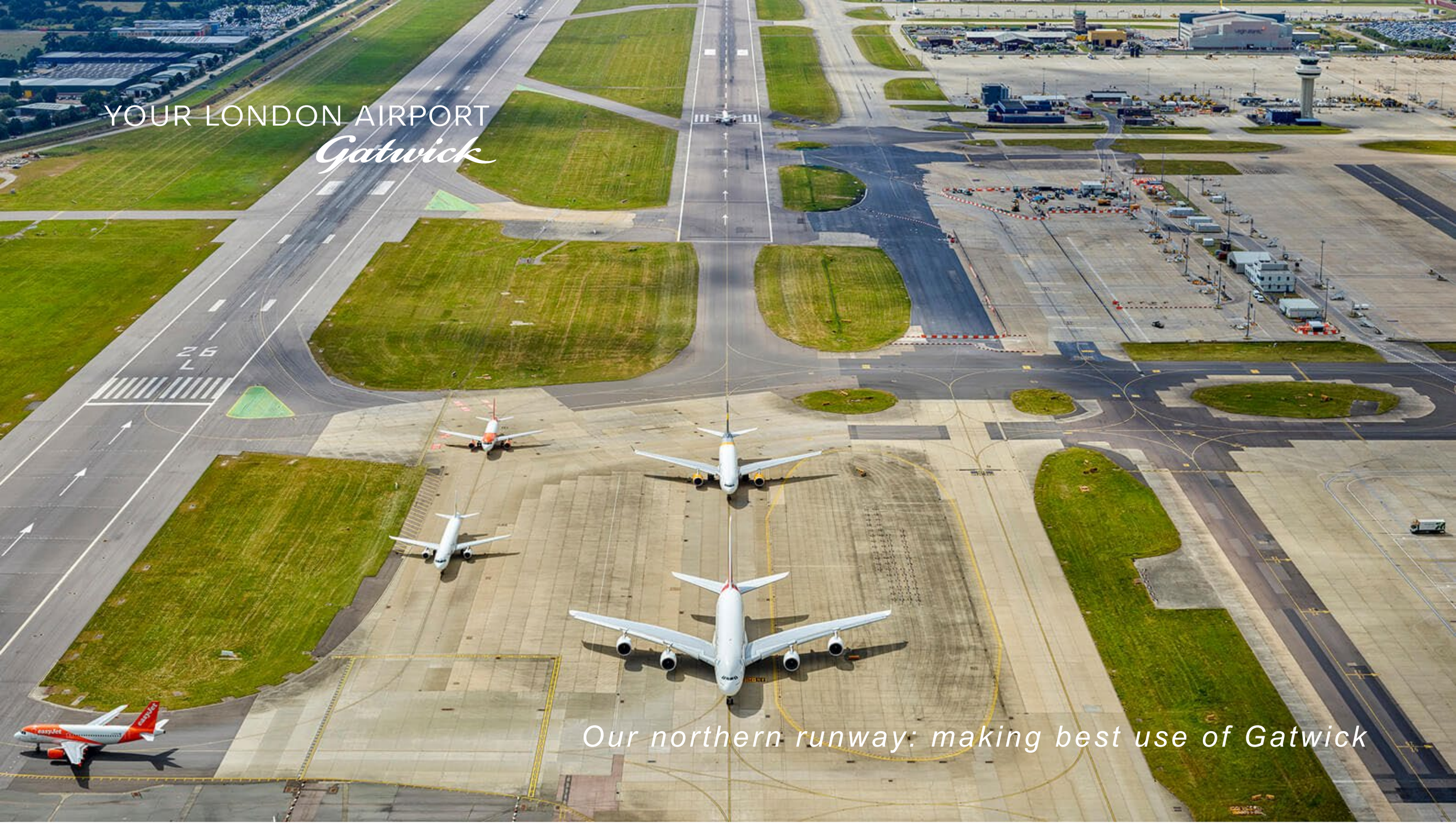
Tandridge District Council (2019) Our Local Plan: 2033

4 Glossary

4.1 Glossary Terms

Table 4.1.1: Glossary of Terms

Term	Description
AONB	Area of Outstanding Natural Beauty
EIA	Environmental Impact Assessment
GAL	Gatwick Airport Limited
PEIR	Preliminary Environmental Information Report



Preliminary Environmental Information Report
Appendix 8.3.1: Summary of Stakeholder Scoping Responses - Landscape, Townscape and Visual Resources

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 8.3.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the summary of stakeholder scoping responses for landscape, townscape and visual resources for the Project.

2 Summary of Stakeholder Scoping Responses for Landscape, Townscape and Visual Resources

Consultee	Date	Details	How/where addressed in PEIR
Charlwood Parish Council	30 September 2019	Told that it is proposed to construct a new around-end taxiway and new holding areas. But it is difficult to make proper assessment without knowing the extent of these developments and whether it is proposed to construct new earth bunds, such as have been constructed around all the northern side of the airport, in order to shield communities from noise and visual intrusion.	Maximum Design Scenarios are defined in Table 8.7.1 of Chapter 8. A noise mitigation feature is assumed to be up to 12 metre high. Table 8.8.1 further defines this as an earth bund to provide a replacement/compensation feature where it is removed. Effects on landscape, townscape and visual receptors are assessed on this basis throughout Section 8.9 of Chapter 8. The effect on views from Lowfield Heath Road are specifically described. A full package of mitigation is proposed, including a noise envelope (for further details, see Chapter 14 Section 14.8 and Appendix 14.9.5).
Crawley Borough Council	30 September 2019	In paragraph 7.2.1, the relevant legislation to be considered should also include the following: ▪ Crawley Landscape Character Assessment (2012) CBC ▪ A Strategy for the West Sussex Landscape (2005) WSCC ▪ West Sussex Landscape Character Assessment (Land Management Guidelines (2003).	The Crawley Borough Council document is included in the baseline and assessment sections of Chapter 8. The Strategy for the West Sussex Landscape has been reviewed and contains no further detail that is specifically relevant to Gatwick or the Project. Therefore, the WSCC West Sussex Landscape Character Assessment is relied upon and is analysed in Appendix 8.6.1 of the PEIR.
Crawley Borough Council	30 September 2019	In paragraph 7.2.4, there is a reference to inclusion of "main buildings" referred to as part of the ZTV model. It is not clear whether the CARE centre with its 50 m tall chimney, the hotels (as these are functionally separate from the airfield) and the grade separated junctions are included as part of this model, CBC would wish to ensure that all elements of the Project are included.	Infrastructure at the CARE facility up to 22 metre high and a stack up to 50 metre high, hotels up to 27 metres high and the flyovers at the North and South Terminal roundabouts up to 10 metre high have been included in the 3D model that forms the basis of the ZTV. The 3D model includes all buildings and infrastructure over 5 metres high based on maximum parameters, as a worst case scenario to ensure the study area is sufficient to ensure all impacts that could give rise to potential significant effects on landscape, townscape and visual resources are assessed.

Consultee	Date	Details	How/where addressed in PEIR
Crawley Borough Council	30 September 2019	CBC consider that the ZTV identified in paragraph 7.2.4 is not extensive enough to capture the key views of the airport from within the Borough Boundary as identified in policy CH8 of the adopted Crawley Borough Local Plan. The study area should be extended to capture the long distance views identified in the policy from Tilgate Park, Junction 11 with A23/A264 and Target Hill.	The preliminary 5 km radius study area is considered sufficient to inform the PEIR. The Project description continues to be refined and, therefore, this will be reviewed for the final Environmental Statement. Site surveys identified that there are no views of Gatwick from the A23/A264 junction and extremely limited views from Target Hill, from which it is highly unlikely that significant effects would occur. Tilgate Park is included as a viewpoint location within the visual assessment in Chapter 8 of the PEIR.
Crawley Borough Council	30 September 2019	There are also views to the airport from land in the High Weald AONB to the south of the Borough and it is considered that the study area should extend to include views on the higher land to the south as identified in the topographical map figure 7.2.17. In paragraph 7.2.32, it is proposed that all landscapes and townscapes outside of the ZTV will be scoped out of the assessment. However, for the reasons set out above CBC consider that the area is not extensive enough to capture all key views and the ZTV should be extended.	Viewpoints assessed within Chapter 8 include Turner's Hill within the High Weald AONB, just outside the 5 km radius study area and Tilgate Hill 'Important Viewpoint'. See Visual Resources in Section 8.6 of chapter 8 of the PEIR. The preliminary 5 km radius study area is sufficient to inform the PEIR. The Project description continues to be refined and, therefore, this will be reviewed for the final Environmental Statement.
Crawley Borough Council	30 September 2019	CBC welcome the opportunity to add to selected viewpoints during the assessment process. The view from Bonnets Lane northwards towards the airport and views west of Ifield (including the edge of the Conservation Area) should be added, particularly if new car parks are proposed south of the main runway.	Additional viewpoints will be considered within the assessment process for the final Environmental Statement, where appropriate.
Historic England	1 October 2019	There is a case for inclusion of heritage/cultural facilities within the non-residential receptors category of the noise assessment chapter (paragraph 7.8.25). The enjoyment and appreciation of heritage sites, museums & galleries, and historic parks and gardens could be disproportionately affected by changes in the noise regime and visual intrusion resulting from more flights and additional ground facilities proposed by the project. Some of these could be well beyond the 3km radius set for the heritage impacts (e.g. Hever Castle).	The effect of overflying aircraft on landscape, townscape and visual resources and the perception of tranquillity is included throughout Chapter 8 of the PEIR. Overflight analysis for landscape and visual, ecology and heritage assessments has been included (see Sections 14.9 and 14.13 Chapter 14 of the PEIR and Chapter 19: Inter-relationships of the PEIR).
Horsham District Council	27 September 2019	Regarding the proposed study area, it is stated that all visual receptors will be scoped out beyond the 5km radius shown on the Zone of Theoretical Visibility (ZTV) map. Although this, in principle, might be the right approach, the plan submitted does not show the areas beyond and it is therefore difficult, at this stage to confirm whether there are any other relevant viewpoints the Council would want to see assessed.	The preliminary 5 km radius study area is considered sufficient to inform the assessment of landscape, townscape and visual resources within the PEIR. The Project description continues to be refined and, therefore, this will be reviewed for the final Environmental Statement.
Horsham District Council	27 September 2019	The Council is concerned that the impact of the proposals on the High Weald Area of Outstanding Natural Beauty has not been adequately addressed and would request that any impacts on this protected landscape are given direct consideration as part of the EIA process.	There is a very small overlap between the ZTV and the High Weald AONB indicating very limited intervisbility with Gatwick Airport or the Project (see Figure 8.4.1 of the PEIR). The majority of the High Weald AONB is included within the wider study area for the assessment of change in the perception of tranquillity as a result of overflying aircraft. Viewpoints assessed within Chapter 8 include Turner's Hill within the High Weald AONB, just outside the 5km radius study area . See Visual Resources in Section 8.6 of this chapter of the PEIR.
Horsham District Council	27 September 2019	No reference has been made in the document to the biomass boiler stack within the Project key components. At this stage, it is not clear whether the 50m stack is considered as an input for the ZTV map? Given the height of this stack the landscape impacts from a structure of this height should be considered as part of the EIA process.	A preliminary location for the 50 metre high stack has been included in the ZTV, together with maximum parameters, as a worst case scenario to ensure the study area is sufficient to ensure all impacts

Consultee	Date	Details	How/where addressed in PEIR
			that could give rise to potential significant effects on landscape, townscape and visual resources are assessed.
Horsham District Council	27 September 2019	In addition to Policies 25, 26, 27 and 30 of the Horsham District Planning Framework (2015), the applicant is further advised to consider 'Policy 31: Green Infrastructure and Biodiversity' as a relevant Policy in this assessment.	This policy will be considered, where relevant.
Horsham District Council	27 September 2019	In reference to the Guidance Documents that will inform the assessments, the applicant is also advised to refer to the published guidance document 'An Approach to Landscape Character Assessment' (Christine Tudor, Natural England, October 2014).	Documents included in methodology in Section 8.4 of Chapter 8 of the PEIR.
Mid Sussex District Council	1 October 2019	It should be confirmed whether a night time assessment will be undertaken for all assessment phases.	Chapter 8 of the PEIR includes an assessment of night time effects on landscape, townscape and visual resources throughout all phases of the Project.
Mid Sussex District Council	1 October 2019	The ES will need to confirm how the effectiveness of new planting will be considered as mitigation for adverse effects within the assessment given its stated 15-year timeframe for establishment and in relation the phases in Chapter 6	Timing of proposed planting is defined, and the level of mitigation achieved throughout the assessment years in Sections 8.8 and 8.9 of chapter 8 of the PEIR.
Mid Sussex District Council	1 October 2019	The spatial scope for the 5 km study area should be clarified, given the 50 m height of the boiler and plumes	The preliminary 5 km radius study area is considered sufficient to inform the PEIR. The Project description continues to be refined and, therefore, this will be reviewed for the final Environmental Statement. The potential for a visible plume at the CARE facility will be considered further during the EIA process and reported, if required, in the Environmental Statement.
Mid Sussex District Council	1 October 2019	The spatial scope for the ‘separate’ study area’ related to over flying aircraft should have regard to frequency and alignment, rather than just height of aircraft	Baseline data for numbers and flight paths of Air Traffic Movements (ATM), and projected numbers of overflying aircraft, have been captured within the Noise Chapter 14 and have informed the assessment of effects on the perception of tranquillity within Chapter 8 of the PEIR. See also Chapter 19: Inter-relationships of the PEIR.
Mid Sussex District Council	1 October 2019	The methodology for the assessment of receptor’s sensitivity should be based upon value and susceptibility, as set out in GLVIA 3	The methodology set out in Section 8.4 and Appendix 8.4.1 refers to GLVIA3 and clearly define all criteria including value, susceptibility, sensitivity, magnitude and significance of effect.
Mid Sussex District Council	1 October 2019	Given the Landscape Character Assessment: Guidance for England and Scotland (2002) is out of date MSDC would prefer the use of “An Approach to Landscape Character Assessment” in 2014 as this supersedes the 2002 guidance.	Documents included in methodology in Section 8.4 of this chapter.
Mid Sussex District Council	1 October 2019	The ES should clearly state the relationship between the noise assessment and tranquillity assessment.	Baseline data for numbers and flight paths of Air Traffic Movements (ATM), and projected numbers of overflying aircraft, have been captured within the Noise Chapter 14 and have informed the assessment of effects on the perception of tranquillity within Chapter 8 of the PEIR. See also Chapter 19: Inter-relationships of the PEIR.
Mid Sussex District Council	1 October 2019	The methodology for the tranquillity assessment should be agreed prior to any assessment being undertaken.	Chapter 8 considers effects on tranquillity. The methodology for the assessment of effects on the perception of tranquillity within nationally designated landscapes will be refined and agreed with consultees before the preparation of the final Environmental Statement.

Consultee	Date	Details	How/where addressed in PEIR
Mid Sussex District Council	1 October 2019	The methodology for the lighting assessment should be agreed prior to any assessment being undertaken.	This is not a specifically landscape and visual issue. There will be lighting strategy in support of the Environmental Statement.
Mid Sussex District Council	1 October 2019	Baseline information on the 'separate study area' related to overflying aircraft should be confirmed in the ES.	Baseline data for numbers and flight paths of Air Traffic Movements (ATM), and projected numbers of overflying aircraft, have been captured within the Noise Chapter 14 and have informed the assessment of effects on the perception of tranquillity within Chapter 8 of the PEIR. See also Chapter 19: Inter-relationships of the PEIR.
Mid Sussex District Council	1 October 2019	Confirmation of consultation and when this will be undertaken should be confirmed at an early stage. This should also set out details of any proposed photomontages (verifiable views).	Consultation with consultees is ongoing as part of a programme of events managed by GAL. Additional consultation will take place throughout the PEIR and Environmental Statement preparation.
Mid Sussex District Council	1 October 2019	The ES will need to consider how building and structure design will inform part of the mitigation of visual effects.	Architectural and engineered forms will be considered within the iterative design development process to ensure mitigation of landscape, townscape and visual effects is addressed.
Mid Sussex District Council	1 October 2019	The threshold at which an effect will constitute a significant effect should be agreed via consultation at an early stage.	The methodology set out in Section 8.4 and Appendix 8.4.1 refers to GLVIA3 and define all criteria including value, susceptibility, sensitivity, magnitude, effect and the threshold of significance. It is intended that the methodology will be discussed with consultees before the preparation of the final ES.
Mole Valley District Council	30 September 2019	Paragraph 7.2.4 – The Council disagrees with the proposed Zone of Theoretical Visibility (ZTV). This is proposed to be based on existing building heights, which extend to 40m in height as per Table 4.6.1. However, the proposed CARE facility biomass boiler flue height of 50m is considerably taller than any existing structure and the impact of this must therefore be taken into account through the EIA process. We would request that the ZTV is based on the height of the tallest structure of the Proposed Development.	A preliminary location for the 50 metre high stack at the CARE facility has been included in the ZTV, together with maximum parameters of all other main buildings and infrastructure, as a worst case scenario to ensure the study area is sufficient to capture all impacts that could give rise to potential significant effects on landscape, townscape and visual resources.
Reigate and Banstead Borough Council	27 September 2019	References to saved Borough Local Plan Policies Pc4 "Tree Protection", Pc6 "Urban Open Land" and Hr37 "Gatwick Area Open Setting" should also be removed from Paragraph 7.3.1 of the EIA Scoping Report following the adoption of the DMP.	These policies are not referred to in Chapter 8 of the PEIR.
Reigate and Banstead Borough Council	27 September 2019	Reference should also be made to/ consideration should also be given to DMP Policy NHE7 "Rural Surrounds of Horley".	Policy NHE7 has been considered. Only temporary effects on the rural surrounds of Horley would occur due to the operation of a construction compound. Policy NHE7 aligns itself with national policy, which is considered within the PEIR. More specifically the policy is concerned with permanent development and its design and siting, which is not considered to be relevant to the Project.
Reigate and Banstead Borough Council	27 September 2019	We are concerned that GAL is proposing to scope out "all landscapes and townscapes located outside of the ZTV and all visual receptors within those locations except for the assessment of tranquillity". The scope of the study area is highly dependent upon, and sensitive to, the robustness of the preliminary ZTV. Within the EIA Scoping Report there is limited clarity/ certainty over the location of future physical works (Paragraph 5.2.18 for example notes that the biomass boiler flue height is likely to be up to approximately 50 metres above ground level but does not provide any specificity regarding the location of the proposed biomass boiler) and insufficient explanation of methodology and assumptions which have been used to define/assess the preliminary ZTV.	A preliminary location for the 50 metre high stack at the CARE facility has been included in the ZTV, together with maximum parameters of all other main buildings and infrastructure, as a worst case scenario. The 3D model includes all buildings and infrastructure over 5 metres high based on maximum parameters, to ensure the study area is sufficient to capture all impacts that could give rise to potential significant effects on landscape, townscape and visual resources. The preliminary 5 km radius study area is considered sufficient to

Consultee	Date	Details	How/where addressed in PEIR
		Given these uncertainties and sensitivities, we consider that it is essential at this stage for GAL to provide greater clarity as to the parameters, assumptions and locations of physical works which have underpinned the ZTV and that allowance is made fora "margin for error"/ buffer to the preliminary ZTV.	inform the PEIR. The Project description continues to be refined and, therefore, this will be reviewed for the final ES.
Reigate and Banstead Borough Council	27 September 2019	With regards to the assessment of the zone of tranquillity, whilst we welcome a larger study area for the assessment, we have concerns with regards to the proposed scoping out of receptors outside of the existing NPRs and arrival flight paths given that the airport is currently in the process of two airspace modernisation programmes (Route 4 and FASI-s) and that at the time of the proposed operation of the Project these airspace changes are due to be in place. We therefore consider that receptors outside of the existing NPRs should not be screened out of the scope of the assessment.	Baseline data for numbers and flight paths of Air Traffic Movements (ATM), and projected numbers of overflying aircraft, have been captured within the Noise Chapter 14 and have informed the assessment of effects on the perception of tranquillity within Chapter 8 of the PEIR. See also Chapter 19: Inter-relationships of the PEIR. No change is proposed to the routes as a result of the Project. The baseline modelling of overflights in 2018 includes flights within approximately 35 miles of Gatwick below 7,000 feet above ground level, including non-Gatwick flights. The assessment of effects on tranquillity is based on the number of proposed Gatwick flights increasing as a result of the Project by up to 20% compared to 2018. The implications of the Government's FASI-S programme and any change in the numbers of ATMs from other airports will be reviewed and considered as part of the EIA process should the information become available.
Reigate and Banstead Borough Council	27 September 2019	Whilst the Council recognises that there are no designated landscapes within the proposed Project site boundary, we note that there are a number of landscapes within close proximity to the airport which are currently affected by overflight. We therefore welcome consideration of potential increased airborne noise and visual impacts within these areas that may occur as a result of increased flight numbers and changes in the volume of flights along defined flight paths as this could impact upon the landscape character and visual receptors as a result of a reduction in the perception of tranquillity within these areas but we also repeat our comments from the previous section regarding the potential change to existing flight paths as a result of the Route 4 and FASI-s airspace modernisation programmes. We therefore consider that receptors outside of the existing NPRs should not be screened out of the scope of the assessment.	The effect of overflying aircraft on landscape, townscape and visual resources and the perception of tranquillity is included throughout Chapter 8 of the PEIR. No change is proposed to the routes as a result of the Project. See response above.
Reigate and Banstead Borough Council	27 September 2019	GAL also need to take into consideration Reigate & Banstead's townscape character areas as defined in our 2004 Landscape and Townscape Character Assessment. We would expect viewpoints to be agreed with the relevant authorities.	Townscape character areas within the 'Borough Wide Landscape and Townscape Character Assessment', undertaken by Atkins on behalf of Reigate and Banstead Borough Council (2008) are considered within Chapter 8 of the PEIR.
Reigate and Banstead Borough Council	27 September 2019	Whilst we welcome consideration of the potential effects of the construction of updated highways junctions on the Riverside Garden Park in Horley, we consider that the scope of the assessment of potential effects should consider more generally countryside to the south of Horley east of the Balcombe Road which could be particularly affected by the construction of updated highway junctions. This area is designated in the Council's DMP as part of the Rural Surrounds of Horley. DMP Policy NHE7 "Rural Surrounds of Horley" recognises that "intrinsic character and beauty of the countryside" within this area and seeks to protect the countryside and "enhance or maintain the visual and physical distinction between Horley urban area and its rural surroundings".	Policy NHE7 has been considered. Only temporary effects on the rural surrounds of Horley would occur due to the operation of a construction compound. Policy NHE7 aligns itself with national policy, which is considered within the PEIR. More specifically the policy is concerned with permanent development and its design and siting, which is not considered to be relevant to the Project.
South Downs National Park Authority	8 October 2019	Para 7.2.1 of the Scoping Report (Main Text) sets out the legislative and policy context. Reference is already made to the South Downs Partnership Management Plan, but this should be expanded to include the South Downs Local Plan: 2019.	The South Downs Local Plan: 2019, including its status as a International Dark Skies Reserve, is considered within Chapter 8 of the PEIR.

Consultee	Date	Details	How/where addressed in PEIR
		Our main area of interest will be the proposed study of overflying aircraft at heights of up to 7,000ft. Not only should the study assess the impact on tranquillity and visual receptors during daylight hours, but it should also be extended to include night-time. The South Downs National Park is designated an International Dark Skies Reserve. Further information can be found at: https://www.southdowns.gov.uk/enjoy/dark-night-skies/. We would wish to understand what the impact of increased numbers of flights, if these were to occur during hours of darkness, might be on this designation.	
Surrey County Council	1 October 2019	The County Council would recommend that the Landscape Character Assessment for Surrey (2015) be included in the list of relevant local policy documents set in paragraph 7.2.1 (pp.65-66) of section 7.2 (pp.65-72) of the Scoping Report (Volume 1). The assessments for the borough of Reigate and Banstead, and for the districts of Mole Valley and Tandridge will be relevant to the LVIA process. The County Council would expect that LVIA to take account of the potential impacts of the proposed development on the landscape character of those parts of the county located within the ZTV defined for the scheme. The inclusion of tranquillity within the scope of the assessment of the operational impacts of the proposed development is welcomed.	County-wide landscape character assessments have been prepared by West Sussex and Surrey County Councils, which coincide with the 5 km radius study area. However, as more detailed landscape and townscape character assessments have been prepared by the six district authorities within the 5 km radius study area and as many of the character areas are duplicated at county and district level, to avoid repetition only the district assessments have formed the basis for the assessment. For completeness and to provide further context to the assessment in Chapter 8 of the PEIR, relevant extracts from the West Sussex County Council Landscape Character Assessment (2007) and the Surrey County Council Landscape Character Assessment (2015) can be found in Appendix 8.6.1.
West Sussex County Council		In reference to Paragraph 7.2.4: We disagree with the use of a zone of theoretical visibility (ZTV) based on the heights of existing buildings, given that the proposed CARE facility would have a stack of up to 50m in height. Table 4.6.1 notes that the maximum height of the South Terminal is 40m, so this would potentially be 10m higher than the tallest feature on site. The final stack height is unlikely to be known until air quality/dispersal modelling has been undertaken as part of the Environment Permitting process. With the CARE facility not being relocated until 2026-2034 (paragraph 5.3.6), for the purposes of the DCO process, and using the Rochdale Envelope, a 50m stack height must be assumed. As a result, consideration in the assessment should be given to the impact of the plume, and lighting on top of the stack. It is also unclear whether the ZTV includes the hotels in the surrounding area.	ZTVs have been generated for both existing and proposed development at Gatwick. The preliminary 5 km radius study area is considered sufficient to inform the PEIR. The Project description continues to be refined and, therefore, this will be reviewed for the final ES. A preliminary location for the 50 metre high stack at the CARE facility has been included in the proposed ZTV, together with maximum parameters for all other main buildings and infrastructure, as a worst case scenario to ensure the study area is sufficient to capture all impacts that could give rise to potential significant effects on landscape, townscape and visual resources. Subject to the confirmation that the CARE facility stack is likely to generate a visible plume, this will be considered within the final Environmental Statement, if appropriate.
West Sussex County Council		In reference to Paragraph 7.2.19: The baseline landscape character could significantly change as a result of climate change over the assessment period through increased drought and flood conditions.	Potential changes to the assessment of effects on landscape, townscape and visual resources is considered at Section 8.10 of the PEIR.
West Sussex County Council		In reference to Table 7.2.1: This should include the development at the western end of the runway, including the noise mitigation (bund or fence - details yet to be specified) and Fire Training Ground (including building to 9m in height).	Effects on landscape, townscape and visual resources as a result of the proposed noise mitigation feature and Fire Training Ground are included in Section 8.9 of the PEIR.
West Sussex County Council		In reference to Paragraph 7.2.33: The extent of the study area should be reconsidered once the potential impact of the 50m stack has been taken into account.	The preliminary 5 km radius study area is considered sufficient to inform the PEIR. The Project description continues to be refined and, therefore, this will be reviewed for the final Environmental Statement.

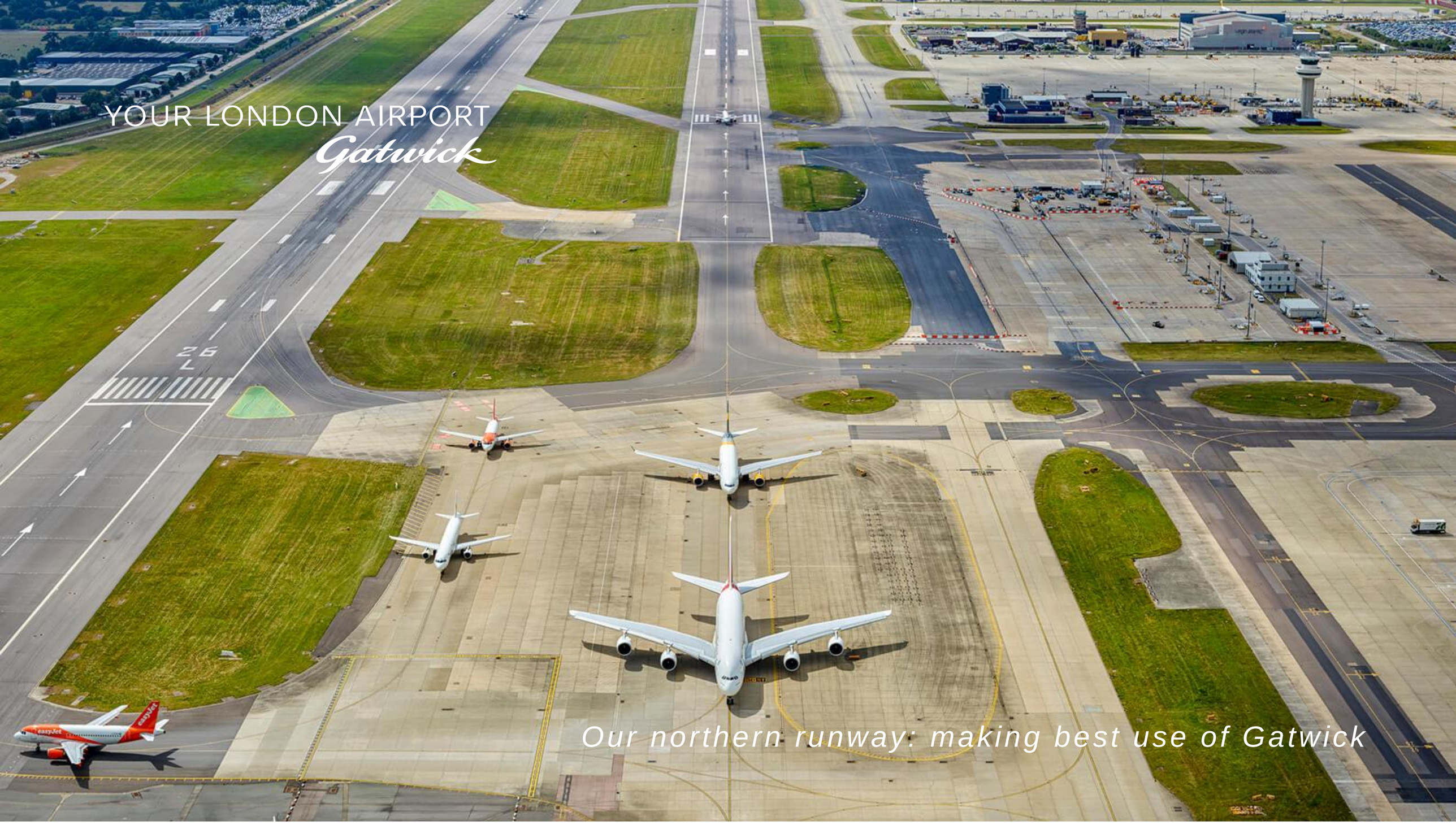
Consultee	Date	Details	How/where addressed in PEIR
			A preliminary location for the 50 metre high stack at the CARE facility has been included in the proposed ZTV, together with maximum parameters for all other main buildings and infrastructure, as a worst case scenario to ensure the study area is sufficient to capture all impacts that could give rise to potential significant effects on landscape, townscape and visual resources .
Wealden District Council	26 September 2019	Suitable reference and consideration is given to the High Weald Area of Outstanding Natural Beauty (AONB) and an assessment of the impacts on tranquillity is scoped in as this is an important part of the AONB's designation. However, it is not clear if impacts on tranquillity is generally assessed for all areas which are within affected zones or whether this is just in relation to the AONB.	The extent of the tranquillity study area has been determined through an appropriate methodology (to accommodate specific criteria in CAP1616 Appendix 2 para B30) and incorporated into baseline data for nationally designated landscape and character areas. See Figure 8.4.2. Tranquillity as an aspect of landscape value has been considered generally for landscapes and townscapes within a 5 km radius of the Project.
Tandridge District Council	30 September 2019	As set out in paragraph 5.2 above, there are limited details on the proposed CARE facility (Central Area Recycling Enclosure), which could have a stack height of up to 50m (potentially the tallest feature on the site). Paragraph 7.2.4 of the EIASR refers to the height of the 'main buildings' on the site and on which the existing ZTV is based (maximum height 40m). At 5km the study area does not extend to the high points/viewpoints on the North Downs/Surrey Hills AONB but it is important that the potential impact of this facility (including any lighting affixed to it) is assessed as part of the wider landscape assessment.	High points within the Surrey Hills AONB are located approximately 10 km from Gatwick Airport. High points within the Kent Downs AONB are located at more than 15 km from Gatwick Airport. The proposed slender stack at the CARE facility is highly unlikely to be visible at these distances. The requirement for aviation warning lights on the top of the stack and an assessment of night time effects will be considered within the final Environmental Statement.

3 Glossary

3.1 Glossary of Terms

Table 3.1.1: Glossary of Terms

Term	Description
CBC	Crawley Borough Council
DMP	Development Management Plan
EIA	Environmental Impact Assessment
ES	Environmental Statement
GAL	Gatwick Airport Limited
PEIR	Preliminary Environmental Information Report
ZTV	Zone of Theoretical Visibility
LVIA	Landscape and Visual Impact Assessment
GLVIA	Guidelines for Landscape and Visual Impact Assessment
AONB	Area of Outstanding Natural Beauty
DCO	Development Consent Order
MSDC	Mid Sussex District Council
EIASR	Environmental Impact Assessment Scoping Report



Preliminary Environmental Information Report
Appendix 8.4.1: Landscape, Townscape and Visual Impact Assessment Methodology

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 8.4.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the Landscape, Townscape and Visual Impact Assessment Methodology for the Project.

2 Landscape, Townscape and Visual Resources

2.1 Introduction

2.1.1 In September 2019, GAL submitted a Scoping Report to the Planning Inspectorate, which described the scope and methodology for the technical studies being undertaken to provide an assessment of any likely significant effects and, where necessary, to determine suitable mitigation measures for the construction and operational phases of the Project.

2.1.2 Following consultation with the statutory bodies, the Planning Inspectorate (on behalf of the Secretary of State) provided a Scoping Opinion on 11 October 2019.

2.1.3 The Scoping Report makes a commitment to develop the Landscape, Townscape and Visual Impact Assessment (LTVIA) in consultation with relevant statutory and non-statutory consultees. The following description of the assessment methodology expands on text within the Scoping.

2.2 Assessment Methodology

Relevant Guidance

2.2.1 As a matter of best practice, the LTVIA has been undertaken based on the relevant guidance on landscape and visual assessment. This includes the below.

- Guidelines for Landscape and Visual Impact Assessment 3rd Edition (Landscape Institute and Institute of Environmental Management and Assessment, 2013).
- An Approach to Landscape Character Assessment (Natural England, October 2014).
- Landscape Character Assessment – Guidance for England and Scotland (The Countryside Agency and Scottish Natural Heritage, 2002).
- Airspace Design: CAP 1616 (Civil Aviation Authority, 2021)
- Tranquillity – An Overview, Technical Information Note 1/17 (Landscape Institute).
- Technical Guidance Note 06/19: Visual Representation of Development Proposals (Landscape Institute).

Scope of the Assessment

2.2.2 The LTVIA includes an appraisal of the landscape, townscape and visual baseline conditions within the study area and their value, condition, susceptibility and sensitivity to change as a result of the Project. The relevant aspects of the Project have been described and the effects on landscape, townscape and visual resources assessed. Design development and mitigation measures have been described which would minimise adverse effects.

2.2.3 The LTVIA focuses on effects that have the potential to be significant, with less emphasis on effects that are unlikely to be significant.

Study Areas

2.2.4 The existing and proposed Zones of Theoretical Visibility (ZTVs) have informed the extent of the study area to ensure that all landscape, townscape and visual receptors that may experience significant effects are captured (Figure 8.4.1 of the PEIR). The proposed ZTV includes a preliminary location for the 50 m high stack at the central airfield maintenance and recycling (CARE) facility, as the tallest element of the Project.

2.2.5 An area of search of 5 km radius from the Project site boundary has been identified as the ZTVs indicate that the vast majority of land that may be potentially intervisible with development at Gatwick Airport lies within this area. This has defined an appropriate study area to capture the relevant landscape, townscape and visual receptors that are likely to be affected by the Project and to ensure that all likely significant effects have been identified. Two locations immediately outside of the 5 km radius study area have also been included in the assessment to ensure very localised effects on receptors at Tilgate Park (Crawley District 'Important Viewpoint') and Turners Hill (High Weald Area of Outstanding Natural Beauty (AONB)) are included in the LTVIA.

2.2.6 A separate study area has been established to coincide with overflying aircraft at height profiles up to 7,000 feet above ground level to address effects on landscape tranquillity and visual receptors. (Figure 8.4.3 of the PEIR). The methodologies for assessing Airspace Change (CAA, 2021) require the LTVIA to consider effects on the perception of tranquillity due to increased overflights within nationally designated landscapes comprising the High Weald, Surrey Hills and Kent Downs AONB's and the South Downs National Park.

Methodology for Baseline Studies

Desk Study

2.2.7 The scope of work has included the following core activities:

- a review of relevant planning policy related to landscape/townscape and visual issues; and
- a desk study and web search of relevant background documents and maps, including reviews of aerial photography, web searches, county and local planning authority publications, National Park and AONB publications and relevant landscape and townscape character assessments for the site and study areas;

Site-Specific Surveys

2.2.8 The scope of work has included the following:

- field assessments and photographic surveys of the character and fabric of the Project site and its surroundings, and of the views available to and from the site. Field surveys allow a better understanding of the landscape and townscape, to determine its character, condition (quality), value and intrinsic sensitivity and identify visual receptors and visual barriers.

2.2.9 A series of representative daytime summer and winter views and winter night time views have been identified (Figure 8.4.1 with panoramic photography at Figures 8.4.4-8.4.20 of the PEIR). The representative viewpoints have been used to assess the potential visual impacts of the Project on the different range of views towards the site. The selected viewpoints include views from close quarters through to distant views in which the Project site is part of a wider landscape. Further viewpoints will be identified and added to the assessment process, as required in consultation with local authorities, county councils, Natural England and the High Weald AONB Management Board.

Tranquillity Assessment Baseline

2.2.10 A methodology for capturing and assessing overflight data has informed the baseline for the assessment of effects on tranquillity. Overflights are capped at a height of 7,000 feet above ground level and within a distance of up to 1.8 km from an observer and defined aircraft that would be visible or audible. The Gatwick overflight data is based on 92 days in summer 2018 and presented within a grid size of 3.6 km aligned with the runway orientation. The data for an average 24 hour period is presented as a heat map with the number of overflights defined for each grid square ranging from 1 to 10, 10 to 50, 50 to 100, 100 to 200 and greater than 200.

2.2.11 The baseline data capture overflying aircraft following established Noise Preferential Routes (NPRs) and arrival flight paths, where effects on tranquillity due to an intensification of existing noise or visual impacts are most likely to occur. Receptors within the landscape outside of these NPRs and routes have been scoped out of the assessment as there are no proposed changes to routing and therefore these areas would not be overflown (and no change in the effect on tranquillity as a result of the Project is likely). No impacts are anticipated beyond this wider study area and effects on designated landscapes outside these areas are proposed to be scoped out of the assessment.

2.2.12 To enable a complete baseline situation to be defined non-Gatwick flights have also been assessed and mainly originate from Heathrow Airport and Redhill aerodrome. Ten days of radar data within approximately 50 km of Gatwick Airport during June and July 2018 have been analysed.

Assessment Criteria and Assignment of Significance

2.2.13 The significance of an effect is determined based on the sensitivity of a receptor and the magnitude of an impact. The terms used to define magnitude and sensitivity are based on and have been adapted from those used in the Design Manual for Roads and Bridges (DMRB) methodology (Highway England *et al*., 2020).

2.2.14 The baseline assessment includes an appraisal of the landscape and townscape (landscape within the built-up area) within the study area. The studies identify the landscape/townscape resources and character, including individual features, key characteristics and the wider landscape/townscape character.

2.2.15 Baseline information on the landscape/townscape has been gathered through a combination of desk studies, consultation and field surveys. Documents used to inform the assessment include aerial photographs, Ordnance Survey maps and published landscape character assessments.

2.2.16 Relevant national, county and district landscape character assessments have been reviewed. Particular attention has been paid to the key landscape characteristics of the relevant landscape types / character areas and special qualities of the High Weald AONB, Surrey Hills AONB, Kent Downs AONB and South Downs National Park. Valued landscape resources have been identified at national and local levels.

2.2.17 Field surveys have been carried out to gain a better understanding of the landscape and townscape, to determine its character, condition and identify visual receptors and visual barriers. The surveys have established the features, elements and characteristics that combine to give the landscape and townscape a distinct sense of place.

2.2.18 Site surveys have identified a range of visual receptors within the 5 km radius study area. Receptors can be categorised in the following main groups.

- Walkers and equestrians using public rights of way.
- Cyclists, including those using National Cycle Route 21.
- Occupiers of residential properties.
- Occupiers of commercial properties.
- Occupiers of vehicles and trains.
- Visitors to Gatwick Airport.
- Members of staff working at Gatwick Airport.

2.2.19 All main receptor groups with potential views of the Project have been described. 17 viewpoint locations which are representative of key visual receptor groups have been identified to provide a more detailed understanding of publicly available views and potential effects on visual amenity, as below.

- Viewpoint 1: Perimeter Road North and Public right of way 346/2Sy, Sussex Border Path.
- Viewpoint 2: Orange Short Stay Multi-Storey Car Park.
- Viewpoint 3: Car rental South Terminal, public right of way 360/Sy.
- Viewpoint 4: River Mole public right of way 346, Sussex Border Path.
- Viewpoint 5: River Mole public right of way 346, Sussex Border Path.
- Viewpoint 6: Riverside Garden Park, National Cycle Route 21.
- Viewpoint 7: Horley Riverside.
- Viewpoint 8: Public right of way 362a north of the A23 and South Terminal.
- Viewpoint 9: Balcombe Road at Pentagon Field.
- Viewpoint 10: Public right of way 359/Sy at Pentagon Field.
- Viewpoint 11: Public right of way 360/1Sy at Tinsley Green.
- Viewpoint 12: Bridleway public right of way 352/Sy at Rowley Farm.
- Viewpoint 13: Ifield Road.
- Viewpoint 14: Public right of way 344, Sussex Border Path east of Charlwood.
- Viewpoint 15: Norwood Hill.
- Viewpoint 16: Turners Hill High Weald AONB.
- Viewpoint 17: Tilgate Hill Crawley Borough Council ‘Important View’.

2.2.20 The representative viewpoints have been used to assess the potential visual impacts of the Project on the different range of views towards the site.

2.2.21 The landscape, townscape and visual assessment process has identified the existing ‘baseline’ and projected future baseline as a result of committed or consented developments in terms of condition, value and character of the landscape/townscape and its visual relationship with its surroundings, building on the initial appraisal of existing baseline conditions.

Receptor Sensitivity/Value

2.2.22 The sensitivity or susceptibility of a landscape or townscape to change varies according to the nature of the existing resource and the nature of the proposed change. Considerations of value, integrity and capacity are all relevant when assessing sensitivity. For the purpose of this assessment, these terms are defined as per the below.

- Value: the relative value that is attached to different landscapes by society. A landscape may be valued by

different stakeholders for a whole variety of reasons. Landscapes can be recognised through national, regional or local designation. Views tend not to be designated, but value can be recognised through a named location shown on a map, or through the creation of a parking lay-by or location of a bench to appreciate a view.

- Integrity: the degree to which the value has been retained, the condition and integrity of the landscape or the view.
- Capacity: the ability of a landscape, townscape or view to accommodate the proposed change while retaining the essential characteristics which define it.

Landscape and Townscape Value

2.2.23 As part of the baseline description of the study area the value of the landscape or townscape that would be affected has been established in accordance with paragraph 170 of the NPPF. The value of certain landscapes has been recognised, eg the national designations of National Park (NP). Some landscapes are locally designated, eg Special Landscape Area (SLA). The aspects/special qualities of the landscape that led to the designations have been noted, as has the degree to which that aspect is present in the particular area under consideration.

2.2.24 Other landscapes are undesignated, but are valued locally for specific reasons or specific elements / features. GLVIA3 includes a list of eight factors within Box 5.1 that have been used to identify landscape/townscape value. These have been used as factors in Sections 8.6 to 8.13 of PEIR Chapter 8: Landscape Townscape and Visual Resources, to establish value within the study area.

- Landscape quality
- Scenic quality
- Rarity
- Representativeness
- Conservation interest
- Recreation value
- Perceptual aspects (including tranquillity)
- Associations

2.2.25 How that value might be affected by a development is classified on a four point scale (low, medium, high and very high) as set out in Table 2.2.1 below. The table can only illustrate general categories, as the effects on an area or element of landscape / townscape is specific to the development proposed and that particular aspect affected.

Table 2.2.1: Landscape/Townscape Value Criteria

Value	Designation	Definition
Very High	International/ National	Exceptional scenic quality (and/or special qualities), no or limited potential for substitution, eg World Heritage Site, National Park, AONB or key elements features within them well known to the wider public.
High	National/ Regional/Local	Very attractive or attractive scenic quality, high or good landscape/townscape quality, limited potential for substitution, eg National Park, AONB, SLA or key elements within them.
Medium	Regional/Local	Typical and commonplace or in part unusual scenic quality, ordinary landscape/townscape quality, potential for substitution, eg Locally designated (SLA) or undesignated, but value expressed through literature and cultural associations or through demonstrable use.
Low	Local	Dull, degraded or damaged scenic quality, poor landscape/townscape quality, can be readily substituted, eg Undesignated. Certain individual landscape/townscape elements or features may be worthy of conservation or landscape/townscape identified would benefit from restoration or enhancement.

Landscape and Townscape Condition

2.2.26 The evaluation of condition is based on judgements about the physical state of the landscape or townscape resource. It reflects the state of repair of individual features and elements, as indicated by the categories within Table 2.2.2 below, or can be applied to the intactness of the resource as a whole outlined by the corresponding descriptions:

Table 2.2.2: Landscape/Townscape Condition Criteria

Condition	Definition
Very Good	Strong structure; very attractive with distinct features worthy of conservation; strong sense of place; no detracting features.
Good	Recognisable structure; attractive with many features worthy of conservation; occasional detracting features.
Ordinary	Distinguishable structure; common place with limited distinctiveness and features worthy of conservation; some detracting features.
Poor	Weak structure; evidence of degradation; lacks distinctiveness and sense of place; frequent detracting features.
Very Poor	Damaged structure; evidence of severe disturbance or dereliction; no distinctiveness; detracting features dominate.

Landscape, Townscape and Visual Receptor Sensitivity

2.2.27 Sensitivity, or susceptibility, is not readily graded in bands. However, in order to provide both consistency and transparency to the assessment process, Table 2.2.3 below define the criteria which have guided the judgement as to the sensitivity of the receptor and the susceptibility to change.

2.2.28 The sensitivity of the landscape and townscape character areas to the type of change associated with the Project has been considered, based on guidance contained within GLVIA3. Table 2.2.3 below summarises criteria used to assess the sensitivity of the landscape to change.

Table 2.2.3: Landscape/Townscape Sensitivity Criteria

Sensitivity	Definition
Very High	Landscape/townscape value recognised by international or national designation. The landscape/townscape resource has very little ability to absorb change of the type proposed without fundamentally altering its present character and is of very high importance, rarity and value. Sense of tranquility or remoteness specifically noted in landscape character assessment. High sensitivity to disturbance specifically noted in landscape character assessment. The qualities for which the landscape/townscape is valued are in good condition, with a clearly apparent distinctive character and absence of detractors. Very limited potential for substitution.
High	Landscape/townscape value recognised by national designation. The landscape/townscape resource has little ability to absorb change of the type proposed without fundamentally altering its present character and/or is of high importance, rarity or value. Sense of tranquility or remoteness specifically noted in landscape character assessment. High sensitivity to disturbance specifically noted in landscape character assessment. The qualities for which the landscape/townscape is valued are in good condition, with a clearly apparent distinctive character and absence of detractors. Limited potential for substitution.
Medium	Landscape/townscape value is recognised or designated locally. The landscape/townscape resource has moderate capacity to absorb change of the type proposed without significantly altering its present character and/or is of medium importance, rarity or value. The landscape/townscape is relatively intact, with a distinctive character and some detractors; and is reasonably tolerant of change. Limited potential for substitution.
Low	The landscape/townscape resource is tolerant of change of the type proposed without detriment to its character and/or is of low importance, rarity or value. Landscape/townscape integrity is low, with a poor condition with the presence of detractors; and the landscape/townscape has the capacity to potentially accommodate high levels of change.
Negligible	The landscape/townscape resource is tolerant of change of the type proposed without detriment to its character and/or is of low importance, rarity or value. Landscape/townscape integrity is low, with a poor condition and a degraded character with the presence of detractors such as dereliction; and the landscape/townscape has the capacity to potentially accommodate considerable change.

2.2.29 The sensitivity of visual receptors has been assessed, based on guidance contained within GLVIA3. Sensitivity is dependent upon several factors including the location and context of the viewpoint, whether views are continuous, fragmented, or intermittent (ie the dynamic nature of a view gained while travelling through an area), the importance of views and the occupation and activity of the visual receptor. Influences such as the number of receptors affected, popularity of views and the significance of the views in relation to valued landscapes or features also determines the importance of views.

Table 2.2.4: Visual Sensitivity Criteria

Sensitivity	Definition
Very High	Large number of viewers whose attention is very likely to be focused on the landscape within nationally designated landscapes of high tranquility. Eg users of strategic recreational footpaths and cycleways; people experiencing views from important landscape features of physical, cultural or historic interest, beauty spots and picnic areas.
High	Large number of viewers whose attention is likely to be focused on the landscape. Eg residents experiencing views from dwellings; users of strategic recreational footpaths and cycleways; people experiencing views from important landscape features of physical, cultural or historic interest, beauty spots and picnic areas.
Medium	Viewers' attention may be focused on landscape, such as users of pavements, footways and secondary footpaths in urban areas, and people engaged in outdoor sport or recreation eg horse riding or golf. Occupiers of vehicles in rural areas.
Low	People at their place of work, or engaged in similar activities, whose attention may be focused on their work or activity and who may therefore be potentially less susceptible to changes in view. Occupiers of vehicles whose attention may be focused on the road.
Negligible	People at their place of work, or engaged in similar activities, whose attention may be focused on their work or activity and who may therefore be potentially less susceptible to changes in view. Occupiers of vehicles in urban areas.
	Occupiers of vehicles in highly scenic areas or on recognised tourist routes.

Magnitude of Impact

2.2.30 The next stage of the assessment process has identified the potential magnitude of change to landscape or townscape character and views arising from the Project. The assessment distinguishes between landscape or townscape impacts and impacts upon views, based on guidance contained within GLVIA3. The former considers the impact upon landscape or townscape character taking account of direct impacts upon the physical resource (landform, vegetation, pattern, etc.) and any indirect impacts arising from the Project, which would be sufficient to impact on the inherent character of a landscape or townscape area. The latter considers the direct impact on views perceived by people from publicly accessible locations. Potential impacts are also considered in terms of their duration ie whether they are permanent or temporary.

2.2.31 The magnitude or scale of change brought about by the Project upon both the existing landscape or townscape resource and upon views, both beneficial and adverse, has been assessed as set out in Table 2.2.5 below.

Table 2.2.5: Impact Magnitude Criteria

Magnitude of Impact	Definition
High	The proposed change forms a dominant or immediately apparent feature that would significantly alter and change view. Where there are substantial changes affecting the character of the landscape/townscape, or important elements through loss of or severe damage to key existing characteristics, features or elements. Proposed development within affected landscape/townscape. Scale, mass and form of development out of character with existing elements. Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (adverse).
	Large scale or major improvement of landscape/townscape character or view; extensive restoration or enhancement of quality (beneficial).
Medium	The proposed change forms a prominent new element that would affect and change the view. The proposed development forms a visible and recognisable feature in the landscape/townscape. Proposed development is within or adjacent to affected landscape/townscape. Scale of development fits with existing features. Partial loss of/damage to key characteristics, features or elements, but not adversely affecting the integrity of landscape/townscape (adverse).
	Moderate scale improvement of landscape/townscape character or view; partial restoration or enhancement of quality (beneficial).
Low	The proposed change constitutes only a minor component of view, which is recognisable, although might be missed by the casual observer. Awareness of the proposed change would not change the overall nature and character of the view. Receptor may be located at distance from the Project. Minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (adverse).
	Minor benefit to, or addition of, one (maybe more) key landscape/townscape characteristics, features or elements or improvement in quality of view due to partial restoration or enhancement (beneficial).
Negligible	Only a very small part of the proposed change would be discernible, and/or it is at such a distance that it would be scarcely appreciated. Consequently, it would have very little effect on view. The effect of change on the perception of the landscape/townscape, the physical characteristics, features or elements is barely discernible (adverse).
	Very minor benefit to or positive addition of one or more landscape/townscape characteristics, features or elements (beneficial).
No Change	No loss of or alteration to landscape/townscape characteristics, features or elements; no observable adverse or beneficial impact.

Significance of Effect

2.2.32 The significance of the effect upon landscape, townscape or visual resources has been determined by taking into account the sensitivity of the receptor and the magnitude of the impact. The method employed for this assessment is presented in Table 2.2.6. Where a range of significance levels are presented, the final assessment for each effect is based upon expert judgement.

2.2.33 In all cases, the evaluation of receptor sensitivity, impact magnitude and significance of effect has been informed by professional judgement and is underpinned by narrative to explain the conclusions reached.

2.2.34 For the purpose of this assessment, any effects with a significance level of moderate or less are not considered to be significant in terms of the EIA Regulations.

Table 2.2.6: Assessment Matrix

Sensitivity	Magnitude of Impact				
	No Change	Negligible	Low	Medium	High
Negligible	No change	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	No change	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	No change	Negligible or Minor	Minor	Moderate	Moderate or Major
High	No change	Minor	Minor or Moderate	Moderate or Major	Major or Substantial
Very High	No change	Minor	Moderate or Major	Major or Substantial	Substantial

2.2.35 A description of the significance levels is provided in the bullets below.

- Substantial: Where the proposed changes cannot be mitigated; would be completely uncharacteristic and would substantially damage the integrity of a valued and important landscape or townscape. Where the proposed changes would form the dominant feature or would be completely uncharacteristic and substantially change the scene in highly valued views. Only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process.
- Major: Where the proposed changes cannot be fully mitigated; would be uncharacteristic and would damage a valued aspect of the landscape or townscape. Where the proposed changes would form a major part of the view, or would be uncharacteristic, and would alter valued views. These beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.
- Moderate: Where some elements of the proposed changes would be out of scale or uncharacteristic of an area. Where the proposed changes to views would be prominent, out of scale or uncharacteristic with the existing view. These beneficial or adverse effects may be important but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.

- Minor: Where the proposed changes would be at slight variance with the character of an area. Where the proposed changes to views would be recognisable or at slight variance with the existing view. These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the Project.
- Negligible: Where the proposed changes would be barely discernible within the landscape/townscape or have a barely discernible influence over a landscape/townscape. Where the proposed changes would be barely discernible within the existing view.

2.2.36 The level of effects is described as substantial, major, moderate, minor or negligible. Where negligible adverse and beneficial effects occur within the same view or same landscape/townscape, the effect can be described as neutral on balance. In the assessment those levels of effect indicated as being 'substantial' or 'major' may be regarded as significant effects. An accumulation of individual 'moderate' effects, for instance experienced by a visual receptor during a journey, may also be regarded as a significant sequential effect.

2.2.37 The assessment matrix at Table 2.2.6 provides a framework for the assignment of levels of effect for each impact identified, together with professional judgement. Long term, day time operational effects form the primary focus of this assessment as these are most likely to result in significant effects. To avoid the need to include separate matrices for assessing the different nature of short term or temporary effects of the construction phase and the relatively limited effects of night time light sources, the same matrix is used to base the assessment on and the assessor has the opportunity to downgrade the level of effect to reflect the reduced duration of the effect or the reduced visibility of the night time context. All assessment conclusions are supported by reasoned justification.

Future Baseline

Pre Initial Construction Phase 2024 to 2029

2.2.38 The developments outlined in this section are currently consented or under construction and would proceed in the absence of the Project. The capability of the existing airport, when the consented airfield and terminal projects are complete, would be 62.4 mppa by 2038 (and 67.2 by 2047). These include the following:

- pier 6 extension and reconfiguration of aircraft stands;
- alterations to Taxiway Quebec;
- resurfacing of the main runway;
- replacement of the Instrument Landing System (ILS) localisers;
- use of robotics technology within existing long stay parking areas
- Gatwick Rail Station improvements;
- highway improvements to North Terminal and South Terminal roundabouts, signalisation and signage;
- extension to the existing BLOC hotel;
- reconfiguration of the existing Hilton hotel
- multi storey car park 4 (1,500 vehicles); and
- multi storey car park 7 (2,750 vehicles)

2.3 Key Project Parameters

2.3.1 The maximum design scenarios for the different elements of the Project have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project design envelope, to that assessed here be taken forward in the final design scheme.

2.4 Mitigation and Enhancement Measures Adopted as Part of the Project

2.4.1 A number of measures have been designed into the Project to reduce the potential for impacts on landscape, townscape and visual resources. These are listed in Table 8.8.1 of Chapter 8.

2.5 Assessment of Effects

2.5.1 Four separate assessment stages have been identified which will form the basis of the LTVIA, as follows:

- 2024: to 2029;
- 2030 – 2032;
- 2033 – 2038; and
- 2038.

2.5.2 The construction, completion and operational phase of each of the elements within the Project have been assessed. Landscape mitigation planting associated with the relevant developments has been assessed as part of the Project at Year 1, when implemented, and at Year 15 when it has reached its intended design purpose.

2.6 Cumulative Effects

Screening of Other Developments and Plans

2.6.1 The Cumulative Effect Assessment has taken into account the impact associated with the Project together with other relevant developments and plans.

2.6.2 Cumulative visual effects have been assessed based on the 17 viewpoint locations previously identified. Static cumulative effects would occur where receptors look directly towards the Project and would also see cumulative schemes in the same angle of view. Additional successive cumulative effects would occur where the receptor can turn through 360 degrees to gain views of cumulative schemes in different angles of view. Sequential cumulative effects would occur where a receptor would be able to see more than one cumulative scheme, together with the Project, within a journey along a route. Effects on landscape, townscape and visual resources have been assessed for the daytime and at night, during construction, at completion and when operational.

3 References

Civil Aviation Authority (2021) Airspace Design: CAP 1616

Countryside Agency and Scottish Natural Heritage (2002) Landscape Character Assessment – Guidance for England and Scotland

Highways England, Transport Scotland, Welsh Government and the Department for Infrastructure Northern Ireland (2020) Design Manual for Roads and Bridges, Volume 11. LA 104: Environmental Assessment and Monitoring. [Online] Available at: http://www.standardsforhighways.co.uk/ha/standards/dmrb/vol11/section2/la104.pdf

Landscape Institute (2017) Tranquillity – An Overview, Technical Information Note 1/17. [Online] Available at: https://www.landscapeinstitute.org/technical-resource/tranquillity/

Landscape Institute (2019) Technical Guidance Note 06/19: Visual Representation of Development Proposals. [Online] Available at: https://www.landscapeinstitute.org/visualisation/

Landscape Institute and Institute of Environmental Management and Assessment (2013) Guidelines for Landscape and Visual Impact Assessment 3rd Edition (GLVIA3)

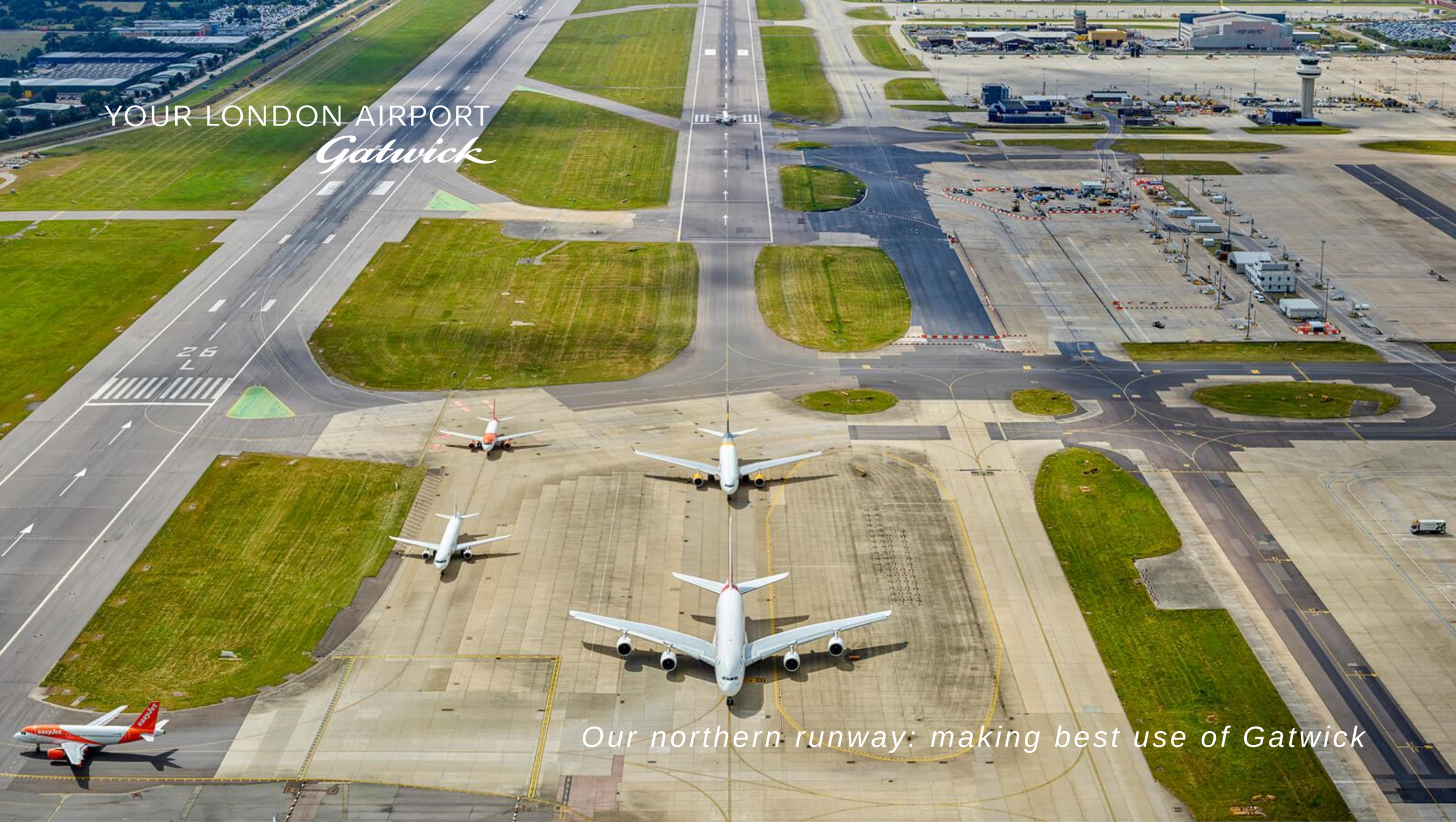
Natural England (2014) An Approach to Landscape Character Assessment.

4 Glossary

4.1 Glossary of terms

Table 4.1.1: Glossary of Terms

Term	Description
AONB	Area of Outstanding Natural Beauty
CARE	Central airfield maintenance and recycling
DMRB	Design Manual for Roads and Bridges
EIA	Environmental Impact Assessment
GAL	Gatwick Airport Limited
LTVIA	Landscape, Townscape and Visual Impact Assessment
NP	National Park
NPR	Noise Preferential Routes
PEIR	Preliminary Environmental Information Report
SLA	Special Landscape Area
ZTV	Zones of Theoretical Visibility



Our northern runway: making best use of Gatwick

Preliminary Environmental Information Report
Appendix 8.6.1: County Landscape Character Assessments

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 8.6.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the Country Landscape Character Assessments for the Project. Figure 1.1.1 details the County Landscape Character Areas referenced in the below sections.

2 County Landscape Character Assessments

2.1 Landscape Character Baseline

2.1.1 County wide landscape character assessments have been prepared by West Sussex and Surrey County Councils, which coincide with the 5 km radius study area. However, as more detailed landscape and townscape character assessments have been prepared by the six district authorities within the 5 km radius study area and as many of the character areas are duplicated at county and district level, to avoid repetition only the district assessments are described in and form the basis for the assessment within the PEIR chapter. For completeness and to provide further context to the assessment, relevant extracts from the West Sussex County Council Landscape Character Assessment (2007) and the Surrey County Council Landscape Character Assessment (2015) are included within this Appendix.

West Sussex County

2.1.2 The Landscape Character Assessment of West Sussex was prepared by West Sussex County Council in 2007. The study identifies four of the 42 unique character areas within the 5 km radius study area.

2.1.3 LW8 Northern Vales lies to the north and south-west of Crawley within the wider Low Weald landscape. Gatwick Airport forms a significant proportion of the overall character area although is not typical of the generally rural, albeit urban fringe landscape.

LW8 Northern Vales Key Characteristics

- *'Flat to gently undulating narrow clay vale, with floodplain and upper tributaries of the River Mole in the north east;*
- *Pattern of small, medium and large fields with a variable density of hedgerows;*
- *Predominantly pasture farmland in the north east….;*
- *Scattered tree cover, isolated woodlands and copses;*
- *Distinctive field trees and farm ponds;*
- *Major road and rail corridors and pylon lines;*
- *Strong suburban and urban fringe influences of Crawley, Horsham and Gatwick Airport;*
- *Some localities retain an enclosed rural character, for instance, west of Ifield;*
- *Large golf course near Ifield; and*
- *Visual intrusion in parts from retail and industrial areas, housing….'*

2.1.4 The study identifies a key issue for change as *'Visual and noise impact of Gatwick Airport'*.

2.1.5 Landscape and Visual Sensitivities are defined as *'Visual and noise intrusion of major traffic routes/minor and major road improvements'*.

2.1.6 Land Management Guidelines are defined as *'Encourage screen planting of native trees and woodland around roadside buildings and service areas, and industrial and commercial development, including Gatwick Airport'*.

2.1.7 The LW4 Low Weald Hills character area lies to the south-west of Gatwick Airport. Key characteristics of the area are as follows.

LW4 Low Weald Key Characteristics

- *'This area has a pastoral and densely wooded character. Low wooded ridges are dissected by steep wooded gills and narrow lanes;*
- *Interspersed between the woodland is a patchwork of mostly small to medium sized pastures enclosed by thick hedgerows and shaws;*
- *Remnant parkland and field corner ponds are recurring features;*
- *Homes and farms are scattered throughout this area; and*
- *Despite the relative proximity of Gatwick Airport and Crawley to the east, the area retains a strong rural character.'*

2.1.8 The study identifies a key issue for change as *'Noise from Gatwick Airport'*.

2.1.9 Landscape and Visual Sensitivities are defined as *'Overall sensitivity to change is high. Despite the high degree of enclosure in many parts of the area, some ridgetops and slopes are prominent with distinctive long views to both North and South Downs and across the Crawley Vale to the High Weald Forests'*.

2.1.10 The HW1 High Weald character area lies to the east of Crawley and the M23. Key characteristics of the area are as follows.

HW1 High Weald Key Characteristics

- *'Wooded, confined rural landscape of intimacy and complexity partly within the High Weald AONB'*.
- *'Plateau, ridges and deep, secluded valleys cut by gill streams'*.
- *'Headwater drainage of the Rivers Eden, Medway, Ouse and Mole'*.
- *'Long views over the Low Weald to the downs, particularly from the high Forest Ridge'*.
- *'Significant woodland cover, a substantial proportion of it ancient, and a dense network of shaws, hedgerows and hedgerow trees'*.
- *'Designed landscapes and exotic treescapes associated with large country houses'.*

2.1.11 Landscape and Visual Sensitivities are defined as *'Woodland cover limits the visual sensitivity of the landscape and confers a sense of intimacy, seclusion and tranquillity'* and *'Long views along valleys and ridges have a high sensitivity to the impact of new urban development and roads'*.

2.1.12 The HW2 High Weald Forests character area coincides completely with the High Weald Area of Outstanding Natural Beauty (AONB) so is not described in further detail. However, two characteristics which are particularly relevant to the assessment are as follows.

HW2 High Weald Forests Key Characteristics

- *'Long views over the Low Weald to the downs, but fewer long views north'.*
- *'Despite the closeness of large towns and roads, a secluded, tranquil nature exists in many parts of the forests'.*

Surrey County

2.1.13 The Surrey Landscape Character Assessment was prepared by Surrey County Council in 2015. The study divides the county into 23 separate Landscape Character Types. The study identifies two character types within the 5 km radius study area as Wooded Low Weald and Low Weald Farmland. The Wooded Low Weald extends along the southern edge of Surrey within Mole Valley District and Waverley District. At a more detailed level the character type within the study area comprises the Cranleigh to Charlwood LCA WW8 (within the Mole Valley District). Key characteristics are as follows.

Cranleigh to Charlwood Wooded Low Weald LCA WW8

- *'Relatively low lying, undulating landform, rising to meet slightly more elevated weald to the north, elsewhere the landform rises to localised high points.*
- *The character area consists of small scale pastoral and arable fields, largely enclosed by intact hedgerows and tree belts. Field sizes become larger towards the south east corner of the character area. The concentration of woodland varies, however increases generally within the central and western parts of the character area.*
- *Woodland is prominently broadleaved, including semi-natural Beech and Oak, but conifer plantations are also present.*
- *Woodland and tree cover encloses the character area and limits long distance views.*
- *The character area abuts Charlwood to the east. Elsewhere there are farmsteads and small groups of dwellings.*
- *A network of rural lanes cross the character area; however a few areas have limited road access and rely on tracks and an extensive network of public rights of way. Open access land is very limited across the majority of the character area, with the main exception being Edolphs Copse, Hammond's Copse and parts of Glover's Wood, all three located at the eastern edge of the character area.*
- *The character area adjoins the Conservation Area at Charlwood.*
- *A rural tranquil landscape, with a sense of remoteness and intimacy due to woodland/tree cover'.*

2.1.14 The study identifies Future Potential Forces for Change as *'Gatwick and associated development including noise and light intrusion'*.

Dorking to Hookwood Low Weald Farmland LCA WF1

2.1.15 This character area lies within the Mole Valley District. Key characteristics are as follows:

- *'Landform is gently undulating. The low weald farmland rises to meet the wooded low weald to the west at a maximum height of approximately 90 m AOD. Land drains to the north and east via the Gad Brook and Deanoak Brook into the River Mole.*
- *The farmland landscape is an irregular pattern of medium, occasionally large scale, arable fields. The smaller pastoral fields are located along watercourses, and there are paddocks and small holdings associated with farmsteads and settlement.*
- *There are well maintained hedgerows, but with fewer trees in the hedgerows than the wooded low weald to the west. Woodland blocks, including ancient woodland, are dispersed and relatively small.*
- *There are unconstrained views, occasionally framed woodland, across the character area, with a more open fell than the less maintained and more treed wooded low weald to the west.*
- *The road network consists of a network of hedge lined rural road and lanes.*
- *There is a good network of public rights of way.*
- *A generally peaceful and attractive landscape, providing an undisturbed setting to River Mole, with views across the Weald from more elevated areas. Although low-key, settlement and roads are obvious human influences and limit the sense pf remoteness. The character area feels less wild and remote than the wooded low weald'*

2.1.16 The study identifies Future Potential Forces for Change as *'Gatwick and related pressures from development and noise'*. However, no reference is made to the adjacent Gatwick Airport or any influence this large-scale development currently has on the LCA.

Flanchford to Horley Low Weald Farmland LCA WF2

2.1.17 This character area runs along the eastern side of the River Mole floodplain, north of Horley, within Reigate and Banstead District. Key characteristics are as follows:

- *Landform is very gently undulating, which rises up from the River Mole to meet the greensand hills to the north.*
- *The character area includes a number of winding streams, and is characterised by drains and mill ponds.*
- *The character area consists predominantly of medium to large scale arable fields with well-maintained hedges. There are a few isolated woodlands, the most significant of which is Slipshatch Wood ancient woodland and includes a small area of conifer plantation.*
- *Rural lanes cross the majority of the character area.*
- *Public rights of way link across the character area, from settlements to the east, to and across the River Mole.*
- *Roads, settlement and adjoining Built Up Areas reduce the sense of tranquillity and of remoteness of the area. Although relatively peaceful, providing an undisturbed setting to River Mole.*
- *The character area has less woodland, simpler topography and appears more maintained than the Wooded Low Weald to the west of the County, and consequently feels less wild and remote than the wooded low weald'.*

Horley to Swaynesland Low Weald Farmland LCA WF3

2.1.18 This is a large character area that lies immediately north-east of Gatwick Airport and extends from Horley and Redhill to Kent in the east, within Tandridge District. Key characteristics are as follows:

- *Landform is broadly undulating rising to the north to meet the greensand hills and to the south to meet the high weald.*
- *The character area consists predominantly of medium-large, arable fields, along with occasional areas of smaller pastoral fields.*
- *There is generally a consistent network of well-maintained hedges across the character area, dispersed blocks of woodland (often ancient woodland). The hedgerow pattern breaks down in a few places. There are a few, usually well vegetated, parcels of land, including paddocks, associated with dispersed farmstead and dwellings.*

- *There are views across the majority of the character area, although woodland occasionally obscures longer distance views.*
- *A network of minor roads and rural lanes, often lined with well-maintained hedges, cross the character area. There is a comprehensive network of public rights of way, including the Vanguard Way Recreational Path and the Tandridge Border Recreation al Path.*
- *Within the character area there are scattered farmsteads, attractive scattered settlements, church yards and mills, as well as dense areas of ribbon development along minor roads, but overall there is limited settlement across the area.*
- *There are some areas of registered common land within the character area including Outwood Common*.
- *A relatively peaceful landscape with limited settlement, particularly to the east, with a slightly higher sense of tranquillity than the low weald farmland west of the Mole floodplain. The character area has less woodland, simpler topography and overall appears more maintained than the Wooded Low Weald to the west*.

2.1.19 The study identifies Future Potential Forces for Change as *'Gatwick and related pressures from development and noise'*.

2.1.20 The Landscape strategy for Low Weald Farmland is: *'Conserve its peaceful, unsettled character, whilst promoting traditional management of woodlands and hedgerows including restoration of hedgerow trees'*.

3 References

West Sussex County Council (2007) Landscape Character Assessment

Surrey County Council (2015) Landscape Character Assessment

4 Glossary

4.1 Glossary of terms

Table 4.1.1: Glossary of Terms

Term	Description
AONB	Area of Outstanding Natural Beauty
EIA	Environmental Impact Assessment
GAL	Gatwick Airport Limited
LCA	Landscape Character Area
PEIR	Preliminary Environmental Information Report

YOUR LONDON AIRPORT Gatwick

KEY

- Project Site Boundary (PEIR)
- County Boundary
- 5km Buffer from Site Boundary (study area for LTVIA)
- Urban

West Sussex

- High Weald (HW1)
- High Weald Forests (HW2)
- Low Weald Hills (LW4)
- Northern Vales (LW8)

Surrey County

- Cranleigh to Charlwood Wooded Low Weald
- Domewood to Dormansland Wooded High Weald
- Dorking to Hookwood Low Weald Farmland
- Flanchford to Horley Low Weald Farmland
- Horley to Swaynesland Low Weald Farmland
- Petridgewood Common and Woodland
- Upper Mole River Floodplain

LW4

LW8

LW8

HW1

HW2

Sources :
Landscape Character Assessment of West Sussex 2003

Surrey County Character Assessment - LCA 2015a figure 11 Character Areas

DOCUMENT

Preliminary Environmental Information Report Appendix 8.6.1

DRAWING TITLE

County Landscape Character Areas

DATE

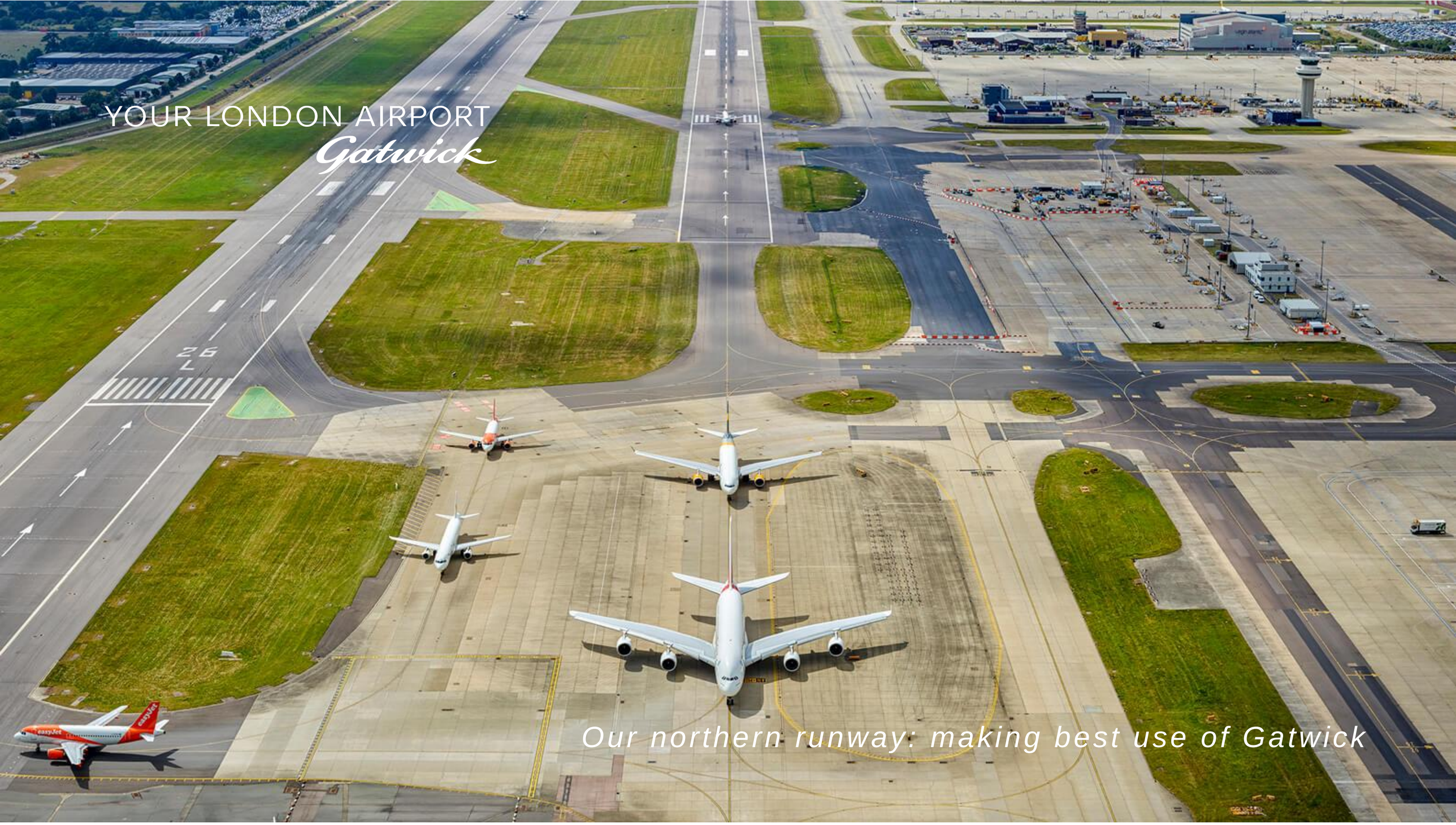
September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 1.1.1	For PEIR Issue
	DRAWN BY: CR	PM / CHECKED BY: PE

SCALE @ A3 1:55,000

0 1,000 2,000 m

\\eur-mpfs-02\projects\11055 Gatwick - Genesis\Tech\Drawings\11055-0355-06.mxd



Preliminary Environmental Information Report
Appendix 8.6.2: CPRE Tranquillity Mapping

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 8.6.2 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the CPRE baseline tranquillity mapping for the Project study area.

1.1.3 Figure 1.1.1 details the baseline tranquillity mapping for the Project study area which has been sourced from Campaign to Protect Rural England.

YOUR LONDON AIRPORT Gatwick

KEY

Project Site Boundary (PEIR)

Most tranquil

Least tranquil

Source:
Campaign to Protect Rural England

DOCUMENT

Preliminary Environmental Information Report Appendix 8.6.2

DRAWING TITLE

Tranquillity Map

DATE

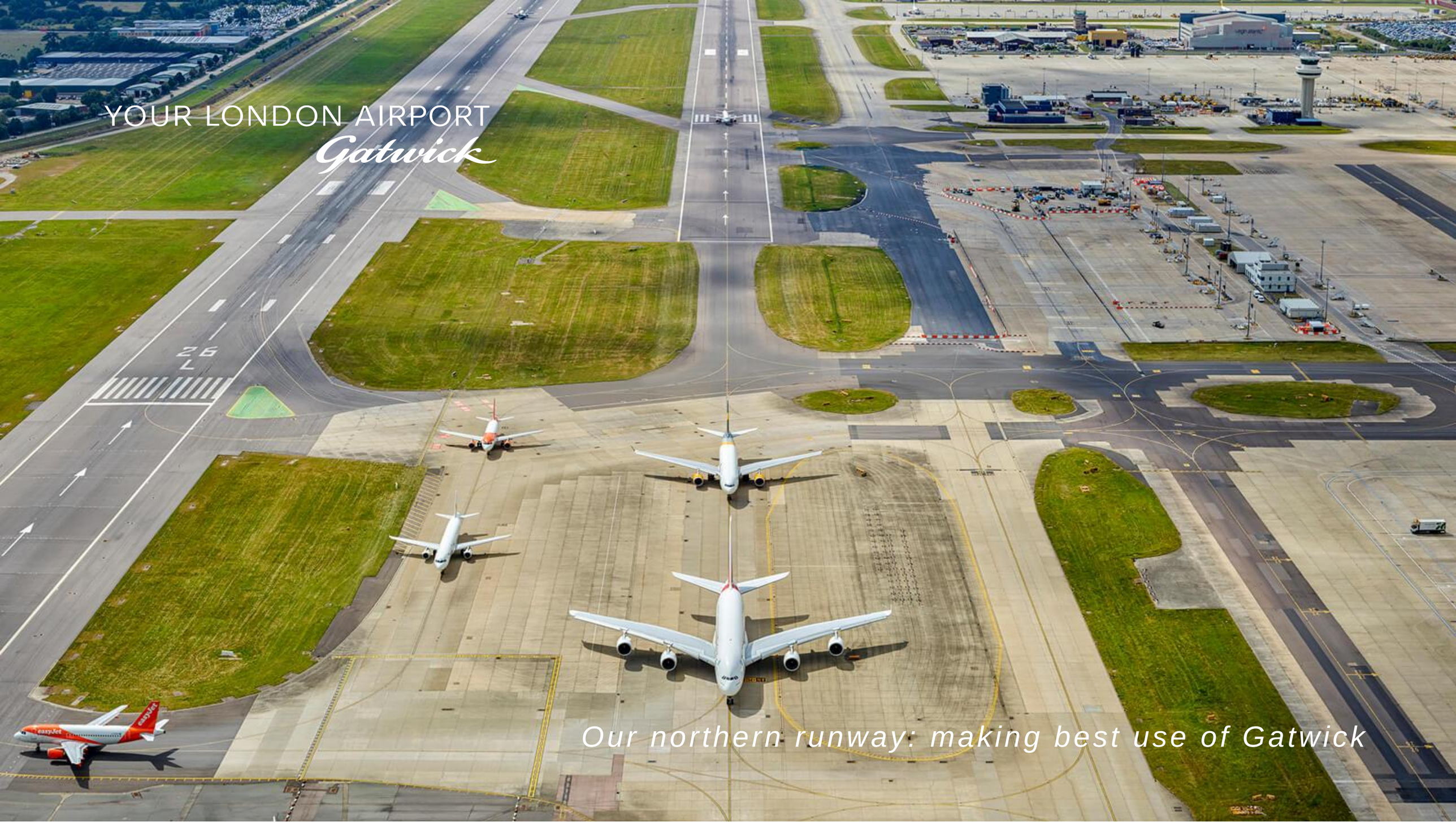
September 2021

ORIENTATION	DRAWING NO.	REVISION
N	FIGURE 1.1.1	For PEIR Issue
	DRAWN BY: CR	PM / CHECKED BY: PE

SCALE @ A3 1:250,000

0 2,500 5,000 10,000 m

\\eur-mpfs-02\projects\11055 Gatwick - Genesis\Tech\Drawings\11055-0277-05.mxd



Preliminary Environmental Information Report
Appendix 8.9.1: Summary of Effects at Representative Viewpoints

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 8.9.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

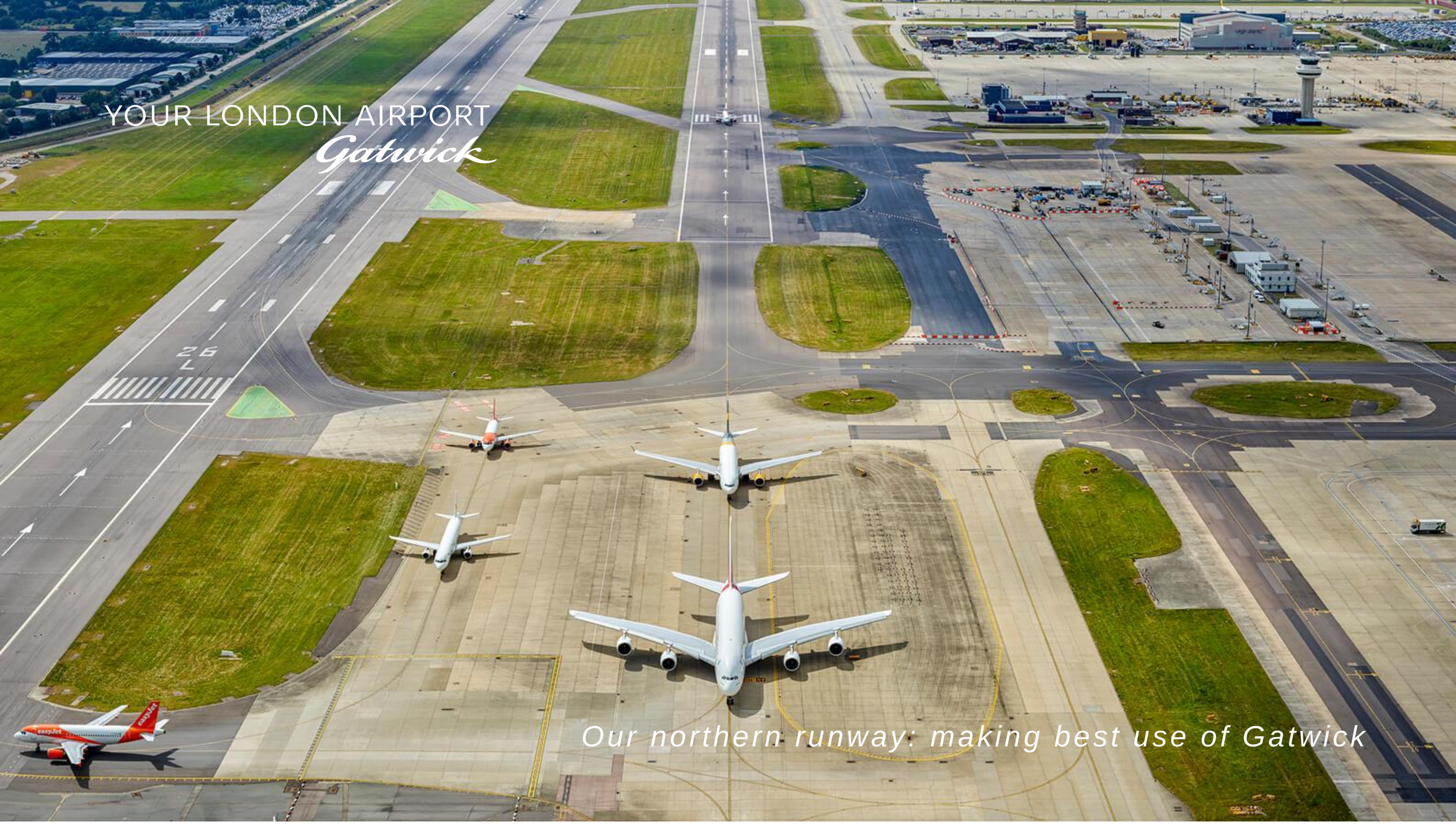
1.2 Assessment of Visual Effects

1.2.1 Table 1.2.1 provides a summary of effects that would be experienced by visual receptors at the 17 representation viewpoint locations, as a result of the Project.

Table 1.2.1: Summary of Effects at Representative Viewpoints

Representative Viewpoint Location	Receptor Sensitivity	2024 to 2029 Construction phase	2030 to 2032 First full year of operation	2033 to 2038 Interim assessment period	2038 Design year
		Magnitude of Impact	**Magnitude of Impact**	**Magnitude of Impact**	**Magnitude of Impact**
		Significance of Effect	**Significance of Effect**	**Significance of Effect**	**Significance of Effect**
Viewpoint 1: Perimeter Road North and Public right of way 346/2Sy, Sussex Border Path	Low: Pedestrians using roadside pavement and occupiers of vehicles.	Low	Low	Low	Low
		Minor adverse (day and night)	**Minor adverse (day and night)**	**Minor adverse (day and night)**	**Minor adverse (day and night)**
Viewpoint 2: Short Stay Multi-Storey Car Park 3	Low: Visitors to the airport.	Negligible	Negligible	Negligible	Negligible
		Negligible (day and night)	**Negligible (day and night)**	**Negligible (day and night)**	**Negligible (day and night)**
Viewpoint 3: Car Rental South Terminal, public right of way 360/Sy	High: Walkers using public right of way.	Medium (Offset by some beneficial impacts)	Medium (Offset by some beneficial impacts)	Medium (Offset by some beneficial impacts)	Medium (Offset by some beneficial impacts)
		Minor adverse (day) Negligible (night)	**Minor adverse (day) Negligible (night)**	**Minor adverse (day) Negligible (night)**	**Minor adverse (day) Negligible (night)**
Viewpoint 4: River Mole public right of way 346, Sussex Border Path	High: Walkers using public right of way.	Not Applicable	Negligible	Negligible	Negligible
			Minor adverse (day and night)	**Minor adverse (day and night)**	**Minor adverse (day and night)**
Viewpoint 5: River Mole public right of way 346, Sussex Border Path	High: Walkers using public right of way.	Negligible	Negligible	Negligible	Negligible
		Minor adverse (day and night)	**Minor adverse (day and night)**	**Minor adverse (day and night)**	**Minor adverse (day and night)**
Viewpoint 6: Riverside Garden Park, National Cycle Route 21	High: Visitors to park and cyclists.	Negligible	Medium	Medium	Low (Offset by some beneficial impacts)
		Negligible (day and night)	**Moderate adverse (day and night)**	**Moderate adverse (day and night)**	**Moderate adverse (day and night winter) Minor adverse (day and night summer)**
Viewpoint 7: Horley Riverside		Negligible	Negligible	Negligible	Negligible or No Change

Representative Viewpoint Location	Receptor Sensitivity	2024 to 2029 Construction phase	2030 to 2032 First full year of operation	2033 to 2038 Interim assessment period	2038 Design year
		Magnitude of Impact	**Magnitude of Impact**	**Magnitude of Impact**	**Magnitude of Impact**
		Significance of Effect	**Significance of Effect**	**Significance of Effect**	**Significance of Effect**
	High: Occupiers of residential properties.	**Negligible (day and night)**	**Minor (day and night)**	**Minor (day and night)**	**Minor (day and night winter)** **No Change (day and night summer)**
Viewpoint 8: Public right of way 362a north of the A23 and South Terminal	High: Walkers using public right of way.	Medium	Medium or low	Medium or low	Low
		Moderate adverse (day) **Minor adverse (night)**	**Moderate adverse (day)** **Minor adverse (night)**	**Moderate adverse (day)** **Minor adverse (night)**	**Moderate or Minor adverse (day, summer and winter)** **Minor adverse (night)**
Viewpoint 9: Balcombe Road at Pentagon Field	Low: Occupiers of vehicles and Medium: Pedestrians using roadside pavement.	High	High	Medium	Low (Offset by some beneficial impacts)
		Moderate or Major adverse (day and night)	**Moderate or Major adverse (day and night)**	**Minor or Moderate adverse (day and night)**	**Minor/Negligible or Moderate/Minor adverse (day and night)**
Viewpoint 10: Public right of way 359/Sy at Pentagon Field	High: Walkers using public right of way.	Medium	Medium	Medium (Offset by some beneficial impacts)	Low
		Major adverse (day and night)	**Major adverse (day and night)**	**Moderate adverse (day and night)**	**Moderate or Minor adverse (day and night)**
Viewpoint 11: Public right of way 360/1Sy at Tinsley Green	High: Walkers using public right of way.	Not Applicable	Not Applicable	Low	Low
				Moderate adverse (day and night)	**Minor adverse (day and night)**
Viewpoint 12: Bridleway public right of way 352/Sy at Rowley Farm	High: Walkers/equestrians using public right of way.	Negligible	Negligible	Negligible	Negligible
		Minor adverse (day and night)	**Minor adverse (day and night)**	**Minor adverse (day and night)**	**Minor adverse (day and night)**
Viewpoint 13: Ifield Road	Low: Occupiers of vehicles.	Negligible	Negligible	Negligible	Negligible
		Negligible (day and night)	**Negligible (day and night)**	**Negligible (day and night)**	**Negligible (day and night)**
Viewpoint 14: Public right of way 344, Sussex Border Path east of Charlwood	High: Walkers using public right of way.	Negligible	Negligible	Negligible	Negligible
		Minor adverse (day and night)	**Minor adverse (day and night)**	**Minor adverse (day and night)**	**Minor adverse (day and night)**
Viewpoint 15: Norwood Hill	Low: Occupiers of vehicles.	Negligible	Negligible	Negligible	Negligible
		Negligible (day and night)	**Negligible (day and night)**	**Negligible (day and night)**	**Negligible (day and night)**
Viewpoint 16: Turners Hill	High: Walkers using public right of way.	Negligible	Negligible	Negligible	Negligible
		Minor adverse (day and night)	**Minor adverse (day and night)**	**Minor adverse (day and night)**	**Minor adverse (day and night)**
Viewpoint 17: Tilgate Hill Crawley Borough Council 'Important View'	Medium: Visitors to park.	Negligible	Negligible	Negligible	Negligible
		Negligible (day and night)	**Negligible (day and night)**	**Negligible (day and night)**	**Negligible (day and night)**



Preliminary Environmental Information Report
Appendix 9.2.1: Ecology and Nature Conservation Legislation

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 9.2.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the relevant legislation for Chapter 9: Ecology and Nature Conservation for the Project.

2 Legislation

2.1 Relevant Guidance

2.1.1 The assessment takes into account the most recent published guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM) (CIEEM, 2019). The guidance aims to promote good practice in the assessment of ecological impacts in terrestrial, freshwater and marine environments in the UK.

2.1.2 In addition, the information prepared in the PEIR has been prepared with reference to the Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017).

2.2 The Conservation of Habitats and Species Regulations 2017

2.2.1 The Conservation of Habitats and Species Regulations 2017, as amended ('the Habitats Regulations') transpose into domestic law the European Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) as well as elements of the Birds Directive (referred to further below). The 2017 legislation supersedes the earlier legislation from 2010 and 1994.

2.2.2 Individual species (such as otter *Lutra lutra* and dormouse *Muscardinus avellanarius*) and species groups (including all native UK bat *Chiroptera* species) receive a high level of protection under the Habitat Regulations.

2.3 The Wildlife and Countryside Act 1981

2.3.1 The Wildlife and Countryside Act 1981 (as amended) is the principal legislative protection for wildlife within England. It establishes protection for certain species of plant and animals and allows for the protection in law of various designated sites. It also consolidates and amends earlier national legislation to implement the European Directive 2009/147/EC on the conservation of wild birds (The Birds Directive) in the UK. Individual species receive different levels of protection under the act. Special Protection Areas (SPAs) were designated under the Wildlife and Countryside Act 1981 where sites and their habitats support significant numbers of wild birds.

2.4 The Countryside and Rights of Way Act 2000

2.4.1 The Wildlife and Countryside Act 1981 has been amended and reinforced in England and Wales by the Countryside and Rights of Way Act (CRoW) Act 2000 (as amended). The CRoW Act increases protection for Sites of Special Scientific Interest (SSSIs) as well as strengthening wildlife enforcement legislation.

2.5 The Natural Environment and Rural Communities Act 2006

2.5.1 The Natural Environment and Rural Communities (NERC) Act 2006 places a duty on all public authorities to have regard to the purpose of conserving biodiversity.

2.5.2 Section 40 of the NERC Act 2006 imposes a duty on all public bodies including local and national government to have regard to biodiversity in the exercise of all of their functions, with particular regard to the species of conservation priority and is often referred to as 'the biodiversity duty'.

2.5.3 In England, Section 41 of the NERC Act lists the species and habitats of highest importance for conserving biodiversity (derived from the original UK Biodiversity Action Plan (BAP) priorities). The Section 41 list is a definitive reference for all public bodies in England (statutory and non-statutory) and is a guide for decision-makers when implementing their statutory duties to have regard to the conservation of biodiversity. This 'biodiversity duty' includes taking steps to promote the restoration and enhancement of the populations of Section 41 species.

2.5.4 Section 41 species include a number of native bat species (including greater horseshoe bat *Rhinolophus ferrumequinum* and lesser horseshoe bat *Rhinolophus hipposideros*, noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, and brown long-eared bat *Plecotus auritus*), dormouse *Muscardinus avellanarius*, hedgehog *Erinaceus europaeus*, brown hare *Lepus europaeus*, a number of bird species associated with grassland and woodland habitats, slow worm *Anguis fragilis*, and great crested newt *Triturus cristatus* amongst others. All these species are of conservation concern and have suffered long-term population decline.

2.6 The Hedgerow Regulations 1997

2.6.1 The Hedgerow Regulations 1997 protect hedgerows from removal, with particular protection for 'important' hedgerows. 'Important' hedgerows are defined in the Regulations.

2.6.2 The Regulations apply to any hedgerow growing in, or adjacent to any common land, protected land (Local Nature Reserves (LNRs) and Site of Special Scientific Interest (SSSIs)), or land used for agriculture, forestry or the breeding or keeping of horses, ponies or donkeys, if it: (a) has a continuous length of, or exceeding, 20 m; or (b) it has a continuous length of less than 20 m and, at each end, meets another hedgerow.

2.7 Wild Mammals Protection Act 1996

2.7.1 The Wild Mammals Protection Act 1996 protects any wild mammal from unnecessary suffering that includes, mutilation, kicking, beating, impaling, stabbing, burning, stoning, crushing, drowning, dragging or asphyxiating.

2.7.2 The Act applies to all wild mammals with the exception of killing a mammal as an act of mercy where it can be proven the mammal had been seriously disabled if not injured unlawfully or there is no reasonable chance of its recovery.

2.8 Legal Protection and Conservation Status afforded to specific Species

Badgers

2.8.1 Under the Protection of Badgers Act (PBA) 1992, badgers *Meles meles* are protected from killing, injuring or disturbance while

occupying a sett, and their setts are protected from obstruction, damage or destruction.

Bats

2.8.2 All bats and their breeding and nesting sites (roosts) are protected under the Habitats Regulations and the Wildlife and Countryside Act 1981.

2.8.3 Any disturbance of a roost due to development must be licensed. The legislation protects roost sites and consideration needs to be given to circumstances where loss of foraging habitat could indirectly result in the loss of the roost.

Breeding Birds

2.8.4 Nesting birds are protected under the Wildlife and Countryside Act 1981, which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs.

2.8.5 In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to intentionally or recklessly disturb them while they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

Dormice

2.8.6 Dormice are protected under Schedule 5 of the Wildlife and Countryside Act 1981. Dormice are also included on Schedule 2 of the Habitat Regulations 2017 as European Protected Species (EPS). They are also listed on Section 41 of the NERC Act 2006.

Amphibians

2.8.7 The great crested newt (GCN) is an EPS and, as such, is afforded protection under the Habitat Regulations. It is also protected under the Wildlife and Countryside Act 1981 which makes it an offence to intentionally kill, injure or take GCN or to damage, destroy or obstruct access to any structure or place used for shelter or protection.

2.8.8 In addition to this, it is an offence to intentionally or recklessly disturb them while they are occupying a structure or place used for that purpose.

2.8.9 Other common amphibians, such as common frog *Rana temporaria*, toad *Bufo bufo*, smooth newt *Lissotriton vulgaris* and palmate newt *Lissotriton helveticus* are protected against sale only under the Wildlife and Countryside Act 1981 (as amended).

Otters

2.8.10 Otters are listed as protected under Schedule 5 of the Wildlife and Countryside Act 1981 and Section 41 of the NERC Act 2006.

Reptiles

2.8.11 All native British species of reptiles are protected under the Wildlife and Countryside Act 1981. The four most widespread reptile species (grass snake *Natrix natrix*, slow worm, common lizard *Zootoca vivipara* and adder *Vipera berus*) are protected from intentional killing or injury.

Water Voles

2.8.12 Water voles are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), which affords them special protection under Section 9, as amended by the CRoW Act 2000.

2.8.13 The water vole is listed as being a Species of Principal Importance in England, in Section 41 of the NERC Act 2006

3 References

3.1 Guidance

British Standards Institution (2013) Biodiversity – Code of Practice for Planning and Development: BS 42020:2013.

Chartered Institute of Ecology and Environmental Management (2017) Guidelines for Preliminary Ecological Appraisal.

Chartered Institute of Ecology and Environmental Management (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.

Institute of Environmental Assessment (1995) Guidelines for Baseline Ecological Assessment.

Ministry of Housing, Communities and Local Government (2019) Planning Practice Guidance: Natural Environment – Biodiversity, Ecosystems and Green Infrastructure.

3.2 Legislation

Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

Directive 2009/147/EC of 30 November 2009 on the conservation of wild birds.

The Conservation of Habitats and Species Regulations 2017.

The Countryside and Rights of Way Act 2000.

The Hedgerow Regulations 1997.

The Natural Environment and Rural Communities Act 2006.

The Protection of Badgers Act 1992.

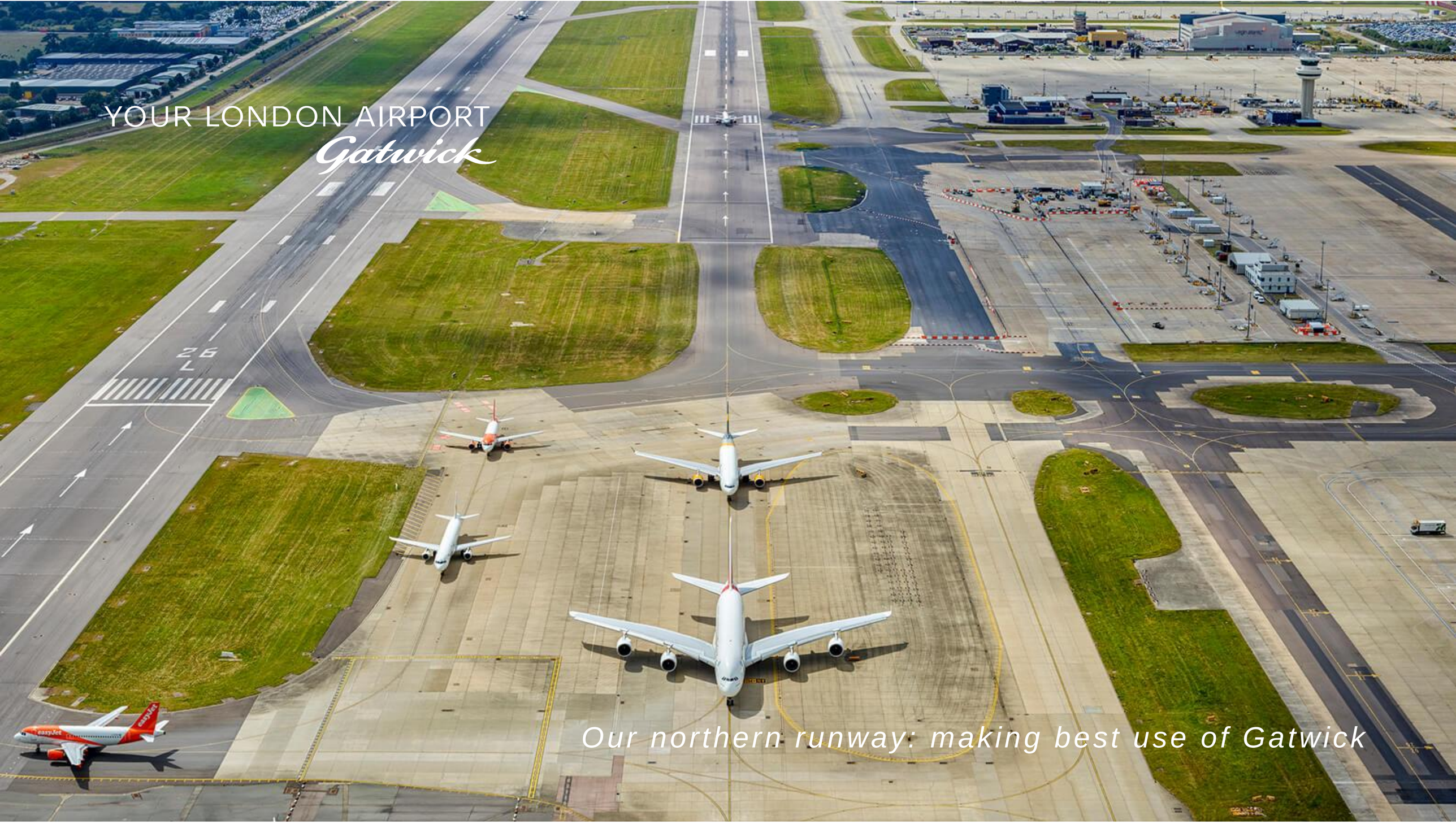
The Wildlife and Countryside Act 1981.

The Wild Mammals (Protection) Act 1996.

4 Glossary

Table 4.1.1: Glossary of Terms

Term	Description
BAP	Biodiversity Action Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
CROW	Countryside and Rights of Way Act
EIA	Environmental Impact Assessment
EPS	European Protected Site
GAL	Gatwick Airport Limited
GCN	Great Crested Newt
LNR	Local Nature Reserve
NERC	Natural Environment and Rural Communities
PBA	Protection of Badgers
PEIR	Preliminary Environmental Information Report
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest



Preliminary Environmental Information Report
Appendix 9.2.2: Summary of Local Planning Policy: Ecology and Nature Conservation

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 9.2.2 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the summary of local planning policy relevant Chapter 9: Ecology and Nature Conservation for the Project.

2 Summary of Local Planning Policy

Policy	Summary
Adopted Policy	
Crawley 2030: Crawley Borough Local Plan 2015 – 2030 (2015)	
ENV2: Biodiversity	All development proposals will be expected to incorporate features to encourage biodiversity where appropriate, and where possible, enhance existing features of nature conservation value within and around the development. To ensure a net gain in biodiversity, the following areas will be conserved and enhanced where possible and the council will support their designation and management: ▪ Sites of Special Scientific Interest (SSSIs); ▪ Ancient woodland, and aged or veteran trees; ▪ Local Nature Reserves (LNRs); ▪ Sites of Nature Conservation Importance (SNCIs); ▪ Nature Improvement Areas; ▪ where habitats or species of Principal Importance (under S41 of the Natural Environment and Rural Communities Act 2006) are present; and ▪ where Protected Species are present.
Reigate and Banstead Local Plan: Core Strategy (2014)	
CS2: Valued Landscape and the Natural Environment	In considering the allocation of land and /or proposals for significant development, the Council and developers will be required to protect and enhance the borough's green fabric. ▪ The Mole Gap to Reigate Escarpment Special Areas of Conservation (SAC) will be afforded the highest level of protection in line with European legislation. Proposals for development that is likely to have a significant effect on the SAC, alone or in combination with other development, will be required to demonstrate that it will not adversely affect the integrity of the site. ▪ SSSIs, SNCIs, LNRs and ancient woodland will be protected for their biodiversity value and where appropriate enhanced. ▪ Urban green spaces, green corridors and site-specific features which make a positive contribution to the green fabric and/or a coherent green infrastructure network and will, as far as practicable, be retained and enhanced.
Reigate and Banstead Local Plan: Development Management Plan 2018-2027 (2019)	
NHE2: Protecting and Enhancing Biodiversity and Areas of	▪ Internationally designated sites, (Natura 2000 sites), including the Mole Gap to Reigate Escarpment SAC, will be afforded the highest level of protection. Development proposals which are likely to have a significant effect on these sites, either individually or in combination with other development, must be accompanied by an Appropriate Assessment. ▪ Development likely to have an adverse effect on the special interest features of a SSSI will only be permitted where it is demonstrated that the benefits of the development in that location clearly outweigh the impacts and any impacts will be suitably mitigated. ▪ Development likely to have an adverse effect upon any site designated as a SNCI, Regionally Important Geological Site (RIGS) or a LNR will only be granted where:

Policy	Summary
Geological Importance	- the need for, and benefits of, the development on that site clearly outweigh the impacts; and - it is demonstrated that adequate mitigation of, or as a last resort, compensation for, the impact of the development will be put in place. ▪ Development within or affecting Potential Sites of Nature Conservation Importance (PoSNCIs) will require an assessment to identify the ecological and nature conservation value of the site and the environmental impact of the proposed development. ▪ Throughout the borough, and especially within Biodiversity Opportunity Areas (BOAs), development proposals will be expected to: - retain and enhance other valued priority habitats and features of biodiversity importance; and - be designed, wherever possible, to achieve a net gain in biodiversity. ▪ Development opportunities where the primary objective is to conserve or enhance biodiversity will be considered favourably.
NHE3: Protecting Trees, Woodland and Natural Habitats	▪ Where relevant, new development proposals will be required to include an assessment of existing trees and landscape features on site, including their suitability for retention. ▪ Development resulting in the loss of or the deterioration in the quality of a protected tree or hedgerow will be refused unless the need for, and benefits of, development in that location clearly outweigh the loss. ▪ Unprotected but important trees, woodland or hedgerows with ecological, amenity or other value should be retained as an integral part of the design of development except where their long-term survival would be compromised by their age or physical condition or there are overriding benefits of their removal. ▪ Where loss of features described above are permitted, this will be subject to adequate compensatory provision commensurate to that which is lost. ▪ Where replacement tree and hedge planting are required, appropriate species of trees should be used and sufficient space must be provided at the design stage for tree provision. ▪ A buffer zone will be required between ancient woodland sites and the boundary of adjacent new developments.
NHE4: Green and Blue Infrastructure	▪ The Council will work with landowners, land managers and stakeholders to secure the provision of a multi-functional green and blue infrastructure network. ▪ Development proposals must: - where possible, increase access to and provision of green and blue infrastructure and open spaces; - avoid any adverse impacts on existing habitats and take the opportunity to enhance and incorporate biodiversity as an integral part of design, including watercourses and riverside habitats; - positively incorporate green and blue infrastructure as an integral part of the design of new developments; - incorporate open spaces and green spaces which can be used in a variety of ways and support a range of activities; - Where possible, create new links and corridors between open spaces, green/blue infrastructure and the countryside beyond; and - Identify measures for appropriate maintenance of relevant green/blue infrastructure. ▪ Within land designated as a Riverside Green Chain, the following uses and facilities will be permitted to facilitate activities compatible with the area and the maintenance of a natural green and blue environment: - formal outdoor recreation, allotments, agriculture and woodland where feasible; - establishment of LNRs and similar nature conservation provision; - enhancements to the riverine environment for water related purposes, including the establishment of buffer zones; and - creation of ponds, swales, bunds, stormwater wetlands and similar features as part of the surface water drainage system serving major new housing development and consistent with an overall agreed landscape plan.
Tandridge District Core Strategy (2008)	
CSP17: Biodiversity	Development proposals should protect biodiversity and provide for the maintenance, enhancement, restoration and, if possible, expansion of biodiversity, by aiming to restore or create suitable semi-natural habitats and ecological networks to sustain wildlife in accordance with the aims of the Surrey Biodiversity Action Plan. The Council will seek to enhance biodiversity by supporting the work of the Downlands Countryside Management Project and by supporting LNRs and Community Wildlife Areas.
Tandridge District Core Strategy 2008. Tandridge Local Plan. Part 2: Detailed Policies 2014-2029 (2014)	
DP19: Biodiversity, Geological Conservation and Green Infrastructure	There will be a presumption in favour of development proposals which seek to: ▪ promote nature conservation and management; and ▪ restore or create Priority Habitats. In order to conserve and enhance the natural environment, proposals which would result in significant harm to local, national or statutory sites of biological importance will be refused planning permission unless: ▪ all reasonable alternative locations with less harmful impacts are demonstrated to be unsuitable; and ▪ the proposal incorporates measures to avoid the harmful impacts arising, sufficiently mitigate their effects, or, as a last resort, compensate for them.

Policy	Summary
	Where a proposal is likely to result in direct or indirect harm to an irreplaceable environmental asset of the highest designation, such as a SSSI, ancient woodland or veteran trees, the granting of planning permission will be wholly exceptional. Planning permission for development directly or indirectly affecting protected or Priority species will only be permitted where it can be demonstrated that the species involved will not be harmed or appropriate mitigation measures can be put in place.
Mid Sussex District Plan 2014-2031 (2018)	
DP17: Ashdown Forest SPA and SAC	In order to prevent adverse effects on the Ashdown Forest SPA and SAC, new development likely to have a significant effect, either alone or in combination with other development, will be required to demonstrate that adequate measures are put in place to avoid or mitigate any potential adverse effects.
DP36: Historic Parks and Gardens	The character, appearance and setting of a registered park, or park or garden of special local historic interest will be protected. This will be achieved by ensuring that any development within or adjacent to a registered park, or park or garden of local historic interest will only be permitted where it protects and enhances its special features, biodiversity, setting and views into and out of the park or garden.
DP37: Trees, Woodland and Hedgerows	The District Council will support the protection and enhancement of trees, woodland and hedgerows, and encourage new planting. In particular, ancient woodland and aged or veteran trees will be protected. Development that will damage or lead to the loss of trees, woodland or hedgerows that contribute, either individually or as part of a group, to the visual amenity value or character of an area, and/or that have landscape, historic or wildlife importance, will not normally be permitted. Proposals for new trees, woodland and hedgerows should be of suitable species, usually native, and where required for visual, noise or light screening purposes, trees, woodland and hedgerows should be of a size and species that will achieve this purpose. Trees, woodland and hedgerows will be protected and enhanced by ensuring development. The felling of protected trees will only be permitted if there is no appropriate alternative. Where a protected tree or group of trees is felled, a replacement tree or group of trees, on a minimum of a 1:1 basis and of an appropriate size and type, will normally be required. The replanting should take place as close to the felled tree or trees as possible having regard to the proximity of adjacent properties.
DP38: Biodiversity	Biodiversity will be protected and enhanced by ensuring development: ▪ contributes and takes opportunities to improve, enhance, manage and restore biodiversity and green infrastructure, so that there is a net gain in biodiversity; ▪ protects existing biodiversity, so that there is no net loss of biodiversity. ▪ minimises habitat and species fragmentation and maximises opportunities to enhance and restore ecological corridors to connect natural habitats and increase coherence and resilience; ▪ promotes the restoration, management and expansion of priority habitats in the District; and ▪ avoids damage to, protects and enhances the special characteristics of internationally designated sites. Designated sites will be given protection and appropriate weight according to their importance and the contribution they make to wider ecological networks. Valued soils will be protected and enhanced, including the best and most versatile agricultural land, and development should not contribute to unacceptable levels of soil pollution
Mid Sussex Local Plan 2004 (saved policies) (2004)	
C5: Areas of Importance for Nature Conservation	Proposals for development or changes of use of management within SSSIs, SNCIs, LNRs, Ancient Woodlands or to other sites or areas identified as being of nature conservation or geological importance, including wildlife corridors will be subject to rigorous examination, and only permitted where the proposal, by virtue of design and layout, minimises the impact on features of nature conservation importance. Proposals should take advantage of opportunities for habitat creation, wherever possible. The weight to be attached to nature conservation interests will reflect the relative significance of designations. Special scrutiny will be applied to those sites which are statutorily designated.
C6: Trees, Hedgerows and Woodlands	Development resulting in the loss of woodlands, hedgerows and trees which are important in the landscape, or as natural habitats, or historically, will be resisted.
Horsham District Planning Framework (excluding South Downs National Park) (2015)	
Policy 25: The Natural Environment and	The Natural Environment and landscape character of the District, including the landscape, landform and development pattern, together with protected landscapes and habitats will be protected against inappropriate development. The Council will support development proposals which: ▪ maintains and enhances the existing network of geological sites and biodiversity, including safeguarding existing designated sites and species, and ensures no net loss of wider biodiversity and provides net gains in biodiversity where possible; and

Policy	Summary
Landscape Character	▪ conserve and where possible enhance the setting of the South Downs National Park.
Policy 31: Green Infrastructure & Biodiversity	▪ Development will be supported where it can demonstrate that it maintains or enhances the existing network of green infrastructure. ▪ Development proposals will be required to contribute to the enhancement of existing biodiversity and should create and manage new habitats where appropriate. ▪ Where felling of protected trees is necessary, replacement planting with a suitable species will be required. ▪ Particular consideration will be given to the hierarchy of sites and habitats in the district. ▪ Where development is anticipated to have a direct or indirect adverse impact on sites or features for biodiversity, development will be refused unless it can be demonstrated that; The reason for the development clearly outweighs the need to protect the value of the site; and, that appropriate mitigation and compensation measures are provided. ▪ Any development with the potential to impact Arun Valley SPA or the Mens SAC will be subject to a Habitats Regulations Assessment (HRA) to determine the need for an Appropriate Assessment.
Mole Valley Core Strategy (2009)	
CS15: Biodiversity and Geological Conservation	Biodiversity and areas of geological importance will be protected and enhanced in accordance with European and National legislation / guidance including that set out in Planning Policy Statement 9 (Biodiversity and Geological Conservation), the South East Plan Policy NRM5 (Conservation and Improvement of Biodiversity) and the Surrey Biodiversity Action Plan. In order to reduce the impact of development on the Mole Gap to Reigate Escarpment SAC, there is a presumption against any increase in residential or employment related development within 800 metres of the site boundary, unless its impact can be mitigated. All water courses, mature hedges and trees within development sites should be, as far as practicable, retained. Only where no realistic alternatives are available or replacement of such features elsewhere in the site would result in biodiversity enhancements above what already exists, will removal of such features be permitted. In these cases, the replacement will be expected to result in biodiversity enhancements to what previously existed and where possible should seek to contribute to a network of green infrastructure and the objectives of the Surrey Biodiversity Action Plan. Planting and other schemes that promote biodiversity will be expected as part of all development schemes, focusing on native species from the locality and particularly trees, a key feature of the environment across Surrey.
Mole Valley Local Plan (2000)	
ENV11: Local and non-statutory nature reserves	Development within or which would have a significant adverse effect on designated Local and Non-Statutory Nature Reserves will not be permitted unless it can be demonstrated to the satisfaction of the Council that there are reasons for the proposal which clearly outweigh the need to safeguard the intrinsic nature conservation value of the site. The Council will support the establishment of local nature reserves if it considers the necessary criteria are met.
ENV12: Sites of Nature Conservation Importance and Potential Sites of Nature Conservation Importance	Development and land use change likely to have an adverse effect on a SNCI identified on the Proposals Map will not be permitted unless it can be clearly demonstrated that there are reasons for the proposal which outweigh the need to safeguard the nature conservation value of the site. In all cases where development or land use change is permitted which would damage the nature conservation value of the site, such damage will be kept to a minimum. Where appropriate, the Council will consider the use of conditions and/or planning obligations to provide appropriate suitable measures. In considering development proposals and land use change that are likely to have a significant effect on the integrity of a potential SNCI Importance identified on the Proposals Map, the Council will consult and have regard to the views of the Surrey Wildlife Trust on the impact of the proposal and any nature conservation value of the site.
ENV13: Features of Local Importance for Nature Conservation	The Council will seek to safeguard sites and features of nature conservation importance that are not identified on the Proposals Map but which contribute to the natural heritage of the District. The development of such features will not be permitted unless either: ▪ the development would not significantly and adversely affect the features; or ▪ the features will be protected from harm or transferred to another habitat; or ▪ the importance of the development outweighs the nature conservation value of the features.
ENV14: Enhancement, management and	In considering development proposals account will be taken of any measures relevant to the proposals concerned to protect or enhance existing nature conservation features and scope to create and manage new areas of nature conservation value.

Policy	Summary
creation of nature conservation features	
ENV15: Species Protection	Where it is evident that a proposed development would be likely to result in harm to a protected species or its habitat, a thorough site investigation will be necessary by the applicant and the relevant nature conservation bodies will be consulted. Development that would materially harm a protected species or its habitat will not be permitted.
Emerging Policy	
Draft Crawley Borough Local Plan 2021-2037 (2021)	
GI1: Green Infrastructure	Multi-functional green infrastructure network will be conserved and enhanced through the following measures: ▪ development which protects and enhances green infrastructure will be supported; ▪ development proposals should take a positive approach to designing green infrastructure, utilising the council's supplementary planning documents to integrate and enhance the green infrastructure network; ▪ proposals which reduce, block or harm the functions of green infrastructure should be avoided. Any loss will be required to be adequately justified, minimised, mitigate against any loss or impact or as a last resort compensate to ensure the integrity of the green and blue infrastructure network is maintained; ▪ the strategic green infrastructure network is afforded the highest protection due to its high value from existing or identified potential multiple functions, for example as recreation, routeways, access to the countryside, wildlife and climate mitigation; ▪ proposals should maximise the opportunity to maintain and extend green infrastructure links to form a multi-functional network of open space, providing opportunities for walking and cycling, and connecting to the urban/rural fringe and the wider countryside beyond; ▪ Cross Boundary matters relating to Green Infrastructure should be considered and incorporated at the early stage of an application; ▪ large proposals will be required to provide new and/or create links to green infrastructure as well as take into consideration the use of SuDS and methods that incorporate blue infrastructure into development designs to improve the visual amenity of the development, to account for Policy EP1 and to aid in reducing surface water run-off. ▪ Householder developments and small non-residential extensions should take into account Policy EP2 and innovative solutions that incorporate green and blue infrastructure into designs at an early stage. Where possible, Natural England's Accessible Natural Green Space Standard recommendations and the Woodland Trust's Woodland Access Standard should be used to assess a development proposal's location in relation to existing accessible natural green space and woodland. As a minimum, developments should seek to ensure new development proposals meet the Crawley local standards for natural greenspace set out in paragraphs 7.13 and 14.16 relating to quantity, accessibility, quality and value.
GI2: Biodiversity Sites	Up-to-date habitat and species surveys and associated reports will be required to accompany planning applications which may affect the areas listed below or sites showing likely ecological value based on past ecological surveys. If significant harm to biodiversity resulting from development cannot be avoided, adequately mitigated or as last resort compensated then planning permission should be refused. ▪ Nationally designated sites (Sites of Special Scientific Interest); ▪ National Planning Policy Framework Sites (Ancient Woodland and aged or veteran trees); ▪ Locally designated sites, and habitats and species outside designated areas: - Local Nature Reserves (LNR); - Local Wildlife Sites (LWS); - Nature Improvement Areas; - Habitats of Principal Importance identified in S41 of the Natural Environment and Rural Communities Act 2006 or Biodiversity Action Plans; - Biodiversity Opportunity Areas; - Where Protected Species are present; - Where Species of Principal Importance are present, as identified in S41 of the Natural Environment and Rural Communities Act 2006. Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists. A buffer zone between development and ancient woodland will be required in line with Natural England Standing Advice.
GI3: Biodiversity and Net Gain	Development whose primary objective is to conserve or enhance biodiversity will be supported. All development proposals will be expected to incorporate features to encourage biodiversity and enhance existing features of nature conservation value within and around the development. Development proposals will be required to demonstrate how the scheme will meet the government's requirement for securing a 'net gain' in biodiversity, including information calculating the current biodiversity value of the site. As a minimum, all development proposals will need to achieve a net gain for biodiversity in accordance with government

Policy	Summary
	expectations, currently a 10% increase in habitat value for wildlife compared with the pre-development baseline. Applications should include consideration to securing benefits for the purposes of pollination and biodiversity as part of their on-site landscaping schemes. This can include consideration for green roofs and green walls, where soft landscaping at ground level is limited. Discussions with Gatwick Airport Limited in relation to planting and management to minimise the risk of bird strike should be held at an early stage of landscape design, in accordance with Policy DD5. Developers may be required to commit to providing an Ecological Management Plan/Biodiversity Offset Management Plan for the development site. This will usually apply to larger developments or where a development site is close to a Local Wildlife Site. Landscape proposals for residential development should contribute to the character and appearance of the town by including at least one new tree, or equivalent soft landscaping, for each new dwelling, of an appropriate species and planted in an appropriate location. The tree and soft landscaping planting requirements would normally be expected to be met within the development site. Where the local planning authority agrees that this is not feasible or desirable, commuted sums will be sought in lieu on a per tree, or equivalent alternative habitat basis, taking account of constraints to planting. The approach would enable the green character and appearance of the borough to be maintained through tree and soft landscape planting on appropriate and available land. Proposals which would result in significant harm to biodiversity will be refused unless: i. this can be avoided by locating the development on an alternative part of the site with less harmful impact; or ii. the harm can be adequately mitigated, or, as a last resort, compensated for. Compensation should consider losses of all the benefits provided by the natural environment.
SD1: Presumption in Favour of Sustainable Development	The council will take a positive approach to approving development which is sustainable. The council will work proactively in partnership with applicants, stakeholders and other partners to jointly find solutions which mean that development can be approved wherever possible, whilst securing development that improves the economic, social and environmental conditions of Crawley and the wider Gatwick Diamond and West Sussex and Greater Brighton sub regions.
Future Mole Valley 2018-2033: Consultation Draft Local Plan (2020)	
Policy EN9: Enhancing Biodiversity	▪ Development proposals should seek to protect, enhance and recover wildlife habitats and species by creating new natural areas or restoring and enhancing existing habitats, particularly in or adjacent to sites designated for their nature conservation importance. ▪ Developments which would have an adverse impact on nature conservation interests will not be granted planning permission unless all the following criteria are met: - The benefits of the development outweigh the harm; - There are no alternative sites that could reasonably accommodate the development where the harm would be reduced; and - Compensation measures can be provided within, or close to the site, that result in no net loss of biodiversity. ▪ To meet the requirements of the Habitats Directive relating to the Bechstein's bat qualifying feature, any allocated greenfield site within 1.5km of the Mole Gap to Reigate Escarpment SAC must consider whether habitat suitable for foraging or commuting Bechstein's bats from the SAC (such as deciduous woodland, mature treelines, species rich pasture or river corridors) are present. If so, such features must be preserved unless surveys demonstrate that they are not used by Bechstein's bats. Care must also be taken through development design to ensure that such retained features are not subject to artificial lighting. ▪ To meet the requirements of the Habitat Directive, and to protect the integrity of the Thames Basin Heaths SPA, all site allocations within 5km of the SPA (and within 5-7km of the SPA if over 50 dwellings) must be mitigated through the provision of Suitable Alternative Natural Greenspace, providing sufficient capacity according to Natural England guidelines, to mitigate the net new residents within Mole Valley. ▪ Developments that include landscape schemes or other green infrastructure measures should be designed using native, preferably, locally-sourced planting and in accordance with the national strategy for biosecurity in Great Britain ▪ Where practical, taking account of the scale and nature of the development, proposals will be required to: a. Include proposals to achieve measurable net gains in biodiversity. b. Increase the coherence of ecological networks through greater connectivity between wildlife sites. c. Offer opportunities to improve health and wellbeing within the local community through direct contact with natural areas. d. Provide educational opportunities to enable local people to improve their understanding of the natural environment
Policy EN11: Green Infrastructure and Play Space	▪ The provision of new or improved green open space, recreation spaces and facilities, and contributions to Mole Valley's network of Green Infrastructure will be supported, particularly where they meet the identified needs of local communities. ▪ Existing provision will be safeguarded from development, unless the space is no longer required, appropriate alternative provision of a higher standard is made, or the need to retain such spaces is clearly outweighed by other development needs. In considering whether the loss would be appropriate, the following will be considered: a. Whether the site makes a significant contribution to the character, environmental quality and amenity of the surrounding area. b. Whether the site provides essential social, community or recreational use. c. Whether the site is of high ecological value. ▪ To address needs arising from development, provision of equipped play space will be required on site as part of any development scheme delivering 50 net dwellings or more. Where there are existing

Policy	Summary
	▪ play facilities adjacent to the site, or where the Council agrees that it would be impractical to provide play facilities on site, an equivalent contribution towards the improvement of existing facilities may be agreed by the Council as an alternative to on-site provision. Appropriate on-site play space provision should be as follows: a. For development of 50 or more net dwellings, a Locally Equipped Area for Play is required. b. Additionally, for development of 200 or more net dwellings, a Neighbourhood Equipped Area for Play is required. c. Additionally, for development of 500 or more net dwellings, a Multi-Use Games Area is required.
Draft Horsham District Local Plan 2019-2036 (2020)	
Strategic Policy 27: The Natural Environment and Landscape Character	The Natural Environment and landscape character of the District, including the landscape, landform and development pattern, together with protected landscapes and habitats, will be protected against inappropriate development. The Council will expect development proposals to be landscape led from the outset so that they clearly inform the design and layout. Proposals will also be required to: ▪ Protect, conserve and enhance the landscape and townscape character, taking into account areas identified as being of landscape importance, the individual settlement characteristics, and maintain settlement separation; ▪ Maintain and enhance the Green Infrastructure Network, the Nature Recovery Network and, where practicable, help to address any identified deficiencies in the District; ▪ Maintain and enhance the existing network of geological sites and biodiversity, including safeguarding existing designated sites and species, and secure net gains in biodiversity; ▪ Incorporate SUDS into a scheme in an optimal location for their purpose whilst also securing landscape enhancements and good quality spaces. Proposals will be expected to provide details to demonstrate that the whole life management and maintenance of the SUDS are appropriate, deliverable and will not cause harm to the natural environment and/or landscape; and ▪ Where applicable, conserve and, where possible, enhance the setting of the South Downs National Park and the High Weald Area of Outstanding Natural Beauty.
Strategic Policy 31: Green Infrastructure and Biodiversity	▪ Development will be supported where it can demonstrate that it maintains and enhances the existing network of green infrastructure, the Nature Recovery Network, natural capital and biodiversity. Proposals that would result in the loss of existing green infrastructure or part of the Nature Recovery Network will be resisted unless it can be demonstrated that new opportunities will be provided that mitigates or compensates for this loss, and ensures that the ecosystem services of the area are retained. ▪ Proposals will be expected to retain and enhance existing fresh water features, hedgerows, trees and deciduous woodland and the provision of additional hedgerow and tree planting will be sought subject to appropriate consideration of local and wider context, habitats and species. ▪ Where the felling of a tree is necessary, for example due to disease, replacement planting with a suitable species and location to retain the link with the wider network of habitats and Green Infrastructure, will be required. ▪ Development proposals will be expected to remove invasive species and will be required to contribute to the enhancement of existing biodiversity and deliver, as a minimum, a 10% net gain through the delivery of appropriate on-site biodiversity net gain or, where this is not practicable, to off-set the delivery to the Nature Recovery Network. ▪ Proposals should create and manage appropriate new habitats, taking into account pollination, where practicable. The Council will support new development which retains and /or enhances significant features of nature conservation on development sites. The Council will also support development which makes a positive contribution to biodiversity, and where appropriate the Nature Recovery Network, through the creation of green spaces, and linkages between habitats to create local and regional ecological networks and allow the movement of wildlife through development sites. ▪ Particular consideration will be given to the hierarchy of sites and habitats in the District as follows: - Special Protection Area (SPA) and Special Areas of Conservation (SAC) - Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNRs) - Local Wildlife Sites (LWS), Local Nature Reserves (LNRs) and any areas of Ancient Woodland, traditional orchards, local geodiversity or other irreplaceable habitats not already identified in a & b above ▪ Where development is anticipated to have a direct or indirect adverse impact on sites or features of importance to nature conservation, development will be refused unless it can be demonstrated that: - The objectives of a site's designation, where applicable, and integrity of the area will not be undermined; - The reason for the development clearly outweighs the need to protect the value of the site; and, - That appropriate mitigation and compensation measures are provided ▪ Any development with the potential to impact Arun Valley SPA or the Mens SAC will be subject to a Habitats Regulation Assessment to determine the need for an Appropriate Assessment. In addition, development will be required to be in accordance with the necessary mitigation measures for development set out in the HRA of this plan.
Tandridge Our Local Plan: 2033 (Regulation 22 Submission) (2019)	
TLP35: Biodiversity,	Proposals for development should protect biodiversity, geodiversity and natural habitats and contribute to the wider Green and Blue infrastructure network in accordance with Policy TLP30: Green and Blue infrastructure. Proposals for development at any given site should ensure that there is no net loss in biodiversity. Schemes should provide for the maintenance, enhancement and, if possible, expansion of such important assets, by aiming to restore or create appropriate priority wildlife habitats and ecological networks to sustain and recover biodiversity.

Policy	Summary
Ecology & Habitats	
TLP36: Ashdown Forest SPA	All residential development within 7 km of the SPA boundary will need to put in place adequate measures to avoid and mitigate potential effects on the SPA.

3 References

Crawley Borough Council (2015) Crawley 2030: Crawley Borough Local Plan 2015 – 2030. [Online] Available at: https://crawley.gov.uk/sites/default/files/documents/PUB271853.pdf

Crawley Borough Council (2021) Crawley Local Plan: Draft Crawley Borough Local Plan 2021-2037, January 2021. For Submission Publication Consultation: January-February 2021. Available at: https://crawley.gov.uk/sites/default/files/2021-01/Submission%20Draft%20Local%20Plan%20January%202021.pdf

Horsham District Council (2015) Horsham District Planning Framework, November 2015. [Online] Available at: https://beta.horsham.gov.uk/__data/assets/pdf_file/0016/60190/Horsham-District-Planning-Framework-2015.pdf

Horsham District Council (2020) Draft Horsham District Local Plan 2019-2036. Available at: https://strategicplanning.horsham.gov.uk/consult.ti/LocalPlanReview/viewCompoundDoc?docid=10336756

Mid Sussex District Council (2004) Mid Sussex Local Plan, Adopted May 2004. [Online] Available at: https://www.midsussex.gov.uk/planning-building/local-plan-2004/

Mid Sussex District Council (2018) Mid Sussex District Plan 2014-2031, Adopted March 2018. [Online] Available at: https://www.midsussex.gov.uk/media/3406/mid-sussex-district-plan.pdf

Mole Valley District Council (2000) The Mole Valley Local Plan. [Online] Available at: [redacted]

Mole Valley District Council (2009) The Mole Valley Local Development Framework: Core Strategy, adopted October 2009. [Online] Available at: https://www.molevalley.gov.uk/media/pdf/6/s/Core_Strategy_DPD_(Adopted).pdf

Mole Valley District Council (2020) Future Mole Valley 2018-2033: Consultation Draft Local Plan. [Online] Available at: https://molevalley.gov.uk/sites/default/files/2020-05/Future%20Mole%20Valley%20draft%20Local%20Plan%20-%202020%20consultation%20version.pdf

Reigate and Banstead Borough Council (2014) Reigate and Banstead Local Plan: Core Strategy, Adopted July 2014. [Online] Available at: http://www.reigate-banstead.gov.uk/info/20380/current_planning_policy/24/core_strategy

Reigate and Banstead Borough Council (2019) Reigate and Banstead Local Plan Development Management Plan, Adopted September 2019. [Online] Available at: http://www.reigate-banstead.gov.uk/info/20380/current_planning_policy/888/development_management_plan

Tandridge District Council (2008) Tandridge District Core Strategy, Adopted October 2008. [Online] Available at: https://www.tandridge.gov.uk/Portals/0/Documents/Planning%20and%20building/Planning%20strategies%20and%20policies/Current%20and%20adopted%20planning%20policies/Core%20strategy/Core-Strategy.pdf

Tandridge District Council (2014) Tandridge Local Plan – Part 2: Detailed Policies 2014-2029, Adopted October 2008. [Online] Available at: https://www.tandridge.gov.uk/Portals/0/Documents/Planning%20and%20building/Planning%20strategies%20and%20policies/Current%20and%20adopted%20planning%20policies/Core%20strategy/Local-Plan-part-2-Detailed-policies.pdf

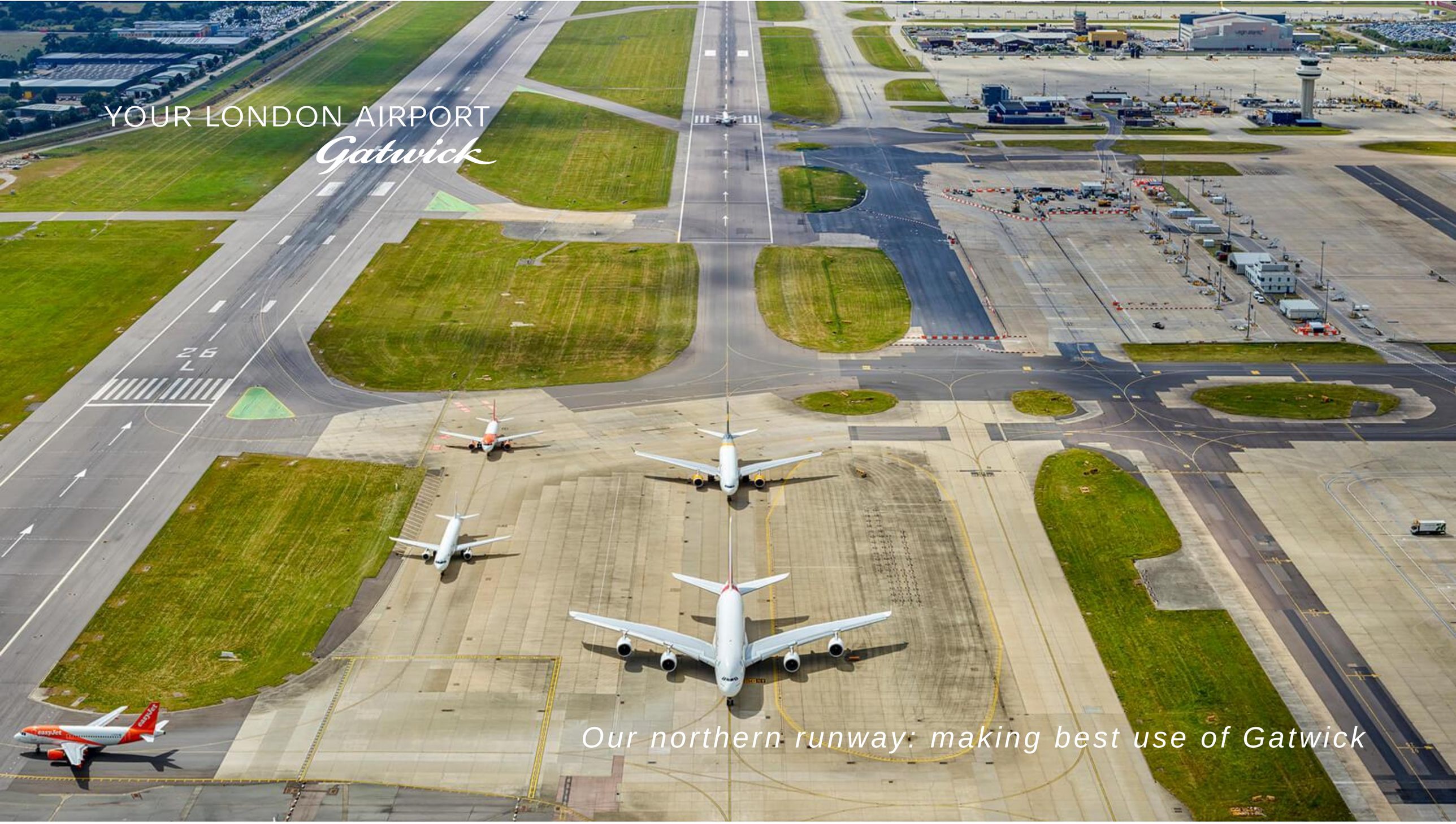
Tandridge District Council (2019) Our Local Plan: 2033 (Regulation 22 Submission), January 2019. [Online] Available at: https://www.tandridge.gov.uk/Portals/0/Documents/Planning%20and%20building/Planning%20strategies%20and%20policies/Local%20plan/Local%20plan%202033/Examination%20library/MAIN%20DOCUMENTS/MD1-Our-Local-Plan-2033-Submission-2019.pdf

4 Glossary

4.1 Glossary of terms

Table 4.1.1: Glossary of Terms

Term	Description
BOA	Biodiversity Opportunity Area
EIA	Environmental Impact Assessment
GAL	Gatwick Airport Limited
HRA	Habitats Regulations Assessment
LNR	Local Nature Reserve
LWS	Local Wildlife Site
NNR	National Nature Reserve
PEIR	Preliminary Environmental Information Report
PoSNCI	Potential Sites of Nature Conservation Importance
SAC	Special Area of Conservation
SNCI	Site of Nature Conservation Importance
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems



Preliminary Environmental Information Report
Appendix 9.3.1: Summary of Stakeholder Scoping Responses - Ecology and Nature Conservation

September 2021

Table of Contents

1 Introduction

1.1 General

1.1.1 This document forms Appendix 9.3.1 of the Preliminary Environmental Information Report (PEIR) prepared on behalf of Gatwick Airport Limited (GAL). The PEIR presents the preliminary findings of the Environmental Impact Assessment (EIA) process for the proposal to make best use of Gatwick Airport's existing runways (referred to within this report as 'the Project'). The Project proposes alterations to the existing northern runway which, together with the lifting of the current restrictions on its use, would enable dual runway operations. The Project includes the development of a range of infrastructure and facilities which, with the alterations to the northern runway, would enable the airport passenger and aircraft operations to increase. Further details regarding the components of the Project can be found in the Chapter 5: Project Description.

1.1.2 This document provides the summary of stakeholder scoping responses for nature and conservation for the Project.

2 Summary of Stakeholder Scoping Responses for Nature and Conservation

Consultee	Date	Details	How/where addressed in PEIR
Crawley Borough Council	30 September 2019	The Sussex Biodiversity record centre records should be drawn upon and should inform the existing baseline conditions.	The PEIR includes Appendix 9.6.1 Ecological Desk Study. All appropriate records provided by Sussex are summarised here.
Crawley Borough Council	30 September 2019	Within the section on 'existing baseline conditions' the EIASR fails to mention the locally designated Biodiversity Opportunity Areas which extend up to and within the airport boundary, these areas must also be carefully considered, and impacts assessed as part of the ES. There are also pockets of ancient woodland just beyond the airport boundary, such as Huntsgreen Wood at the Gatwick Rd /A23 junction, and Allen's Wood /Blackcorner Wood to the SE of the airport boundary should be included in the scope.	No Biodiversity Opportunity Areas (BOAs) have currently been identified. Information about these have been requested and will be included in the ES. For now BOAs are referenced to in paragraph 9.6.8 of the PEIR Chapter.
Crawley Borough Council	30 September 2019	In respect of the potential effects in table 7.3.1, the ES should be clear on the clear synergies between drainage and ecology impacts upstream or downstream from the airport as any increase in water flow through a watercourse could impact on the ecology of the watercourse or floodplain (including any increased sediment loading or contaminants). This should be assessed and mitigation methods identified.	The ecological assessment provided in Chapter 9 of the PEIR has taken into consideration the hydrological assessment set out in Chapter 11: Water Environment of the PEIR.
Crawley Borough Council	30 September 2019	The mitigation list 7.3.43 makes no reference to the enhancement of biodiversity which should be included as a requirement of the Project, to be consistent with the Government position set out in its 25-year Environment Plan (2018) (and reflected in the Crawley Borough Local Plan Policy ENV2) to halt the loss of biodiversity by 2020 and move to net gain.	Mitigation and enhancement proposals are detailed in Section 9.8 and Table 9.8.1 (Chapter 9 of the PEIR). The Project will adhere to any future legislation requiring NSIPs to deliver a biodiversity net gain, as set out in any future corresponding NPS and resulting from the Environment Act.
Crawley Borough Council	30 September 2019	CBC confirms that Willoughby Fields is a designated Local Nature Reserve.	Willoughby Fields Local Nature Reserve is considered in paragraph 9.6.4 (Chapter 9 of the PEIR).
Elmbridge Borough Council	30 September 2019	It is considered that the potential effects on the Thames Basin Heaths SPA should also be assessed as part of the ES which falls just outside the 20km buffer for International Statutory Designated Sites and Study Area.	Impacts to the Thames Basin Heaths SPA have been considered and are reported within Appendix 9.9.1: Habitat Regulations Assessment.
Forestry Commission		The Forestry Commission has also prepared joint standing advice with Natural England on ancient woodland, ancient trees and veteran trees which we refer you to as it notes that ancient woodland, ancient trees and veteran trees are an irreplaceable habitat and that, in planning decisions, Plantations on Ancient Woodland Sites (PAWS) should be treated equally in terms of the protection afforded to ancient woodland.	No ancient or veteran trees that would be affected by the Project were identified during the Phase 1 habitat survey. Ancient woodland was identified within the Project site boundary and is reported in the desk study report at Appendix 9.6.1 and summarised in Section 9.6 (Chapter 9 of the PEIR). Mitigation measures designed into the Project to avoid effects on ancient woodland are described in Table 9.8.1 and potential effects are described in Section 9.9 (Chapter 9 of

Consultee	Date	Details	How/where addressed in PEIR
			the PEIR). Opportunities to avoid effects on these features and habitats have been taken during the site selection process (see Chapter 3: Need and Alternatives Considered of the PEIR).
Forestry Commission		Within 7.3.5 it states that Ancient woodland base map has been obtained from the MAGIC website. Woodland under 2 hectares may not appear on the Ancient Woodland Inventory but may still have ancient woodland characteristics so we would support that a detailed investigation is undertaken to ascertain whether any additional ancient woodlands exist that may be impacted by the proposed scheme.	All woodland within the Project site boundary was assessed for Ancient Woodland characteristics during the Phase 1 habitat survey, PEIR Appendix 9.6.2, and no further areas of Ancient woodland were identified.
Forestry Commission		The scoping report does not refer to veteran trees. Ancient trees and veteran trees can be individual trees, or groups of trees including within hedgerows. We would support the inclusion of notable trees within the ES, ancient and veteran trees can be individual, clumps or groups. Site investigations for the ES should identify ancient and veteran trees. Any potential impact on landscape regarding Ancient Woodland, Ancient trees and Veteran trees and other woodland should be included in the Environment Statement.	No ancient or veteran trees that would be affected by the Project were identified during the Phase 1 habitat survey. Ancient woodland was identified within the Project site boundary and is reported in the desk study report at Appendix 9.6.1 (of the PEIR) and summarised in Section 9.6 (Chapter 9 of the PEIR). Mitigation measures designed into the Project to avoid effects on ancient woodland are described in Table 9.8.1 and potential effects are described in Section 9.9 (Chapter 9 of the PEIR). Opportunities to avoid effects on these features and habitats have been taken during the site selection process (see Chapter 3: Need and Alternatives Considered of the PEIR).
Forestry Commission		Within FIGURE 5.2.1e it indicates Potential areas for flood compensation. The ES should consider the potential impacts and disturbance within the buffer zone of the ancient woodland.	No ancient or veteran trees that would be affected by the Project were identified during the Phase 1 habitat survey. Ancient woodland was identified within the Project site boundary and is reported in the desk study report at Appendix 9.6.1 and summarised in Section 9.6. Mitigation measures designed into the Project to avoid effects on ancient woodland are described in Table 9.8.1 and potential effects are described in Section 9.9. Opportunities to avoid effects on these features and habitats have been taken during the site selection process (see Chapter 3: Need and Alternatives Considered).
Forestry Commission		FIGURE 5.2.1f the Main Construction Compounds is located next to the ancient woodland. The ES should consider the potential impacts and disturbance within the buffer zone of ancient woodland.	No ancient or veteran trees that would be affected by the Project were identified during the Phase 1 habitat survey. Ancient woodland was identified within the Project site boundary and is reported in the desk study report at Appendix 9.6.1 (of the PEIR) and summarised in Section 9.6 (Chapter 9 of the PEIR). Mitigation measures designed into the Project to avoid effects on ancient woodland are described in Table 9.8.1 and potential effects are described in Section 9.9 (Chapter 9 of the PEIR). Opportunities to avoid effects on these features and habitats have been taken during the site selection process (see Chapter 3: Need and Alternatives Considered of the PEIR).

Consultee	Date	Details	How/where addressed in PEIR
Forestry Commission		Within FIGURE 7.3. - there is only Ancient woodland identified, we would like to see all woodland assessed for value and impact, and to be considered within the scheme design and any mitigation/compensation provisions with a minimum 'no net loss' and ideally 'net gain' for ecological habitats including woodlands.	All woodland has been assessed and mapped during the Phase 1 Habitat Survey (paragraphs 9.6.14 – 9.6.17 of Chapter 9 of the PEIR) and biodiversity net gain calculations are ongoing and will be included in the ES.
Forestry Commission		With regard to mitigation we suggest that a UKFS-compliant Woodland Creation Design Plan is considered for any potential woodland creation habitat proposed in the development; including its long term management to address future management including land locked areas to ensure suitable planting schemes and the appropriate infrastructure is in place.	This will be taken into account at ES stage once final mitigation plans have been agreed.
Forestry Commission		A UKFS compliant woodland management plan should be undertaken for any woodland management of existing woodland proposals put forward as part of the mitigation package.	This will be taken into account at ES stage once final mitigation plans have been agreed.
Horsham District Council	27 September 2019	Reference should be made to the draft Sussex Bat SAC Planning and Landscape Scale Enhancement Protocol (South Downs National Park Authority/Natural England, undated)	This has been referenced and included within Appendix 9.9.1 of the PEIR.
Horsham District Council	27 September 2019	Although the ecology chapter refer the Natural England's MAGIC website, the applicant's ecologists need to use this resource to check the Impact Risk Zones for individual designated sites instead of a generic 5km buffer from the development.	The Natural England website was referred to and identified the Mole Gap to Reigate Escarpment SSSI and Glovers Wood SSSI as having Impact Risk Zones overlapping the Project site boundary. The impacts of the Project on these sites were assessed in Paragraph 9.9.4 of Chapter 9 of the PEIR.
Horsham District Council	27 September 2019	The final Study Area should be refined in relation to SACs designated for bats, should such mobile species be identified as present on the development site or where these sites lie outside the initial 20km and 5km search areas. We note that the survey area will also include up to 500 metres both up and down stream of the major watercourses that flow through the Project site to identify any potential sign of otter/water vole. A similar survey area would be used for fish, should such surveys be required.	The initial search area for European designated sites (including SACs, SPAs and Ramsar sites) was 20 km from the Project site boundary to allow for effects arising from vehicle emissions. This buffer has been extended for SACs designated for bats within 30 km of the Project site. (Paragraph 9.4.8 of Chapter 9 of the PEIR).
Horsham District Council	27 September 2019	We note that the desk study for species records will include local record centres - this should include Sussex Biodiversity Record Centre (SxBRC) - and these records should inform survey requirements. Records from any new or updated surveys undertaken in Sussex should be shared back with SxBRC.	The PEIR includes Appendix 9.6.1 Ecological Desk Study. All appropriate records provided by Sussex are summarised here.
Horsham District Council	27 September 2019	As protected Species including badgers and reptiles such as grass snake have also been found within the Study Area, we expect that Preliminary Environmental Information Report (PEIR) to include details of mitigation, compensation and enhancement for all protected species. It is particularly recommended that the survey and assessment of badgers is provided in a separate confidential appendix to avoid release of sensitive information.	Details of mitigation measures designed into the Project at this stage are described in Table 9.8.1 (Chapter 9 of the PEIR).
Horsham District Council	27 September 2019	Although surveys for breeding birds have been undertaken, we recommend that these include nesting birds as some Priority Species, for example, Skylark, may be affected by wildlife hazard safeguarding considerations.	Details of mitigation measures designed into the Project at this stage are described in Table 9.8.1 (Chapter 9 of the PEIR).
Horsham District Council	27 September 2019	We recommend that the PIER contains details of air quality monitoring available on roads within 200m of N2k sites and SSSI woodland particularly those which are likely to generate increased traffic to the airport as a result of the development. This is particularly important for Ashdown Forest SAC and SPA Mole Gap and Reigate escarpment SAC as these Habitat (European) sites are designated for nutrient poor heathland. Ashdown Forest supports important lichen assemblages and air pollution listed in Site Improvement Plan (SIP) which needs a Site Nitrogen Plan to control, reduce and ameliorate atmospheric nitrogen impacts. Mole Gap and Reigate escarpment SC also has air pollution as an issue listed in the SIP. Further investigation of the impacts of nitrogen deposition is needed by monitoring the indicators of increased nitrogen (N) deposition, such as	Change in traffic flows on routes serving the site to be considered in the ES and will be used to inform any necessary air quality monitoring.

Consultee	Date	Details	How/where addressed in PEIR
		increased vigorous grass growth, increase in Tor-grass and other grasses, and a decrease in orchid species through the use of fixed-point quadrat surveys over 5 years. These habitat sites could therefore be adversely affected by changes in air quality resulting from the development so this needs to be covered by the shadow HRA/Appropriate Assessment.	
Horsham District Council	27 September 2019	We recommend that botanical survey consideration of habitats is related to SAC or SSSI designation features, such as species rich grassland which may be intolerant to nutrient deposition and species, such as lichens susceptible to air pollution. This also applies to Ancient Woodland which is recognised as by the NPPF as an irreplaceable habitat and it is important to understand if any of these are sensitive to nutrient nitrogen and NOx concentrations.	Effects on European designated sites are provided within Section 9.9 of this chapter and within the Habitats Regulations Assessment Report included in Appendix 9.9.1.
Horsham District Council	27 September 2019	We note that 7.3.15 lists habitats of ecological interest, however, it will be necessary to identify any impacts on Priority habitats and species (and not just significant ones) in the Environmental Report to ensure that the Secretary of State can demonstrate their Section 40 duty under NERC Act 2006.	Priority habitats and species have been identified as Important Ecological Features in Table 9.6.5 and any potential effects on them are described in Section 9.9 (Chapter 9 of the PEIR).
Horsham District Council	27 September 2019	We welcome protection of habitats during construction activities from pollution/disturbance etc. and recommend that effective mitigation measures are embedded in the CoCP and secured as a requirement of the DCO. A draft should be submitted with the PIER and outline Landscape and Ecological Management Plan.	A draft CoCP has been produced (Appendix 5.3.1 of the PEIR). An outline Landscape and Ecological Management Plan will be submitted with the ES.
Horsham District Council	27 September 2019	Further mitigation, such as the provision of new commuting routes for bats or new foraging habitats for birds, may also need to be incorporated, based on the findings of the assessment as required, noting that any new habitat provided may be influenced by wildlife hazard safeguarding considerations.	Details of mitigation measures designed into the Project at this stage are described in Table 9.8.1 (Chapter 9 of the PEIR).
Horsham District Council	27 September 2019	Any potential significant effects, both direct and indirect, should be assessed and appropriate mitigation and compensation measures recommended to ensure these can be secured by a condition of any consent. This will allow the Secretary of State to discharge all associated statutory duties, including Section 40 NERC biodiversity duty.	Details of mitigation measures designed into the Project at this stage are described in Table 9.8.1 (Chapter 9 of the PEIR).
Horsham District Council	27 September 2019	We recommend that references to notable (which has a specific meaning relating to distribution of species) are refined and that the report needs to clearly identify Priority Habitats and Species. We note that the Scoping Report uses the term "notable" for species, includes additional criteria, for example, Red Data Book. Clarification of this term is recommended as it does not reflect that term where it is used for distribution trends measured at 10km square resolution, for example, Nationally Notable.	Priority habitats and species have been identified as Important Ecological Features in Table 9.6.5 and any potential effects on them are described in Section 9.9 (Chapter 9 of the PEIR).
Horsham District Council	27 September 2019	As PINS and the Secretary of State will need to prepare/adopt an HRA screening/Appropriate assessment, the applicant should provide shadow documents for consideration and possible adoption for formal consultation with Natural England. There needs to be in-combination assessment in tandem with the cumulative assessment for EIA to ensure that regulatory requirements are met.	A HRA has been provided as Appendix 9.9.1 of the PEIR.
Horsham District Council	27 September 2019	To establish a consistent assessment approach, there is merit in the use of a Significance Matrix and standard terminology as the basis for assessment for each individual topic, where this is possible.	Table 9.4.5 establishes a significance Assessment Matrix that has been used to assess the effects in Section 9.9 (Chapter 9 of the PEIR).
Horsham District Council	27 September 2019	The Scoping report paragraph 7.3.46 only lists two ecological issues to be scoped out but Appendix 9.1.1 lists three.	During the PEIR process as more detailed designs were provided only one ecological issue was eventually scoped out, this being the direct habitat loss effects within the boundary of designated sites. All other ecological issues have been assessed within the PEIR chapter.

Consultee	Date	Details	How/where addressed in PEIR
Horsham District Council	27 September 2019	We recommend creating Priority Habitats as well as measures for Protected and Priority Species. The PIER should thoroughly explore all reasonable options to deliver measurable net gain from the development and restore biodiversity networks.	Details of mitigation and enhancement measures designed into the Project at this stage are described in Table 9.8.1 (Chapter 9 of the PEIR). The Project will adhere to any future legislation requiring NSIPs to deliver a biodiversity net gain, as set out in any future corresponding NPS and resulting from the Environment Act.
Horsham District Council	27 September 2019	In addition to the EIA report, it will be necessary to also provide sufficient information on non-significant impacts on Protected and Priority species and habitats at submission either in a non-EIA chapter or separate documentation.	Information on non-significant impacts on protected and priority species have been provided within Section 9.6 (Chapter 9 of the PEIR).
Mid Sussex District Council	1 October 2019	It should be noted for the purposes of undertaking the EIA that CIEEM has just released an updated version of their guideline for ecological impact assessment (September 2019).	The assessment is based on the 2019 guidance.
Mid Sussex District Council	1 October 2019	It should be noted that the standard assessment thresholds described in the scope of the noise and vibration assessment (Chapter 7) may not be adequate as a proxy for noise impacts on some ecological receptors such as bats. This may therefore need considering for the EIA depending upon the location of the Bechstein's bat colonies and the expected change in the noisescape due to the project.	This would be assessed in the ES, once full ranges of the colonies and roost locations have been identified.
Mid Sussex District Council	1 October 2019	In light of High Court rulings relating to Ashdown Forest SAC/SPA, assessments at internationally important wildlife sites should apply any thresholds used to determine a significant change in traffic flows to 'in combination' changes in traffic flows with other plans and projects, rather than to the Project in isolation, therefore the Transport Model needs to be robust and fit for purpose to ensure this can be assessed.	Change in traffic flows on routes serving the site have been modelled and are presented in the PTAR with the results used in Chapter 19: Cumulative Effects and Inter-relationships, to model changes in air quality. Interpretation of these impacts is provided in Appendix 9.9.1.
Mole Valley District Council	30 September 2019	Paragraph 7.3.1 – For the avoidance of doubt, the Council would like to make clear that not all of the Mole Valley Local Plan 2000 policies listed as relevant to Ecology and Nature Conservation were saved following review of the 2000 Local Plan in 2007. Policies ENV9 and ENV10 were not saved and are therefore not applicable.	This has been amended to reflect the comment in Table 9.2.2 (Chapter 9 of the PEIR).
Mole Valley District Council	30 September 2019	Paragraph 7.3.13 – The Scoping Report fails to refer to Sites of Nature Conservation Importance (SNCI), designated under Policy ENV12 of the Mole Valley Local Plan 2000 and Policy CS15 of the Mole Valley Core Strategy 2009. These sites are designated as they contain flora and fauna of county or regional value. They play a valuable role in nature conservation and should therefore be considered accordingly. The SNCIs within the 5km study area, available to view on the Council's Proposals Map, are: ▪ Withy Gill, Hookwood ▪ Edolph's Copse, Charlwood ▪ Rickett's Wood, Charlwood ▪ Pockmire's Wood and Beggar's Gill, Charlwood ▪ Leg of Mutton Wood / The Jordans, Newdigate ▪ Duke's Copse, Newdigate ▪ Newdigate Brickworks ▪ Hammond's Copse, Newdigate	Surrey Biodiversity Records Centre have been contacted for details of SNCI's, an assessment of the proposals on nature conservation assets of these sites would be undertaken as part of the ES.
Mole Valley District Council	30 September 2019	Paragraph 7.3.14 – The potential impacts of the development on Priority Habitats and Species, as defined in the National Planning Policy Framework, should be fully assessed through the EIA process.	Priority habitats and species have been identified as Important Ecological Features in Table 9.6.5 and any potential effects on them are described in Section 9.9 (Chapter 9 of the PEIR).
Mole Valley District Council	30 September 2019	Paragraph 7.3.43 – The Proposed Development should provide biodiversity net gains in accordance with national policy set out in the 25 Year Environment Plan (2018).	Biodiversity net gain calculations are ongoing and will be included in the ES.
Reigate and Banstead Borough Council	27 September 2019	References to saved Borough Local Plan Policy Pc2G "Local Nature Conservation Interest" should be removed from Paragraph 7.3.1 of the EIA Scoping Report following the adoption of the DMP.	This has been noted and updated within the PEIR Chapter.

Consultee	Date	Details	How/where addressed in PEIR
Reigate and Banstead Borough Council	27 September 2019	We question whether there is enough evidence/ justification at this stage to screen out changes in water quality at European designated sites. Whilst we note the justification for screening out the effect on water quality at European designated sites (namely that European designated sites are hydrologically linked to the Project site and that therefore there is no impact pathway), we would draw attention to Reigate & Banstead's Habitat Regulation Assessment produced for the DMP Examination (October/ November 2019) which concluded that there was a potential hydrological impact pathway between our borough and the Ashdown Forest SAC and SPA and ask that GAL consider whether this site should therefore be scoped in.	An assessment of effects on European designated sites is provided within Section 9.9 of Chapter 9 of the PEIR and within the Habitats Regulations Assessment Report included in Appendix 9.9.1 of the PEIR, which considers the potential for effects on European designated sites. This includes consideration of the potential for effects arising from hydrological pathways and associated changes to water quality.
South Downs National Park Authority	8 October 2019	The SDNPA concurs with the identification of The Mens SAC and Ebernoe Common SAC within the scope of the study. Both of these locations sit within the South Downs National Park.	Stated in Section 9.6 (Chapter 9 of the PEIR).
Surrey County Council	1 October 2019	With reference to the guidance listed under paragraph 7.3.2 (p.74) of the Scoping Report (Volume 1), given that the assessment is to include modelling of air quality effects on designated sites, the County Council would recommend that the recently published Institute of Air Quality Management (IAQM) guidance (A Guide to the assessment of air quality impacts on designated nature conservation sites, IAQM, June 2019) on that topic be included. The County Council would expect the assessment of air quality impacts on nature conservation assets to include Sites of Nature Conservation Importance (SNCIs).	Surrey Biodiversity Records Centre have been contacted for details of SNCI's, an assessment of air quality on nature conservation assets of these sites would be undertaken as part of the ES. The assessment will have full regard to the IAQM guidance.
Surrey County Council	1 October 2019	The County Council notes that no reference appears to have been made to Biodiversity Opportunity Areas (BOAs), which may be of assistance to the assessment in respect of the identification of appropriate mitigation and opportunities for net gain. The BOA most relevant to the proposed DCO application site is the RO5 'River Mole & Tributaries' BOA.	SNCIs are included as locally designated sites within this assessment (see Appendix 9.6.1 and Table 9.6.1 Chapter 9 of the PEIR). No BOAs have been identified.
West Sussex County Council		In reference to Paragraph 7.3.27: The assessment should include reference to non-road mobile machinery (hedge trimmers, lawn mowers, etc.).	Based on updated designs through the PEIR process, there would be no impact of non-road mobile machinery on designated sites. A full construction ecological management plan will be provided. Noise levels are already high within the area and used to high levels of noise, the extra machinery would have a negligible impact.
West Sussex County Council		In reference to Paragraph 7.3.5: The data used to inform this Scoping Report has been limited to the Magic website. However, Local Record Centres have been enquired of and presumably the substantial incoming data will inform the ES and pick up omitted Local Wildlife Site Boundaries (LWS) e.g. Horleyland Wood.	The PEIR includes Appendix 9.6.1 Ecological Desk Study. All appropriate records provided by Sussex and Surrey local record centres are summarised here.
Wealden District Council	26 September 2019	The Council must be content that any potential impacts to the Ashdown Forest Special Area of Conservation have been taken into account and are satisfactorily scoped into the assessment. The Council will require detailed assessments to be undertaken in relation to the impact of traffic and airplace emissions. The Council would recommend the EIA scoping assessment list all of the relevant 'designated sites' that it will test effects of development on.	Effects on European designated sites are provided within Section 9.9 of this chapter and within the Habitats Regulations (Non-significant Effects) Report included in Appendix 9.9.1.
Tandridge District Council	30 September 2019	No specific comments are made on the proposed scope of the baseline studies, study area, affects proposed to be assessed, and the approaches to the assessment of effects, and mitigation, enhancement and monitoring in relation to this topic.	The PEIR includes Appendix 9.6.1 Ecological Desk Study. All appropriate records provided by Sussex are summarised within Appendix 9.6.1 of the PEIR.

3 Glossary

3.1 Glossary of terms

Table 3.1.1: Glossary of Terms

Term	Description
BOA	Biodiversity Opportunity Areas
CBC	Crawley Borough Council
CIEEM	Chartered Institute of Ecology and Environmental Management
CoCP	Code of Construction Practice
DCO	Development Consent Order
DMP	Development Management Plan
EIA	Environmental Impact Assessment
EIASR	Environmental Impact Assessment Scoping Assessment
ES	Environmental Statement
GAL	Gatwick Airport Limited
IAQM	Institute of Air Quality Management
NERC	Natural Environment and Rural Communities Act
NPPF	National Planning Policy Framework
PEIR	Preliminary Environmental Information Report
PEIR	Preliminary Environmental Impact Report
PINS	Planning Inspectorate
SAC	Special Areas of Conservation
SNCI	Sites of Nature Conservation Importance
SPA	Special Protection Areas
SSSI	Site of Special Scientific Interest
SxBRC	Sussex Biodiversity Records Centre
UKFS	United Kingdom Forestry Standard