A Second Runway for Gatwick

Updated Scheme Design Submission

SD2

Airport Master Plan

YOUR LONDON AIRPORT
Gatwick

Table of Contents

Table of Figures

Table of Appendices

This document SD2 Master Plan should be reviewed in conjunction with the following Gatwick Appendices:

AC Module 1	**Strategic Fit**
Appendix A1	London Traffic Report
Appendix A2	How Technology will drive transformation of the aviation industry
AC Module 3	**Local Economy Impacts**
Appendix A4	Local Economy Impacts
AC Module 14	**Operational Efficiency**
Appendix A5	Operational Efficiency - Master Plan
AC Module 5	**Noise**
Appendix A7	Air Noise
Appendix A8	Ground Noise
AC Module 6	**Air Quality**
Appendix A9	Air Quality
AC Module 8	**Carbon**
Appendix A11	Carbon
AC Module 10	**Place**
Appendix A13	Place
AC Module 11	**Quality of Life**
Appendix A14	Quality of Life
AC Module 12	**Community**
Appendix A15	Community
AC Module 13	**Cost and Commercial Viability**
Appendix A19	Commercial Facilities Requirements
AC Module 15	**Operational Risk**
Appendix A25	Operational Risk
Other	
Appendix A26	Airspace
Appendix A27	Public Safety Zones
Appendix A29	Fuel Strategy
Appendix A30	Planning Context

Executive Summary

The Masterplan will see Gatwick transform the airport it is today to a new international gateway for London and the South East. Its compact site and simple design will mean it can cater for all airline models at the same time as offering the quickest possible journey times through the airport. It will compliment the Mayor's London Plan, create Olympic scale regeneration legacy for South London and deprived coastal areas whilst minimising the environmental impacts on the area.

Developing a second runway at Gatwick will transform the way the air transport industry supports the needs of people in London, the South East and the UK. Our Master Plan is innovative, world leading and visionary. By putting passengers and airlines interests at the heart of our thinking we believe we have arrived at a proposal that is extremely well suited to the way in which the air transport industry is evolving globally, is efficient and is best suited to maintaining the UK's position as Europe's most important aviation hub.

Gatwick's location south of London, and in a semi-rural setting, means that it starts from a position of significant advantage over Heathrow. The existing airport benefits from a compact, one-runway, two-terminal configuration, with excellent surface access connections. It is the most efficient single runway airport in the world with high levels of operational performance and customer service resulting from the many improvements made in the last four years under its new ownership. For example, aircraft movements in the hour have risen from 50 to 55 since 2009 and we are the only major London airport to meet and exceed all the CAA's targets for the level of service we provide to our passengers and airlines.

Gatwick's two runway master plan builds from this strong foundation and provides even greater efficiency. Passengers will benefit from punctual services and very short queuing and taxiing times along with shorter journey times to their most convenient airport. This will be supported by a world-class Gatwick Gateway public transport interchange, providing simple and easy wayfinding from a single front door.

Overall, our analysis shows that our Master Plan will deliver significant time savings for passengers of, on average, around 38 minutes for each one-way journey they make in a 2+2 (Gatwick second runway solution) versus a 3+1 (Heathrow runway 3 solution). For a return trip this equates with a time of some 76 minutes and would drive a significant economic benefit for passengers.

The Airports Commission's Terms of Reference are to (among other things);

"*Identify and recommend to Government options for maintaining the UK's status as an international hub for aviation*". Our master plan describes how Gatwick can be developed to provide the physical infrastructure in a way that contributes towards meeting that objective by:

- Delivering the capacity and connectivity identified in the Commission's assessment of need and, by opening a new runway as early as 2025, the master plan will address the London system capacity constraints earlier than is possible at Heathrow.
- Providing a highly efficient airport layout that is suitable for all airline business models, thus better supporting growth of short haul, low cost carriers and charter traffic (which are not well served by a third runway at Heathrow) as well as full service long haul traffic.
- Developing a flexible, compact and efficient airfield system that will allow rapid turnaround of aircraft and, with rapid connectivity between terminals, will enhance the operational efficiency for

all users of the airport. In contrast, Heathrow has long and complex taxiing routes today and the inevitably increased complexity of these in a three runway layout will not only lead to extremely long taxiing times but, we believe, will also adversely impact on the whole of the airfield and runway operation. There will also be much greater variability in taxiing times at Heathrow and airlines will have to allow for this in their published "block times". For example, the longest taxiing distance at Heathrow will be close to 2km longer than at Gatwick, and we have estimated that the maximum taxiing and holding time at Gatwick will be 15 minutes compared to 45 minutes at Heathrow.

- Creating an airport layout which is simple and clear and will help passengers navigate through the airport quickly and intuitively. Short door-to-gate distances and minimum level changes will make the journey easy for all.
- With the two runway master plan we are committed to providing short journey times through the airport. For example, most passengers will be able to get from the kerb to the departures gate in just 30 minutes and from their arrivals gate to the kerb in just 45 minutes. These short transit times through the airport are, and will remain, simply unachievable at Heathrow.
- Similarly, we will build on our Gatwick Connect product to enable those passengers who wish to transfer to be able to do so in just 30 minutes where they are transferring within the same terminal, and in 45 minutes where they are transferring between terminals irrespective of the airlines they are using (such transfer times are not achievable at Heathrow today, let alone with the complexity of a third runway and an additional terminal building and associated piers and satellites).
- The aircraft parking apron is highly adaptable and can accommodate a series of alternative layouts to suit an intensive low cost operation or a highly efficient transfer product.
- Providing a new terminal, a world-class Gatwick Gateway transport interchange, and a series of improvements to the existing airport facilities, along with implementation of the planned surface access strategy, will ensure that the whole passenger journey is fit for purpose for a national gateway to the UK.
- Creating a sustainable master plan that facilitates growth but has limited environmental impacts, coupled with a strategic and comprehensive approach to mitigation designed to limit and in certain respects improve the local environment.
- Ensuring that the master plan supports the delivery of existing economic and spatial development strategies such as:
  - The London Plan which seeks to rebalance spatially the capital's economy. The expansion of Gatwick can make a major contribution to this by providing linkages and connectivity to areas that have been earmarked for regeneration or have the capacity for growth. The fast, frequent and reliable transport links between Gatwick and Croydon, Clapham Junction, London Bridge and Victoria will maximise the regeneration effects on areas earmarked for growth including key inner London areas. There will be a pull of economic activity south of the Thames, rebalancing the spatial direction of the City in a way that is consistent with the London Plan. Places like Croydon, Sutton and Wandle Valley have ambitious plans to deliver jobs and growth and Gatwick's employment strategy will ensure that the benefits of a second runway spread directly to those areas. The excellent North-South rail services will also help revive the North and North East London economies and support growth in the London-Stansted-Cambridge corridor, as highlighted in the Plan;

  - The Gatwick Diamond Strategic Statement. The Gatwick Diamond stretches from the southern edge of London to the northern boundaries of Brighton and Hove. The growth of the Diamond has been supported by its close proximity to Gatwick and the resulting excellent surface access links. Expansion of Gatwick will assist these areas both during construction and operation;
  - The Coast to Capital LEP Strategy for Growth. Gatwick's expansion with the resulting growth in international connectivity will support the objectives to develop a flourishing and competitive knowledge based economy with high levels of entrepreneurship.
- Creating further economic benefits for the local economy. Areas of the south coast which currently have relatively high proportions of unemployed people seeking work in relatively unskilled occupations include Arun, Rother, Hastings, Worthing and Eastbourne. This area will benefit from targeted initiatives to meet the employment needs of the Airport;
- Dispersing airport capacity, by providing a second runway at Gatwick, will avoid over concentration of air routes in one part of the South East's airspace as well as avoiding a significant growth in flights over densely populated central London.

Gatwick's two runway master plan will deliver capacity for 95mppa by 2050. This assessment of the capacity of the single runway airport may turn out to be conservative as we continually innovate to extract additional capacity from our single runway.

Gatwick's location provides some key advantages; in particular the lack of significant physical onsite constraints and the relatively unpopulated surroundings will result in limited environmental and social impacts from both construction and operation. Other strengths of the Gatwick master plan are:

- Gatwick starts from a position of significant strength with regard to the environmental implications relative to the Heathrow options. Noise is a particular case in point. Heathrow claim that the number of people affected by noise is falling. It is clear, however, that a third runway with an additional 260,000 aircraft landing and taking-off will produce more noise than a two-runway Heathrow without the additional take-offs and landings. The present measures to describe noise nuisance are considered to understate the true impact of noise at Heathrow. Many people are still significantly affected by noise outside the 57 leq contour. If the contour is expanded, the position is even more dramatic. For Gatwick in 2012 there were only 11,300 people within the 55 Lden contour whereas there were 725,000 within the same contour at Heathrow, over 60 times as many. The fundamental issue is to identify the difference in noise between a three-runway and a two-runway Heathrow as, given the overflying of London, it is clear that many more people will be affected. Gatwick has supplied the relevant information for its expansion, but Heathrow has so far failed to do so.
- Expansion of the airfield to the south of the existing runway will allow the existing airport to continue to operate during construction with little disruption. This means that construction can be completed earlier, at a lower cost and with less impact on local communities. Our Sustainable Construction Strategy will assist in protecting quality of life for local communities whilst delivering a resource efficient delivery plan;
- The new passenger facilities can be planned as a simple modular system that can be incrementally developed to suit the growth and type of demand that develops and can be planned to be flexible and adaptable at the outset;

SD2 Airport Master Plan

- Limited land-take is required to facilitate expansion. The Gatwick master plan is compact and efficient, which minimises land take requirements and corresponding community and environmental impacts, meaning that development will be kept almost entirely within the existing safeguarded area and will avoid the need for environmental restrictions that have typically been necessary at Heathrow;
- The compact site supports an efficient operational solution once it comes into use, unlike Heathrow which starts from an inefficient layout and becomes less efficient still with a third runway;
- The effects on neighbouring communities are minimised and mitigated and are of a magnitude lower than at Heathrow. The master plan incorporates a suite of enhancement measures delivering socio-economic and environmental benefits. Social amenity enhancements include the new river corridor and linear park with habitat management, landscaping, and the provision of additional footpaths and cycle ways;
- Facilitating sustainable surface access is a key component of the master plan and, in addition to cycling and walking provision, there will be investment in enhanced bus lanes and other public transport infrastructure;

Since the change of ownership in 2009, Gatwick has consistently delivered excellent passenger experience by innovating and introducing new products, encouraging air traffic growth and improving the quality of the airport facilities.

These improvements (e.g. automated security, and dedicated family and business security channels many of which have been replicated by other airports such as Heathrow and Stansted) are indicators of Gatwick's ambition to become London's airport of choice, and of Gatwick's intent to compete.

Implementation of the Gatwick master plan will provide the opportunity to deliver further significant change and improvements in passenger experience – indeed Gatwick in 2030 will, in effect, be a new airport fit to be a major international gateway to London and the UK.

1. Introduction

This report describes the salient elements of Gatwick's master plan and is one of a suite of documents that form Gatwick's updated scheme design submission to the Commission. It brings together the master plan strategy developed with key stakeholders and the supporting technical analysis, and incorporates a number of other work-streams.

- This document has been structured so as to address the objectives associated with the master plan component identified in Table 4.1 of the Commission's Appraisal Framework. This document focuses on the key specific objectives noted below, recognising that other topics are addressed more fully within our family of documents. To improve the experience of passengers and other users of aviation.
- To ensure individual airport and airport system efficiency.
- To provide additional capacity that facilitates connectivity in line with the assessment of need.
- To enhance individual airport and airports systems resilience.
- To build flexibility into schemes designs.
- To meet present industry safety and security systems.
- To maintain and where possible enhance current safety performance with a view to future changes and potential improvements in standards.

It also draws from the following assessment modules: strategic fit, local economy, surface access, noise, air quality, carbon, quality of life and community. This document, along with the more detailed technical appendices, also explains how the master plan meets the other requirements set out in Appendix B of the Appraisal Framework such as Land Valuation, Land Evaluation, Airspace, Public Safety Zones, Surface Access and Freight Movements.

Gatwick has undertaken a comprehensive six-week public consultation on Gatwick's three runway options, beginning 4 April and closing 16 May 2014. A full report of the consultation, including Gatwick's response in terms of our preferred option and any further scheme development, will be submitted to the Commission in July 2014.

This master plan should be read in conjunction with the other Scheme Design reports and appendices. In particular the following appendices provide supporting information relevant to the Airport Commission's description of the master plan scheme design element:

- London Traffic Report;
- Operational Efficiency – Master Plan;
- Planning Context;
- Local Economic Impacts;
- Air Noise;
- Ground Noise;
- Air Quality;

- Biodiversity;
- Carbon;
- Place;
- Quality of Life;
- Community;
- Operational Risk;
- Public Safety Zones;
- Airspace;
- Fuel Strategy;
- Commercial Facilities Requirements;
- How Technology will drive Transformation of the Aviation Industry.

1.1 Master Planning Aims

The aim of the master plan is to:

- Demonstrate the technical feasibility of our proposal and provide a strong evidence base to support our plan;
- Provide a clear indication of how the airport might be developed and how this development might impact others;
- Show that the master plan has the necessary flexibility to allow future development to respond to changing requirements and technological advances;
- Show how the Commission's assessment of need is met and exceeded;
- Explain why Gatwick provides the best, and most sustainable, location to construct the next runway.

1.2 Traffic Forecasts

In July 2013, Gatwick announced plans for a consultation on the options for developing a second runway at Gatwick. The traffic forecasts used to prepare the analysis for this consultation were produced in May 2013. For Option 3 (the option shortlisted by the Airports Commission in its December 2013 Interim Report) these forecasts showed 87mppa and 513,000 movements in 2050.

Gatwick's public consultation runs from 2 April to 16 May 2014. The principal objective in undertaking the consultation is to ensure that the views of local residents and other local stakeholders are taken into account by both Gatwick before it announces its final preferred option in July 2014, and by the Commission itself in preparing its Final Report.

SD2 Airport Master Plan

In its Interim Report the Airports Commission announced that 'refreshed designs' of the shortlisted options were expected to be submitted on 9 May 2014 (on 2nd April 2014 this was revised to May 14th). As part of the preparation of its 14 May submission, Gatwick instructed its consultants to review, in the light of the Appraisal Framework, all of the principal elements of its Option 3 scheme. One of these was the traffic forecasts.

Gatwick obtained advice from its traffic forecasting consultants that there was a strong case for increasing forecast annual ATM and passenger numbers to a level higher than those on which Gatwick had consulted. This was on the basis that the peak period numbers would not increase but that the spread of traffic across the year at Gatwick would by that time handle more passengers than Heathrow today. In the light of this advice, Gatwick decided to include in this submission material covering both the 87mppa 513,000 ATMs case and its more up to date 95mppa, 560,000 ATMs case.

Based on the work undertaken by Gatwick, it is clear that the 87mppa case is the same as the 95mppa case in terms of the physical infrastructure contained in the master plan (as the peak demand is unchanged) and land-take requirements and therefore the ground based environmental effects. The road and rail access implications also remain the same and we have updated our assessment of employment, housing and economic effects to reflect the change in traffic forecasts.

The impacts, however, differ in relation to certain environment, social and economic effects including air noise, air quality, carbon, water and utility consumption.

The differences are expected to be comparatively small, and Gatwick is now undertaking detailed work to assess these and will advise the Airports Commission of the outcome.

2. Capacity

Objective: To provide additional capacity that facilitates connectivity in line with the assessment of need

Gatwick's master plan has been developed around a highly efficient and optimised independent mixed mode, two-runway system. A new 3,400m runway, in combination with the existing, similar length runway, will provide a capacity in 2050 equivalent to around 95mppa. The existing airport has a capacity in the short to medium term of around 45mppa, increasing to around 50mppa by 2050 as a result of peak spreading, larger aircraft and raising further the movement rate on the runway.

Building on Gatwick's expertise in operating the world's most efficient single runway, simulation modelling of the two-runway airport confirms that peak hour capacity will increase from 55 to 98 ATMs. This peak hour capacity is considered to be conservative. Proposals are currently being implemented which will seek to increase the existing runway throughput to 60 ATMs per hour by the early 2020s and we would anticipate a corresponding increase would be achievable for the two runway system. Even without taking account of any uplift to our base capacity, the peak hour capacity of our 2+2 scheme translates to an additional 260,000 ATMs per year in 2050, which Heathrow will not be able to match for a combination of operational and environmental reasons.

Central to the master plan's ability to deliver this step in capacity is:

- A simple, efficient airfield configuration that will reliably support high levels of throughput, allowing the runway system to be fully utilised;
- A design which is suitable for a range of airline business models and can stimulate growth in each of them;
- A master plan that can be delivered sooner, as early as 2025, relieving the pressure of the London airport system that the Commission concludes in the Interim report would otherwise be substantial by 2030.

A second runway at Gatwick (2+2) delivers more passengers, more destinations and facilitates effective airline and airport competition which in turn acts as a catalyst to lower air fares and drives more demand than a third runway at Heathrow (3+1). This is good for consumers and makes the UK a more attractive place to do business.

2.1 Airfield

The master plan is driven by the need to support the two runway system. Following extensive study, a runway separation of 1,045m has been selected which will allow simultaneous independent mixed mode operations on the runways with sufficient room for supporting terminals, taxiways and midfield apron capacity, but avoids the additional environmental impacts that a wider separation would introduce.

The airfield has two distinct operational zones; a northern zone, served by the existing apron and North and South Terminals, and a new midfield apron and new terminal. The capacity of each zone is approximately equal, with the northern zone serving 45mppa and the midfield serving 50mppa. This means that the additional capacity beyond that of the existing runway will be provided by the new runway and midfield apron, allowing rapid delivery of new capacity with minimum disruption to existing operations.

The midfield location for the new apron places the new stands in the optimal position between the runways. This will support the continuation of Gatwick's already strong airfield operational performance. In contrast Heathrow starts from a position of poor airfield operational efficiency today. The taxiway system is subject to significant operational restrictions, with certain parts of the central terminal area experiencing congestion on the taxiway system. Heathrow is vulnerable to Air Traffic Control (ATC) delays today. Taxiing times are comparatively long and so called 'block times' have increased to allow for these inefficiencies.

These issues would be compounded by the provision of a third runway at Heathrow. Aircraft taxiing times will become materially longer, and taxiway routings would be even more complex, than today. The sheer volume of aircraft movements concentrated in a small area can be expected to add to further congestion. In addition, operational restrictions that have been imposed for environmental reasons, such as runway alternation, add complexity to the airfield and therefore the efficiency and reliability of the operation. As a result, we believe that the effective annual capacity of the three-runway Heathrow would be closer to some 670,000 ATMs for a combination of operational and environmental reasons.

FIGURE 1: EXISTING AIRPORT PLAN

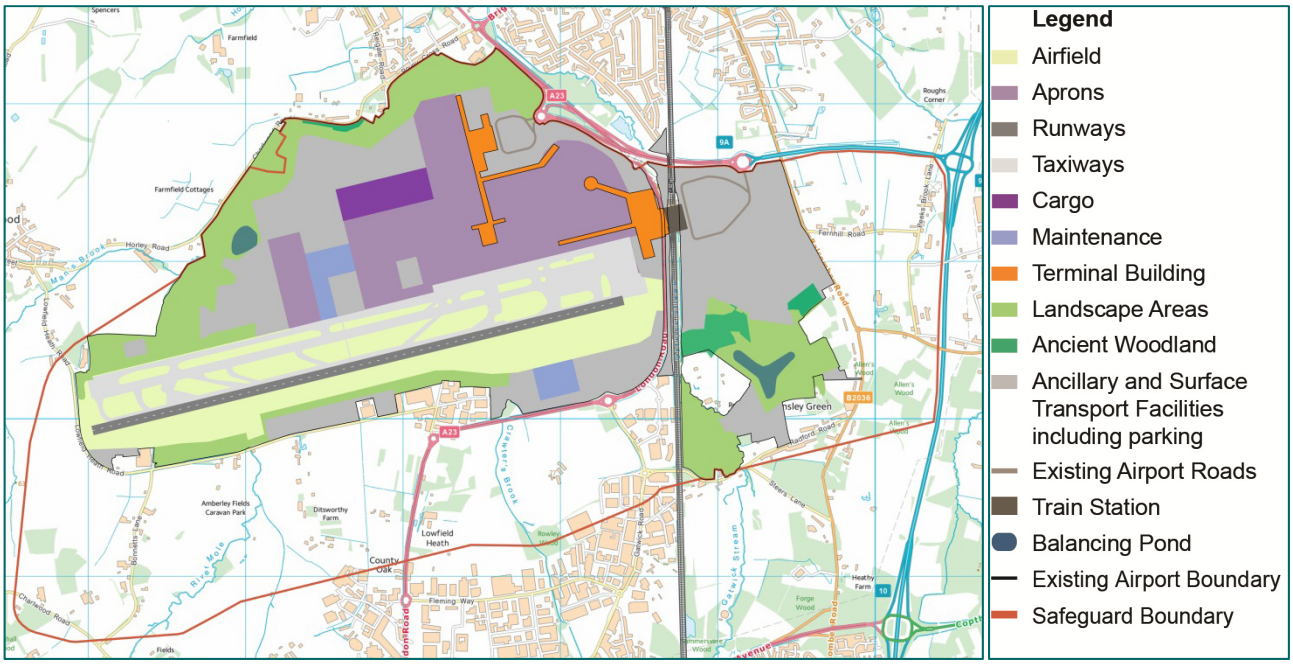
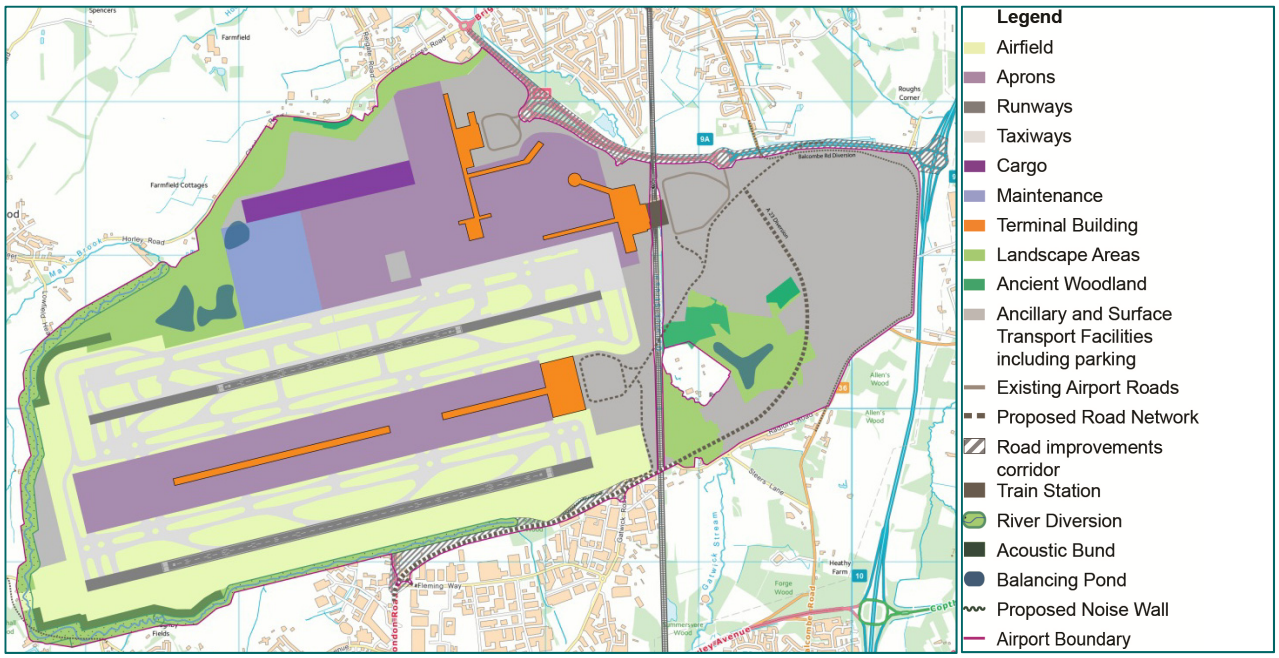


FIGURE 2: 2050 MASTER PLAN



The midfield area will provide a compact and efficient airfield area with new parallel Code F (inner) and Code E (outer) taxiways provided to both the north of the new and south of the existing runway. Two new dual Code F cross-field taxiways will allow efficient circulation for aircraft of all sizes. Rapid exit junctions for narrow bodied and wide bodied aircraft will minimise runway occupancy times and suitable aircraft hold provisions and dedicated push-back taxi lanes will allow free flow taxiing circulation to maximise runway utilisation and capacity.

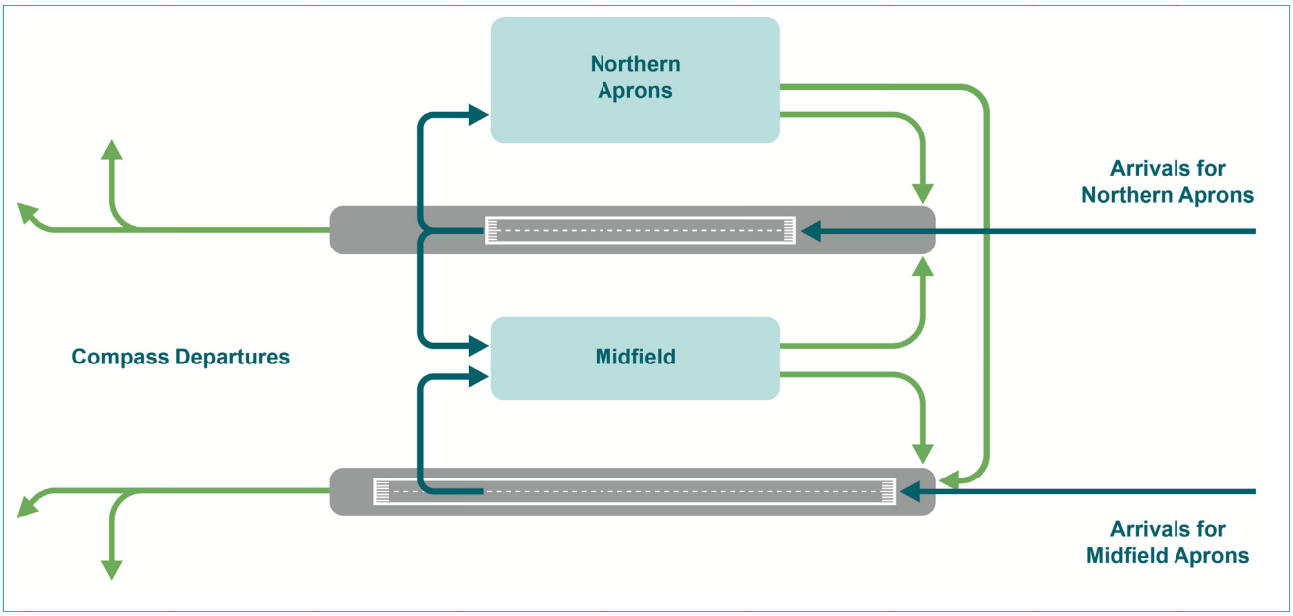
2.2 Airspace

Although detailed airspace design has not yet been undertaken, our discussions to date with NATS have not identified any reason why this level of throughput cannot be achieved within an appropriately re-designed airspace system. Similarly NATS have not indicated any reason why the addition of a second runway at Gatwick will adversely impact current operations at other airports, including Redhill Aerodrome.

Figure 3 shows the expected method of runway operation, developed with the assistance of NATS. This provides flexibility to allocate either runway to departing aircraft, in accordance with the direction of their onward flight. This will eliminate the need for flight paths of departing aircraft to cross, maintaining the full capacity potential of the runways.

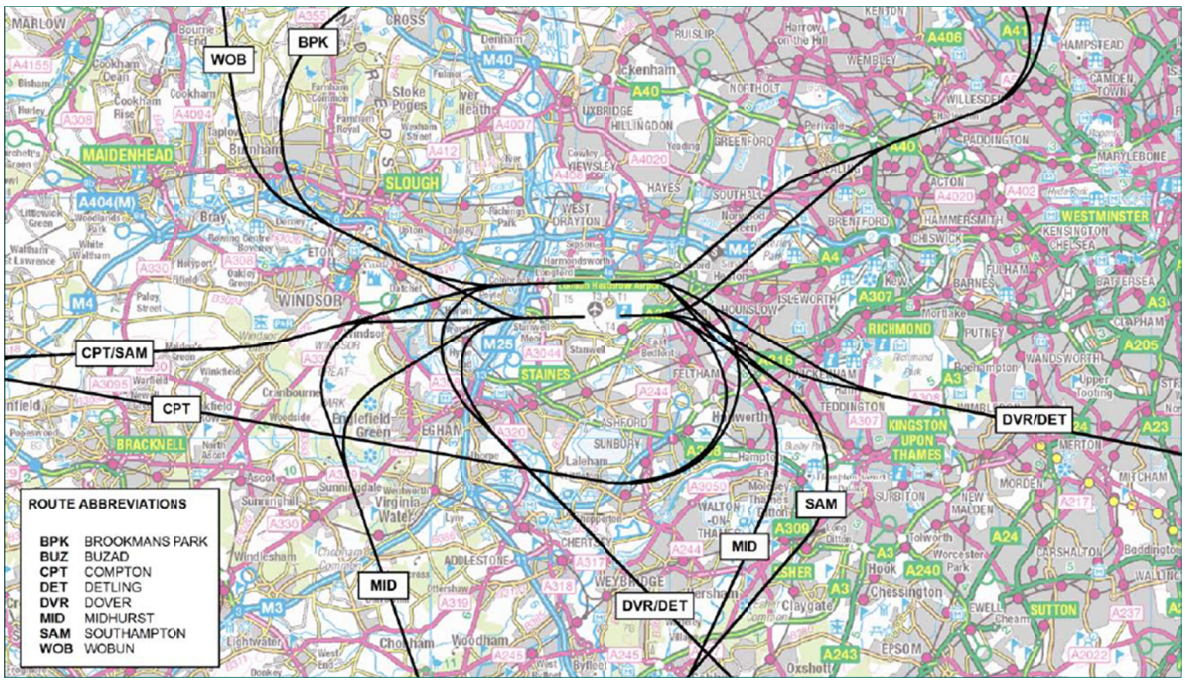
Arriving flights will be allocated a landing runway in accordance with the apron they will be using. This will simplify the ground movement of arriving aircraft, reducing taxi times and fuel burn.

FIGURE 3: RUNWAY APPROACH AND DEPARTURE FLOWS



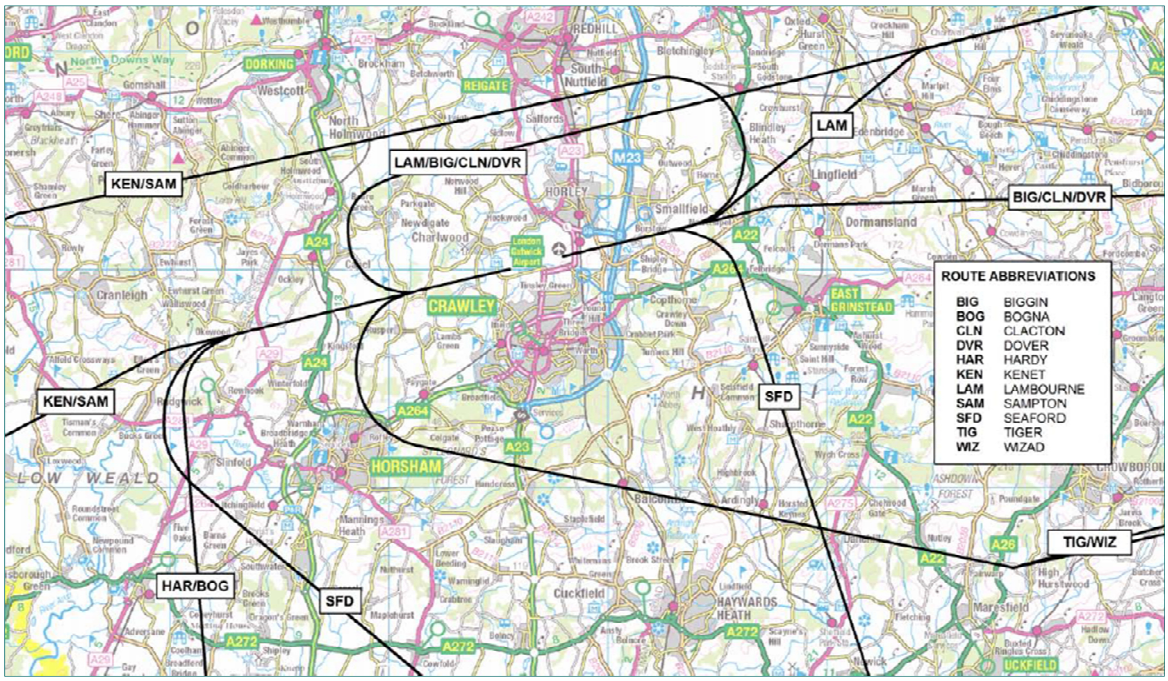
Dispersing airport capacity by providing a second runway at Gatwick will avoid a concentration of air routes in one part of the South East's airspace as well as avoiding approximately 100,000 additional flights over densely populated central London. The figures below illustrate today's air routings. Although these are expected to evolve, it will not be possible to avoid flights associated with Heathrow flying over London.

FIGURE 4: HEATHROW STANDARD INSTRUMENT DEPARTURE (SID) ROUTES OVER LONDON



Source: CAA ERCD Report 1301

FIGURE 5: GATWICK STANDARD INSTRUMENT DEPARTURE (SID) ROUTES



(Source: CAA ERCD Report 1302)

2.3 Aprons

Our modelling has shown that Gatwick will have more than adequate stand capacity in the northern and midfield aprons to accommodate the forecast traffic. The master plan provides 106 stands in the northern apron and 104 stands in the midfield apron (Figure 6). The wide body stands are generally designed as Code E or F MARS, and these can accommodate either one Code E/F or two Code C aircraft, so that the total provision is for up to 269 aircraft.

FIGURE 6: TABLE OF AIRCRAFT STANDS

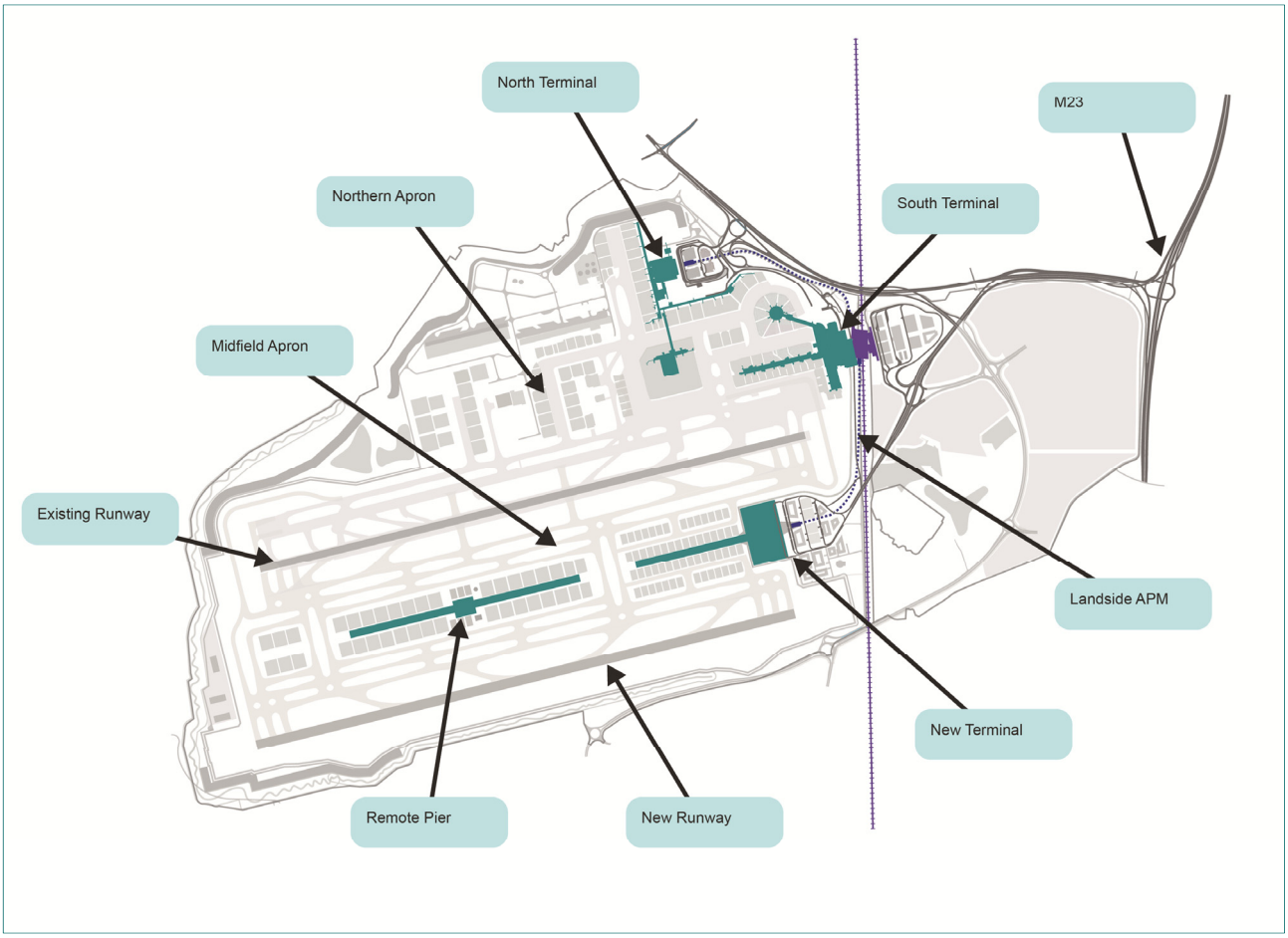
Aircraft Code	Total Stands	Contact Stands	Remote Stands
C	94	58	36
D	17	6	11
E	24	15	9
E MARS	64	47	17
F MARS/F	11	8	3
TOTAL	210 (based on max aircraft size) 269 (based on max aircraft number)		

Our stand capacity analysis indicates that both the northern and midfield aprons will have flexibility to respond to different fleet mixes and volumes of aircraft parking demand, providing resilience to changes in the future traffic characteristics.

2.4 Terminals

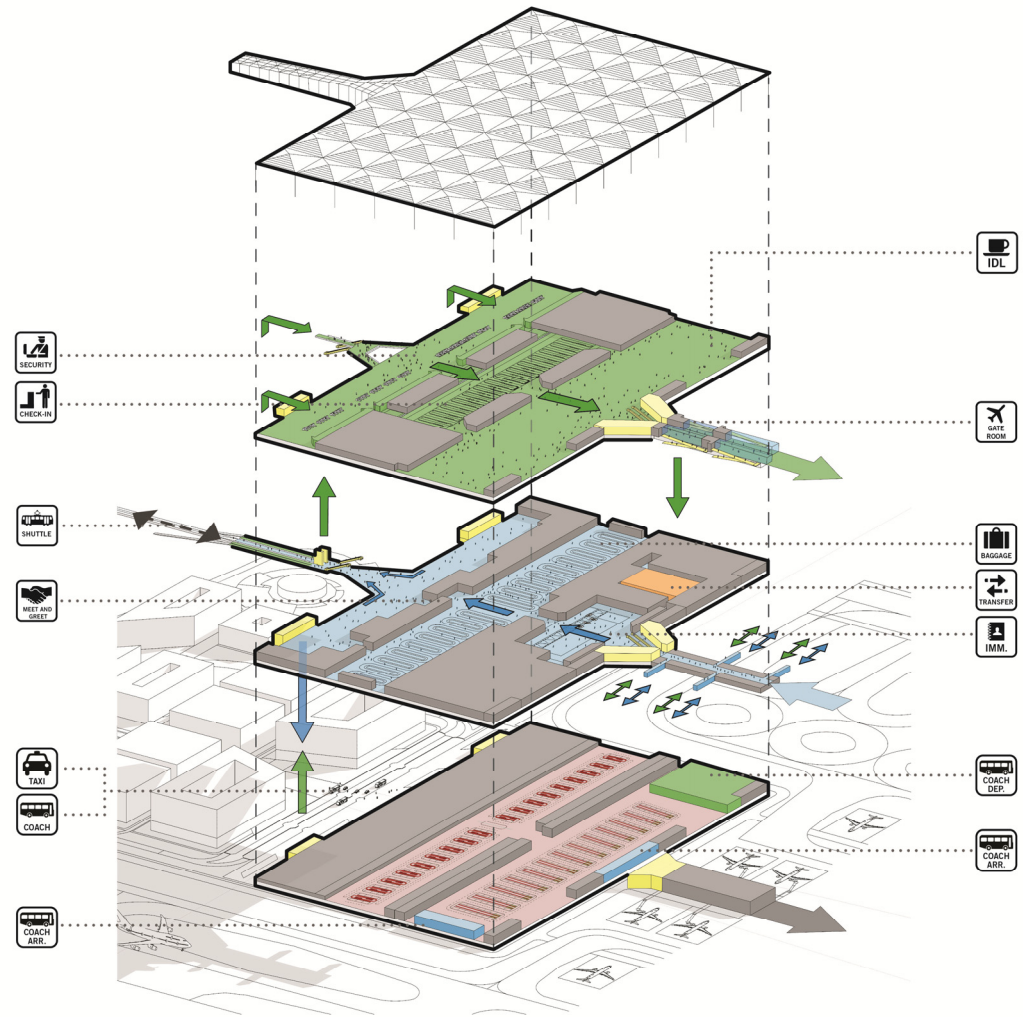
The terminals strategy is based on a three terminal airport (Figure 7), creating an easy-to-navigate layout for passengers, providing efficient and easy movement from all surface access modes through one of the three terminals to the aircraft. The existing North and South Terminals will continue their successful programmes of upgrading and modernisation and with modest internal enhancements will provide 22.5mppa capacity in each.

FIGURE 7: THREE TERMINAL AIRPORT ARRANGEMENT



The New Terminal will be a state-of-the-art, 3-level facility with a modular design allowing incremental expansion up to a maximum capacity of 50mppa. Figure 8 shows the principal floor levels of the New Terminal. The ground floor will be a non-public space, accommodating baggage and plant equipment. The first floor will be allocated to arriving passengers and office support accommodation. The second floor will be allocated to departing passengers and is positioned beneath a high-level roof allowing natural light to fill the passenger spaces. The simple organisation of the terminal minimises level changes and will help passengers find their way through the building.

FIGURE 8: NEW TERMINAL LAYOUT



IDL International Departure Lounge

GATE ROOM Gate Rooms

BAGGAGE Baggage

SHUTTLE Shuttle Station

IMM. Immigration

COACH DEP. Coach Departures

COACH ARR. Coach Arrivals

SECURITY Security

CHECK-IN Check-In

TRANSFER Transfers

MEET AND GREET Meet and Greet

TAXI Taxi Station

All three terminals will take advantage of new technologies to ensure processes are seamless and un-intrusive for passengers. Each terminal will be able to accommodate a range of airline and passenger business models (short haul, long haul, domestic, low cost and full service) with services and facilities customised to support the growth of all sectors.

Each terminal will be conveniently connected to a landside automated people mover (APM), providing access with a maximum 7 minute journey time to any terminal for rail, coach, bus services and car rental. Long term car parking will be consolidated into the area to the east of the railway, and short term parking provided adjacent to each terminal.

2.5 Support Facilities

The expanded airport will be supported by a comprehensive range of facilities including cargo, fuel farm, maintenance, and workshops, which are generally located in the northern apron.

With a second runway, the expansion of long-haul services at Gatwick, especially to emerging markets, will support significant growth in cargo throughput. This is forecast to reach 1,070,000 tonnes by 2050. While Heathrow is the largest freight airport today, the growth of Gatwick will provide the opportunity to provide competition and choice within the air freight market. Gatwick's master plan provides space for 65,000m^2 of state of the art cargo buildings, which, importantly, will be located directly on the airside boundary. These can be tailored to the specific needs of future operators, e.g. provision for the handling of perishable goods. Flexible leases can be offered at much lower costs than at Heathrow where there is a shortage of space. This has resulted in freight forward agencies being scattered around the Heathrow area. Gatwick can provide the land, the infrastructure and the excellent surface access networks needed to promote the expansion of freight operations at a price that will foster competition and growth.

Further airfield support functions will be accommodated in the midfield area with space for a new control tower, fire station and maintenance facilities.

The public space to the east of the New Terminal will provide space for new hotels, offices and short-stay car parks.

We will also work with our consultative committee to explore the desirable timing and location for a new ground run pen where engine testing would be carried out.

The land east of the railway contains the site for a new CHP energy centre, including an energy from waste (EfW) plant using gasification, pyrolysis and/or alternative technologies.

The area between the railway and the M23 will also contain a centralised long-stay car parking zone serving all three terminals. Space can also be made available here for the re-provision of commercial businesses displaced by the airport expansion, should they want to relocate here and should this provision be supported by the local authority.

3. Passenger experience

Objective: To improve the experience of passengers and other users of aviation

3.1 Introduction

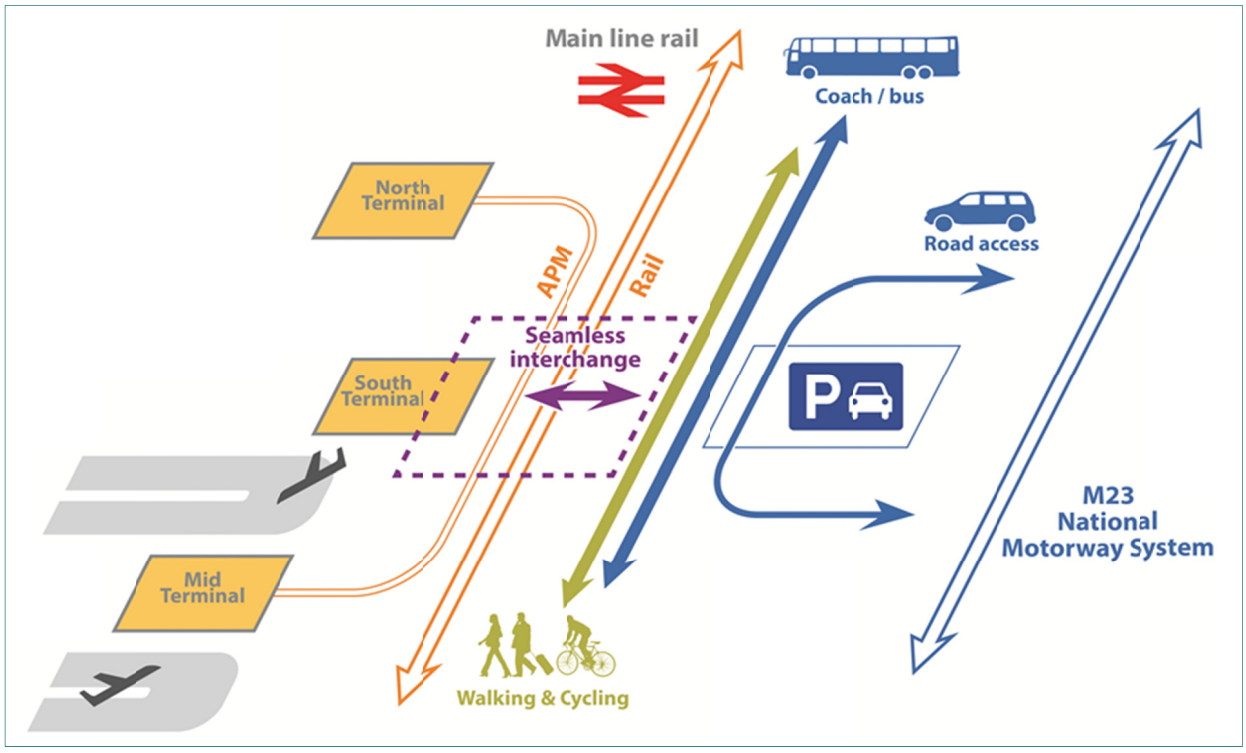
The Master Plan is designed to build on the transformation of Gatwick that began in 2009 with the change in ownership.

Gatwick is by far the most efficient single runway airport in the World. The siting of the new parallel runway, its unrestricted operation and the siting of the new terminal will mean that Gatwick can become the most efficient two runway airport in the World. Passengers will benefit from punctual services and very short queuing and taxiing times for aircraft meaning more on-time departures and arrivals and fewer delays.

The simple, compact and uncompromised layout coupled with further planned initiatives will mean short distances and quick journey times from arrival at the airport through to the departure lounges and gates and vice versa.

Within the Gatwick airport boundary, whether arriving by public or private transport, access to the terminals will be both quick and simple. Around two-thirds of passengers will arrive via the Gatwick Gateway which will bring together rail, bus, coach, hire car, pedestrian and cycle access into a single interchange facility, as illustrated in Figure 9.

FIGURE 9: THE SEAMLESS INTERCHANGE CREATED BY GATWICK GATEWAY



The Gatwick Gateway will be pivotal to guaranteeing quick access to check in for departing passengers on a low stress, low hassle basis and will be wholly above ground. It will take the form of a concourse connecting the different transport modes with the automated people mover (APM) which will provide rapid access to the North Terminal and the New Terminal. South Terminal will be just a short walk away. This single main focus for surface access modes will simplify way-finding, improve the passenger experience and minimise on-airport connection times.

Gatwick currently targets the following times for passenger journey times through the airport:

FIGURE 10: TABLE OF CURRENT JOURNEY TIME TARGETS THROUGH THE TERMINAL AT GATWICK

	Current Target (minutes)
Departures	
Kerb to Gate	45
Bag-drop to Gate	20
Arrivals	
Gate to baggage reclaim	15
Gate to kerb	60

New technology and processes will enable these targets to be improved:

FIGURE 11: TABLE OF FUTURE JOURNEY TIME TARGETS THROUGH THE TERMINAL AT GATWICK

	Second Runway Target (minutes)
Departures	
Kerb to Gate	30
Bag-drop to Gate	20
Arrivals	
Gate to baggage reclaim	15
Gate to kerb	45

The upgraded facilities will provide a smooth, reliable and pleasant journey through the airport for passengers of all types. Gatwick plans to continue to develop its facilities and services to provide superior experience for its target passenger segments through, and at the airport.

FIGURE 12: SERVICE IMPROVEMENTS FOR PASSENGER SEGMENTS

Passenger segment	Service Improvement Examples
Passengers with reduced mobility	Provision of suitable toilets, welfare facilities and resting places at regular intervals, reserved seating areas and dedicated pick up areas. Accessible infrastructure and transport networks.
Family Groups	Facilities designed around family requirements. Safe activity and amusement areas for families, frequent baby changing facilities, family eating offers.
Business and Premium Passengers	Avoidance of queuing with dedicated lanes, business centres and quiet areas, segregated exclusive lounges and priority bag services.
Leisure Passengers	Minimise gate dwell times and fast arrival bag delivery, real time travel information and personalised call to gate using smart phone technology. Wide range of retail and catering offers.

The new facilities will be modern, pleasant and contain the full range of shopping, restaurant, lounge and other facilities that passengers will want.

The facilities are also designed to fit with Gatwick's strategy to transform its service for transferring passengers. Growing numbers of passengers “self-connect" and in 2013 Gatwick launched “Gatwick Connect" which is a service designed to simplify the transfer process for these passengers. It currently works by allowing connecting passengers to check-in their bag within the reclaim hall. Gatwick is currently developing a plan which, with innovative use of existing technology, will enable it seamlessly to connect passengers from any aircraft to any other aircraft from and to any gate at any terminal and between any airlines in under 45 minutes. The new terminal design conforms to this target.

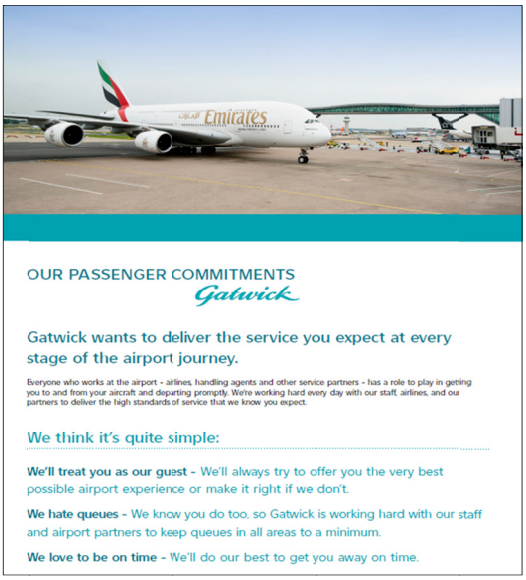
3.2 Service Quality

Gatwick’s master plan is designed to build on the transformation of Gatwick that began in 2009 with the change of ownership.

In 2010, Gatwick became the first UK airport to publish passenger commitments (Figure 13), outlining the service passengers can expect:

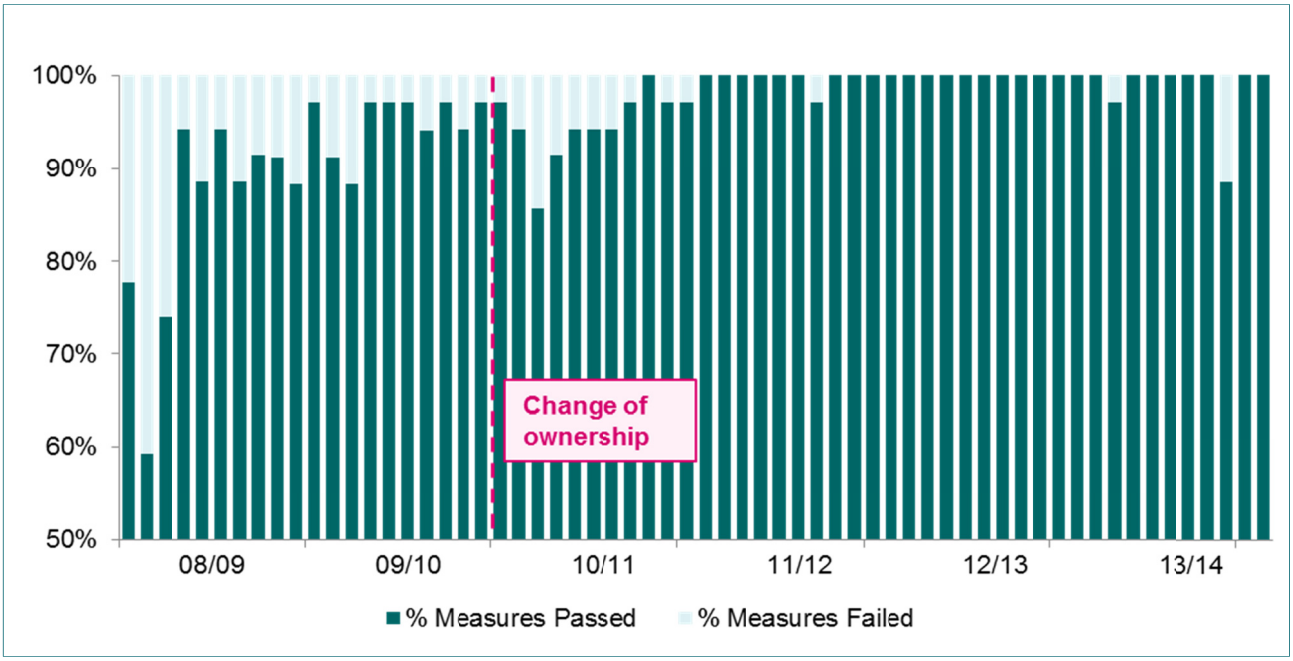
- **We’ll treat you as our guest** – We’ll always try to offer you the very best possible airport experience or make it right if we don’t;
- **We hate queues** – We know you do too, so Gatwick is working hard with our staff and airport partners to keep queues in all areas to a minimum;
- **We love to be on time** – We’ll do our best to get you away on time.

FIGURE 13: GATWICK PASSENGER COMMITMENTS



The recent improvements in passenger service and quality of facilities is clear to see (Figure 14), and confirmed in the CAA monitoring results, with Gatwick achieving 100% attainment of service quality (SQR). In comparison Heathrow has never achieved all of their SQR targets in any month for the past six years.

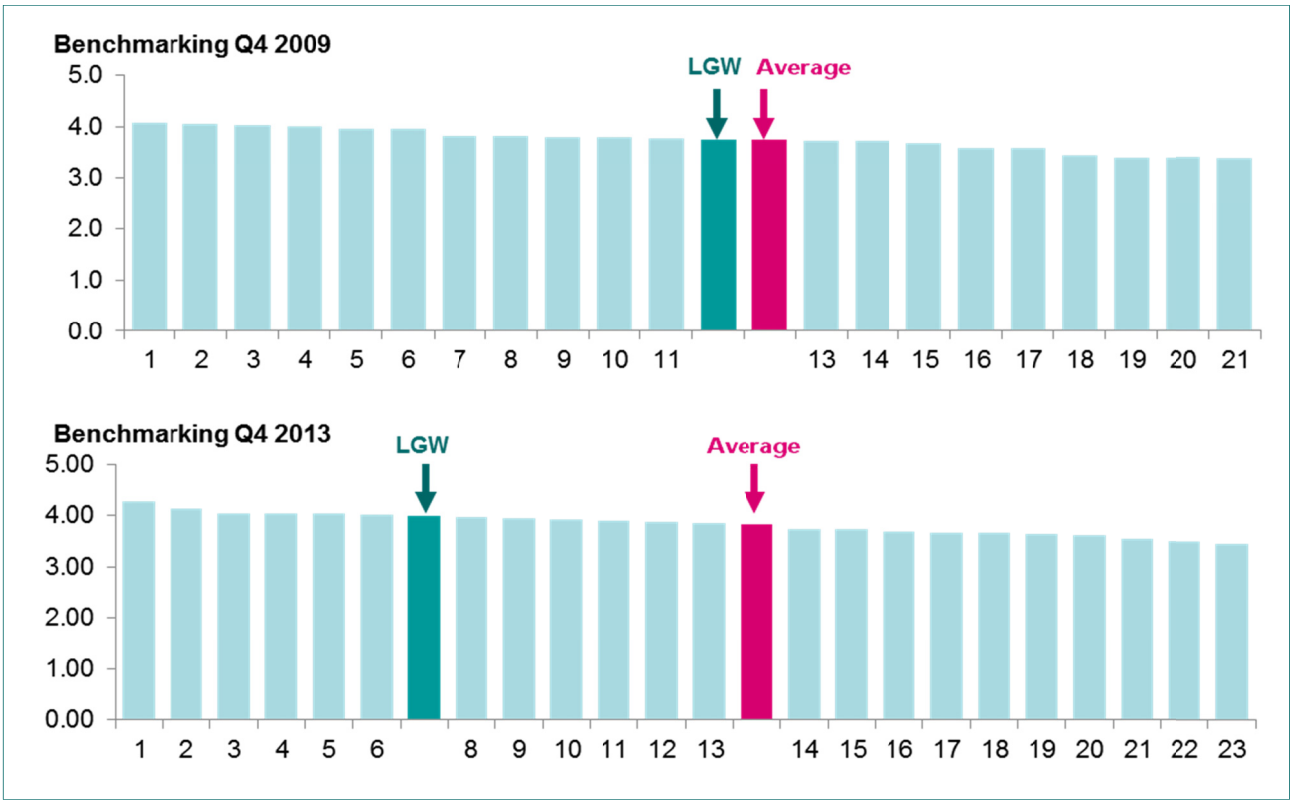
FIGURE 14: GATWICK SERVICE QUALITY MONITOR



Gatwick carries out its own Quality Service Monitor (QSM). Satisfaction scores have risen to 95% of respondents departing from the airport rating the service as ‘good’ or ‘excellent’ in 2013 from 90% in 2009.

Gatwick is also measured independently against other world airports via the Airport Service Quality (ASQ). Figure 15 shows Gatwick’s progress from middle ranking to the Upper Quartile since new ownership in 2009.

FIGURE 15: AIRPORT SERVICE QUALITY (ASQ) FOR GATWICK 2009 AND 2014



Our increased focus on service improvement is a fundamental business strategy to promote growth, attract more airlines and change perceptions of Gatwick's position in the market. This new competitive airport environment is forcing other London airports to review their market propositions, improve service quality and provide better value for the travelling public.

Examples of this can be seen in Gatwick's South Terminal Security facility (Figure 16) where in 2011 innovative auto boarding scanners were introduced to improve the experience for departing air passengers. Other airports are now following Gatwick's lead and introducing these facilities. To improve the passenger experience for arriving air passengers, Gatwick has introduced Europe's largest Immigration auto-gate facility (Figure 17) and other airports are yet to follow Gatwick's lead.

FIGURE 16: GATWICK SOUTH TERMINAL AUTOMATED SECURITY FACILITY

FIGURE 17: EUROPE'S LARGEST IMMIGRATION AUTO GATE FACILITY - GATWICK

3.3 Journey Time

Minimising the journey time through the airport is fundamental to providing high quality service and maximising the efficiency of the airport. Figure 18 shows the journey times delivered by the master plan.

The definition of the table content is as follows:

Average travel time to airport:

- The average road and rail journey times to/from the expanded airport, reflecting where passengers currently begin or end their journey in the UK, and allowing for the projected growth in passenger numbers;

Average time from arrival at airport to terminal building:

- The time taken to travel between the primary access mode terminus (e.g. car park or rail station) and the terminal building.

Average departure/arrival time through terminal:

- Departing and arriving passenger journey times through the terminal, between the kerb and the gate.

Average taxiing and holding time:

- Average time taken to taxi between the stand and the runway (averaged for arrivals and departures) including any anticipated departures holding, but excluding push-back time.

Journey times are summarised in the following table, and each segment is described in more detail in sections 3.4 to 3.7.

FIGURE 18: TABLE OF COMPARATIVE JOURNEY TIMES

	Gatwick Two Runways (minutes)	Heathrow Three Runways (minutes)	Difference
Average travel time to airport	61	70	9
Average travel time from arrival at airport to terminal building	7	20	13
Sub-total:	68	90	22
Average departure/arrival time through terminal	38	45	7
Average taxiing and holding time	7	16	9
Total journey time:	113	151	38

Figure 18 above shows that, for each stage of the passenger journey, Gatwick offer's very short travel times and will deliver faster journeys than those experienced at Heathrow.

In addition, Gatwick will enjoy highly efficient and competitive Minimum Connection Times (MCTs) for those who wish to transfer compared with Heathrow, as shown in Figure 19.

FIGURE 19: TABLE OF CURRENT AND FUTURE MINIMUM CONNECTION TIME TARGETS FOR GATWICK

	Gatwick Two Runways (minutes)	Heathrow Three Runways (minutes)	Difference
Transfers			
Within-terminal	30	60	30
Between-terminals	45	115	75

3.4 The journey to and from the airport

Taking account of where passengers using Gatwick currently begin or end their journey in the UK, and allowing for the projected growth in passenger numbers, road and rail journeys to/from the expanded airport will take an average of only 61 minutes. The maximum journey time is very dependent on distance travelled, but generally journeys of the same distance take less time to Gatwick than to Heathrow for a large part of the country, especially when using public transport. For many passengers travelling by rail there will be a journey time reduction as a result of major improvements taking place before 2025. These will bring all of London's main terminus railway stations, including Paddington, within a maximum of 50 minutes from Gatwick including average waiting time for a train, and all except Paddington within 45 minutes.

For Heathrow, even with Crossrail, the maximum time to reach all of these key interchanges will be 56 minutes, with four stations taking at least 50 minutes to reach. A much higher percentage of rail passengers are able to access Gatwick directly and conveniently by rail than at Heathrow, and many journey times to Gatwick from beyond London are also shorter than to Heathrow. In contrast therefore, the equivalent average journey for passengers travelling to or from a three runway Heathrow will be on average 70 minutes and for some journeys considerably more.

The Gatwick Gateway will be connected directly to the New Terminal and North Terminal by automated people mover (APM). Depending on the mode of access, the total travel time from Gatwick Gateway and/or car parks to any terminal will be 7 minutes.

By contrast the geographical spread of an expanded Heathrow will result in an equivalent average travel time of 20 minutes with some connections of up to 25 minutes, reflecting the location of the central interchange remote from terminals, numerous rail stations with longer walking distances and the dispersed public car park locations around the perimeter of the airport.

Consolidating long stay car parks close to the M23, to the east of the airport, will reduce access times for those that do drive to Gatwick. Passengers using the long stay car parks will access their terminals by a frequent bus service, which will be on dedicated airport roads. These bus transfers will take on average only 3-4 minutes due to the compact nature of the airport and the frequency and speed of journeys. Passengers will still be able to access each terminal forecourt offering fast and direct access for local bus, airport taxi, charter coaches and other registered vehicles.

Orientation from road or rail will be simple, with one main motorway junction and a single rail station providing access to all terminal facilities. There will be no confusion or ambiguity about which rail station, or road junction, serves which terminal, unlike the challenge facing current and future Heathrow users. For example, Heathrow Express users currently have to decide whether to alight at Central to access T2, change trains for T4 or continue to T5 station. Those travelling to the airport via the M25 need to select the correct one of three junctions signposted to Heathrow but accessing different terminals and car parking areas.

3.5 The journey to and through the terminal

Figures 10 and 11 in section 3.1 show our current targets for journey times through the Gatwick terminals and the targets that have been set for the New Terminal. Full use of new and emerging technologies will ensure passenger and baggage processes are quick and non-intrusive. Remote check-in, self-service bag-drop, 'walk-though' security screening, automated boarding gates and other process improvements will ensure queuing is avoided almost entirely. We have set a new target that will allow departing passengers to reach the departures gate within 30 minutes.

These journey time improvements are made possible by designing out queues, minimising walking distances and providing travel assistance where required, e.g. by moving walkways and an automated people mover. For those passengers who choose to spend more time at the airport, facilities will be provided for entertainment, working, eating and shopping, with family zones and quiet spaces for those who simply want to relax.

An equally quick and easy journey will be offered to arriving passengers. Even for those with bags, the kerbside will normally be reached within 45 minutes of leaving the aircraft, assisted by efficient baggage delivery processes and auto-gate technology at immigration.

These journey times cannot be matched at Heathrow which has a much more dispersed layout, with satellite piers located further from the terminals and buildings with multiple floor levels. We estimate that journey times there will typically be 10 minutes longer. Gatwick's focus on innovation and investment in service improvements will mean we continue to lead the way in minimising queuing and process times.

Gatwick is committed to enhancing accessibility for all, addressing the needs of those with differing levels of mobility and ensuring that all passengers enjoy a high quality experience. The master plan reflects this through step-free access both to, and within, the terminal building and within the wider infrastructure. Signposting and provision for the visually or hearing impaired will be integrated into the terminal architecture and we will have assistance points within easy access of all passengers.

3.6 Minimum Connect Times (MCT)

Gatwick's master plan is designed to deliver our strategy to transform the service offered to transferring passengers, a key component being highly competitive connecting times between flights.

In 2013 Gatwick launched the 'Gatwick Connect' product, designed to improve the journey for those 'self-connecting' at the airport. Through the use of existing and new technologies, future improvements to Gatwick Connect will remove the need for self-connecting transfer passengers to reclaim their bags at Gatwick. This will allow these passengers to remain airside, simplifying and speeding up their journey.

The application of this new process, the compact nature of Gatwick and the well-connected terminals will result in a class-leading minimum connection time of 45 minutes between all terminals and 30 minutes for intra terminal transfers. In comparison inter-terminal MCTs at Heathrow today are in the range of 90 minutes to 105 minutes but these could increase to around 115 minutes for transfers to and from the new northern apron given its remoteness, especially from Terminal 4. Intra terminal MCTs at Heathrow are around 60 minutes.

In the future, connecting passengers at Gatwick will have more freedom to choose the airline and route options that best meet their personal needs. Information technology and process improvements will then allow connecting passengers and their bags to be easily identified on arrival. Those on a minimum time connection will be given priority treatment to take them directly to the departures gate by airside transfer vehicle.

In most cases, flights with the highest transfer volumes will be co-located in the same terminal allowing even shorter times to be offered to those who need them. Each terminal will have its own transfer facility for bags and passengers, reducing journey distances and times to a minimum.

3.7 On-board the aircraft at the airport

It is equally important to provide a fast, reliable and efficient operation on the airfield to avoid delaying aircraft and passengers on the ground. Gatwick's master plan has been designed to minimise taxiing times and runway delays, improving both the passenger experience and reducing fuel burn with benefits to the airlines and the environment.

Gatwick will achieve this by locating the new apron between the two runways, offering exceptionally short taxiing distances. However this is not at the cost of congestion. Dedicated apron taxi-lanes keep the 'push-back' operation separate from the through-taxiways. This is in contrast to Heathrow where the majority of taxiways linking the runways will frequently be blocked by aircraft pushing-back from the adjacent stands.

When setting their schedules the airlines will take account of not just the average taxiing times but the maximum that might be experienced. The maximum taxiway and holding times will be 15 minutes for a two-runway Gatwick, compared with 45 minutes for a three runway Heathrow. The equivalent average times will be 7 minutes and 16 minutes.

Overall, what this analysis shows is that passengers will on average save around 38 minutes for each one-way journey they make in a 2+2 solution versus a 3+1. For a return trip this equates with a time of some 76 minutes and would drive a significant economic benefit for passengers.

3.8 Quality of Facilities

Major upgrades along the whole of the passenger journey are planned for Gatwick both in the new and existing terminals and at London's mainline rail stations, with new trains being introduced and the construction and operation of the Gatwick Gateway transport interchange.

The New Terminal and the Gatwick Gateway in particular will provide an opportunity to create facilities of high architectural merit, suitable as a premier gateway to London and the UK, as well as being a well-considered statement of efficiency and good design. In short, a future journey through Gatwick will be very different from today.

3.9 Innovation

Gatwick prides itself on using innovation to improve the passenger experience and provide new and better services to airport users. These result from our research into passengers' expectations and requirements and our analysis of how process changes and the application of new technologies can deliver against these. Our new state-of-the-art security channels and our work with airlines on exploring new approaches to bag-drop and shorter aircraft turnaround times are good examples of how we take the lead on airport innovation.

This approach will continue with the two-runway airport. Our process for class-leading minimum connection times demonstrates our commitment to delivering new standards of service though the application of new technologies. Further information on how we see the passengers' experience of air travel changing in the future, through the use of new technologies, is provided in the appendix 'How Technology will drive Transformation of the Aviation Industry'.

4. Efficient

Objective: To ensure individual airport and airport system efficiency

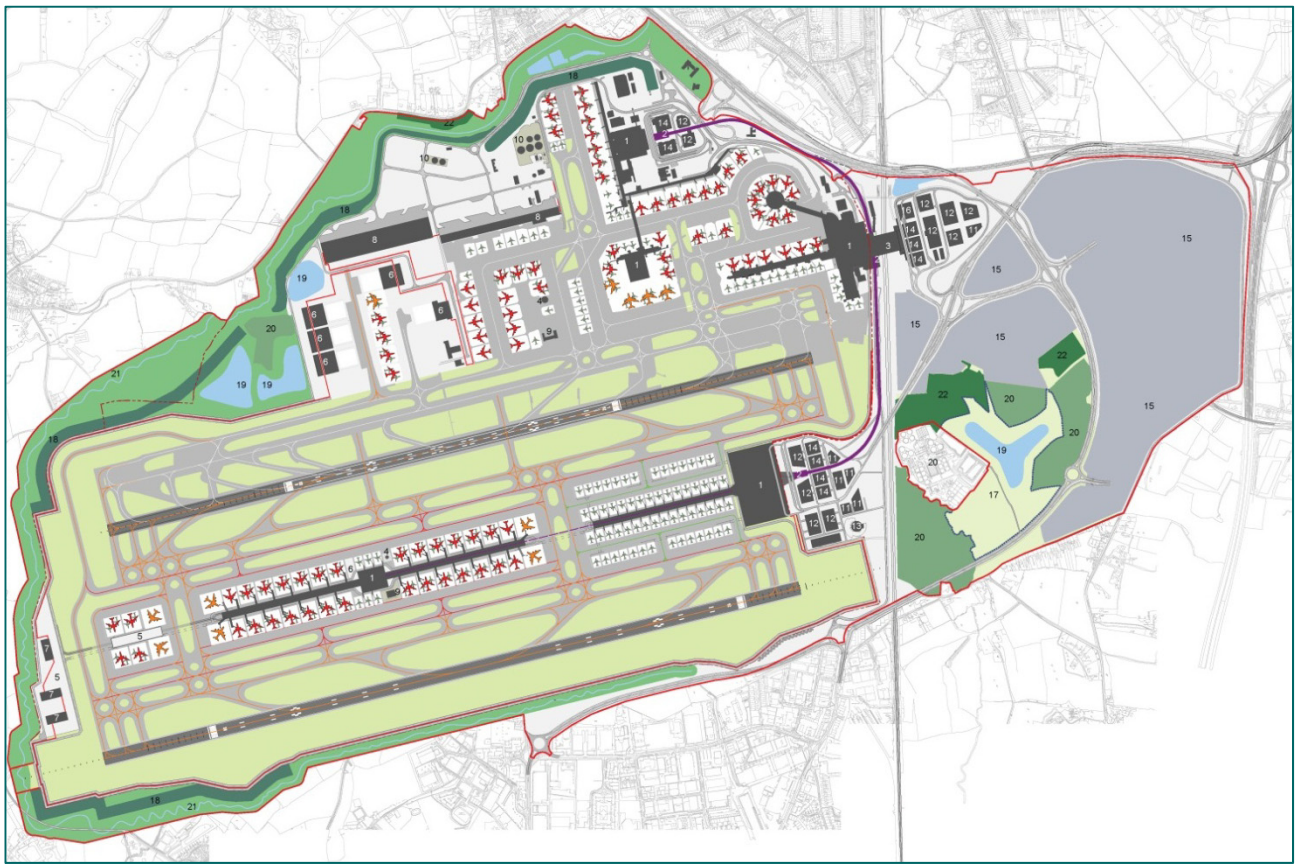
Gatwick today has the ability to operate efficiently at all times of the day and for different airlines models, and this is reflected in competitive costs for passengers and attractiveness for airlines to grow services at the airport. Key features in our master plan are:

- a relatively simple and low-risk development with much lower capital costs than Heathrow;
- short taxiing times and no delays, to reduce turnaround times and fuel burn;
- facilities that lend themselves to efficient crew utilisation and rostering;
- facilities tailored to different types of airline business models, that allow airlines to differentiate themselves from each other;
- airport facilities designed to deliver a high level of utilisation;
- easily accessible support activities such as aircraft servicing, cargo and car parking.

4.1 Airfield

Our efficient airfield design is a simple but flexible arrangement of taxiways and taxi lanes serving the runways and aprons. It has a main circulation system comprising dual-parallel taxiways with separate 'push-back' taxi lanes, ensuring the main flow of aircraft will be uninterrupted. This allows the new aprons to be positioned close to the runways resulting in short taxi times and uncongested flows. The average free flow travel time from leaving stand to start of roll on the runway will be 7 minutes. In 2050, with up to 98 scheduled flights in the peak hour, delays will be well below the industry standard of 10 minute average in the peak hour.

FIGURE 20: 2050 MASTER PLAN AIRFIELD LAYOUT



Source: Operational Efficiency Masterplan Appendix Figure 4.1_1

The method of runway operation keeps taxiing distances low and predictable. Aircraft will land on the runway closest to their apron and, although the departure runway will depend on the destination, the proximity of the runways to the aprons will keep taxiing times short. At Heathrow the proposed complex method of runway alternation, necessary to mitigate air noise impacts, will result in longer and highly unpredictable travel times.

It is also notable that the current taxiways between the runways at Heathrow have to accommodate flights handling around 70mppa. With a third runway these existing taxiways will handle flights with well in excess of 100mppa. This will result in more taxiing conflicts and delays on the ground.

With both of Gatwick's runways operating in mixed mode, the flexibility for adjusting the operation to deal with peaks in demand or disruption events such as bad weather will be maximised. In contrast, with two of the proposed three runways at Heathrow operating in segregated mode, the runway systems will have less flexibility to deal with short term peaks and fluctuations in demand.

Holding delays will be minimal at Gatwick with the benefit of redesigned airspace, flexible high-capacity runways and new processes such as A-CDM which will enable controllers to optimise the ground movement control of aircraft. We believe that, at Heathrow, delays of several minutes could still be a feature of the operation owing to:

- The longer and less predictable nature of the taxiing distances making the ground movement controller's job much more challenging;
- The need to maintain a 'bank' of queuing aircraft at the holding point for the departures-only runway to ensure that the optimum departures sequence needed to achieve the runway movement rate can be achieved.

Similarly Heathrow's 'arrivals-only' runway, with its limited flexibility for accommodating peaks in departure demand, is likely to result in a higher level of arrivals delay than at Gatwick with its two mixed mode runways.

The versatile MARS and multi-use aircraft stand arrangement allows for different combinations of narrow body and wide body aircraft to be accommodated within the same apron, which means that different parking demands can be accommodated through the day. In 2050 a stand utilisation of 2,500 ATMs/stand is anticipated. This means that our piers and satellites do not have to be larger than necessary and that the gates most convenient for passengers can be the ones most intensively used.

The master plan has been designed to enable airside operational vehicles, e.g. freight and baggage vehicles, to move quickly and easily around the airfield. Wide airside roads with underpasses beneath taxiways will serve the new midfield apron and a high speed road network will connect this with the existing northern apron and the cargo, maintenance and ancillary support facilities.

4.2 Terminal Operations

Each of the three terminals will be designed to accommodate a range of airline and airline business models, and the size of the terminal facilities has been developed based on both passenger and operational needs for a busy-day traffic forecast planning schedule.

This means that the peak flows of long haul and short haul traffic, which occur at different times of the day, can be accommodated and allow the terminals to be fully utilised for extended parts of the day. The result is that the New Terminal will have a floor space requirement per million annual passengers of approximately 4,600m^2, which is around half the equivalent space requirement for Heathrow's Terminal 5.

The proximity of the three terminals to each other, with the excellent landside and airside connections, will result in a high level of operational efficiency for airport operators, airlines and services providers. The short distances between and within terminals mean less time will be taken for staff and equipment movements, ensuring high levels of productivity are achievable. The same is true for the airfield. Operational functions will be consolidated into locations that can readily serve the adjacent apron areas rather than being fragmented and separated by large distances. For example, the travel distance for ground service vehicles between the most distant part of the midfield apron to the opposite end of the north apron will be approximately 5,600m. This compares to 7,300m for the Heathrow proposals.

Gatwick Gateway's transport interchange facilities and the long term and staff car parking located in the eastern campus will not only provide efficient movement for passengers but will ensure time savings for staff travelling via frequent short shuttle services. Facilities will be well utilised and not suffer from the inefficiencies of multiple facilities separated by large distances.

5. Flexible

Objective: To build flexibility into scheme's design

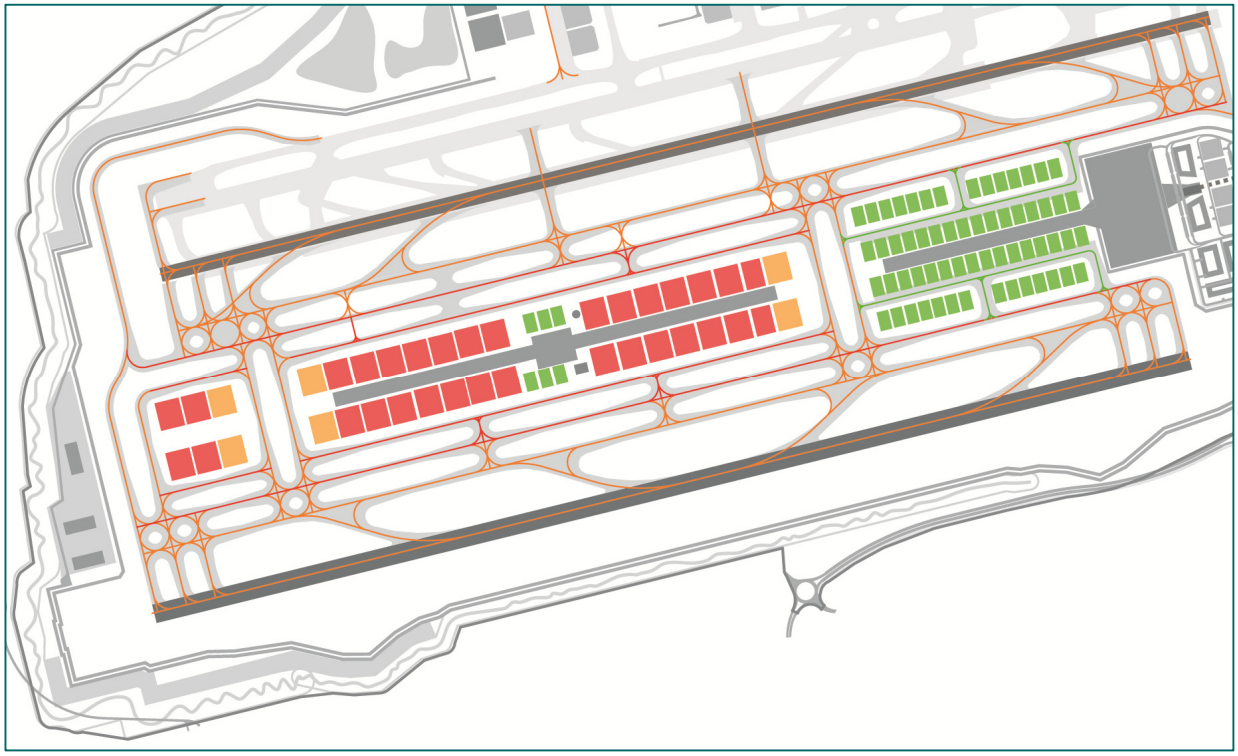
We have developed our master plan to ensure it will be fit-for-purpose in 20-30 years. To achieve this, we have ensured that the overall design allows for future emerging and changing requirements.

Our runway system is a good example of this. To maximise the flexibility of a two runway system it has been designed for fully independent mixed mode operations, with ILS CAT III equipment and take-off distances of 3,400m. Both runways and supporting taxiways will accommodate Code F aircraft, the largest aircraft likely to operate in the foreseeable future.

Our midfield apron has been designed to allow for a range of apron, stand and pier/satellite arrangements that can be developed incrementally at a pace tailored to match the rate of growth that develops over time, and in a form that matches the type of growth as the market evolves. This will allow different mixes of aircraft and airline models to be accommodated.

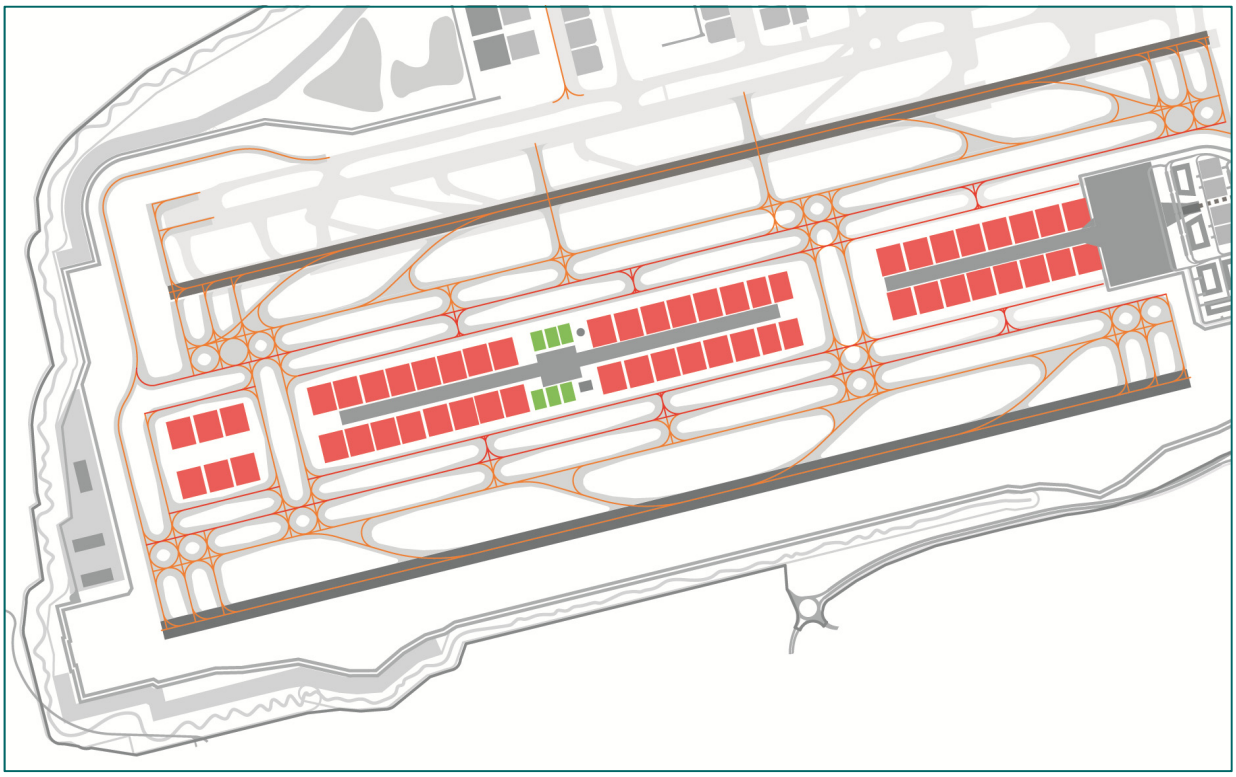
The figures below illustrate how the airfield can be developed for different mixes of wide and narrow body aircraft where red indicates Code E (including MARS), green indicates Code C and orange indicates Code F. The base apron configuration used in the 2050 master plan is shown first in Figure 21. Figures 22 to 24 show possible variants to this.

FIGURE 21: BASE PLAN FOR MIDFIELD APRON



The pier next to the terminal is serviced by a mixture of Code C contact and remote stands (green). The remote pier is served by mix of Code E MARS (red), Code F (orange) and Code C stands.

FIGURE 22: MAXIMUM E MARS CONFIGURATION

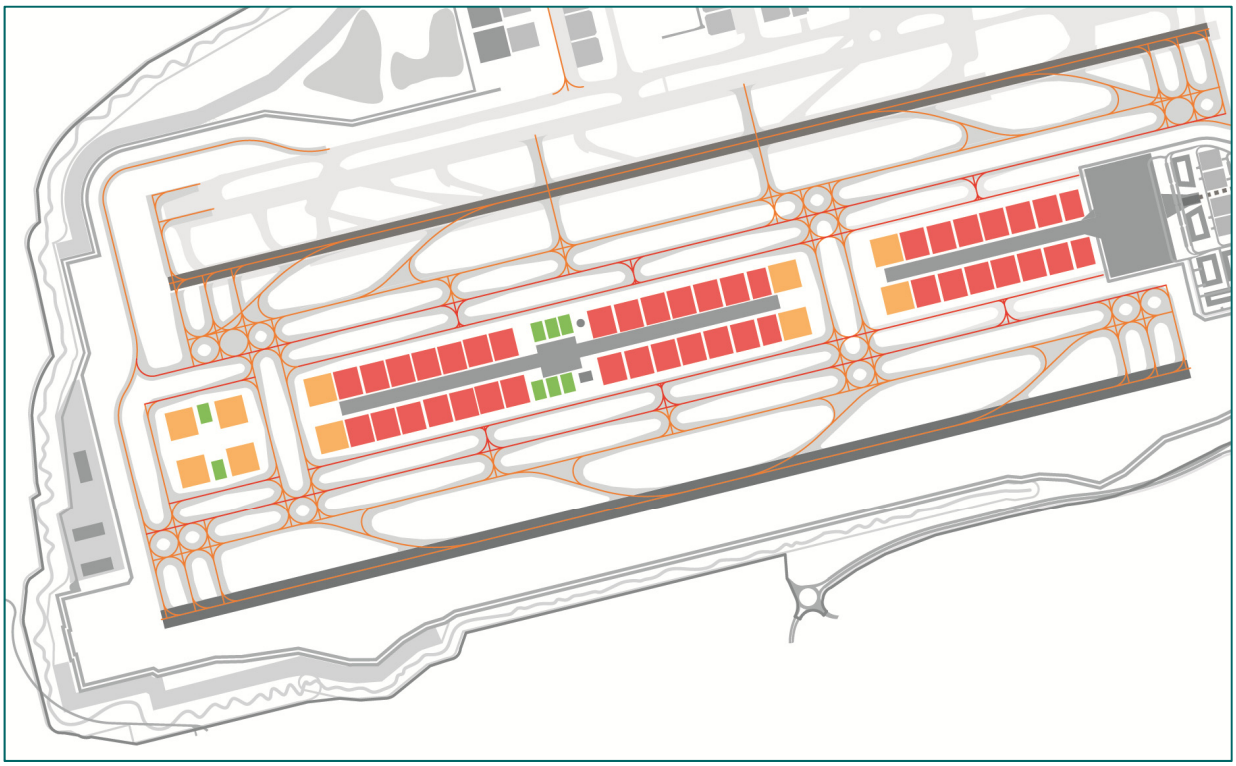


The E MARS configuration layout replaces the four rows of Code C stands (green) next to the terminal with 12 Code E MARS and 4 Code E stands (red).

FIGURE 23: HIGH CODE C CONFIGURATION

The High Code C layout replaces 12 Code E MARS and 4 Code E stands on the satellite with Code C stands (green). Near the terminal the Code C stands have been replaced by 6 Code E MARS and 2 Code E stands (red).

FIGURE 24: HIGH CODE C CONFIGURATION



The Code F configuration provides up to 10 Code F stands (orange). These would be perpendicular to the other stands so they can be pushed back onto the adjacent Code F taxiways.

The new runway and midfield apron is located within the safeguarded area, on land which is predominantly agricultural, which means that there are few existing constraints. This allows the midfield apron to be designed from the outset to be flexible and adaptable. This freedom is in marked contrast to the situation at Heathrow and the constrained site there for the proposed Terminal 6 and the third runway which, for example, requires construction over the realigned M25. Our strategy is to focus future development mainly between the runways, with little significant further development of the northern apron, except for the expansion of cargo and aircraft maintenance functions.

The New Terminal is designed as a mixed airline facility, with a large rectangular three level floor plate. A 'loose fit' approach to the design places structural columns, elevators and escalators and building service systems on a widely spaced regular grid within a modular building form. This allows expansion in increments dictated by demand, and internal fit-out which can be readily adapted without major structural modifications. The interior can thus be tailored to the demands of different airline models, with spaces created for facilities such as airline lounges, all within the same flexible building envelope.

With the New Terminal, and with regular retrofit updates of the existing two terminals, the overall airport will be maintained with contemporary technology. The increasing use of common user platforms, data monitoring, digital communications and predictive control systems will ensure the airport facilities can respond to the changing demands made on them for example by changing airline models.

6. Safe and secure

Objective: To meet present industry safety and security systems

The Gatwick master plan has been developed to provide the highest levels of safety and security for all users. It is compliant with current safety and security requirements and follows industry best practice throughout. It has been configured in accordance with relevant standards and design criteria published by the International Civil Aviation Organisation (ICAO) and UK Civil Aviation Authority (CAA), with reference also made to the European Aviation Safety Agency (EASA) requirements as appropriate for issues such as taxiway separations. There are no significant infringements of the safeguarding surfaces defined by these organisations, e.g. 'procedures for air navigation services – aircraft operations' (PANS-OPS) and obstacle limitation surfaces (OLS). We have prepared a compliance audit comparing our master plan with the requirements of the relevant codes and standards, which is included in our Operational Efficiency – Master Plan appendix.

Terminals are sized to accommodate the optimum levels of passenger, staff and baggage screening, fire safety and security systems using known technologies and with space safeguarded for new developments. Access to each terminal will be from ground level or at elevated levels and will provide safe and easily controlled entry and egress from the buildings and to rail services. Access from below ground and tunnelled spaces has been avoided as this creates complexities for personal security and comfort as well as escape and smoke control.

On the airfield, a new fire station is placed centrally in the midfield, which will provide rapid access to all parts of the airfield. Direct road access from the M23 will allow easy access to all airport facilities by the emergency services.

Third party safety is enhanced by the fact that approaches to both runways to the east and west will be over relatively unpopulated areas. The 10^{-4} public safety zone contours are within the airport boundary and the 10^{-5} contours do not trigger a property purchase requirement. Beyond the PSZ areas, the flight paths taken to and from Gatwick will generally avoid flying over central London whereas the 3+1 solution would significantly increase flights over the dense population areas of the Capital.

The overall airport site is compact and will be easy to secure. All public access will be from the east with the spur road readily controlled and closed if circumstances dictate. The perimeter to the south, west and north will be protected and monitored, with the river diversion and noise bunds providing a buffer zone for additional security. The A23 will be diverted around the eastern boundary of the airport meaning that, in contrast to Heathrow, there will be no public roads passing beneath airport facilities.

7. Future proof

Objective: To maintain and where possible enhance current safety performance with a view to future changes and potential improvements in standards

Over the time period considered in our master plan it is inevitable that changes and enhancements will be made to the required safety performance and standards that will need to be met. Some are known and have been incorporated into our plans, such as the Standard 3 HBS baggage screening requirements to be implemented in the UK by 2018. Others are not known and will require airports to retrofit infrastructure and procedures to existing systems.

In developing our two-runway master plan, four concepts have been at the heart of our thinking:

- providing facilities that reflect the range of different airline operating models that exist now;
- providing solutions that are highly efficient in their operation for airlines and passengers alike;
- capturing the benefits of innovation in passenger processing and airline operations;
- leaving as much flexibility as possible to allow us to capture and incorporate new thinking as it emerges.

We have developed the space planning and spatial layouts to provide the flexibility to enable this to be done readily. In addition, there are some inherent features of our proposals that will allow the master plan to be easily adapted to maintain industry leading safety performance.

- We have developed proposals for the construction of end around taxiways (EATs) at each end of the existing runway to allow movements between the northern apron and the new runway without runway crossings should these be needed;
- The airfield is compact and more easily covered by systems such as ground radar and surveillance than the R3 Heathrow plans;
- Access to the airport is from the east, providing an easily secured airfield perimeter to the north, south and west which is remote from public activity or other major infrastructure. We avoid the complexities likely in the Heathrow proposal, where major upgrades of airfield infrastructure interface with the M25 and vice versa;
- Road and rail access to the airport and APM connections between terminals will all be above ground. These are inherently safer and easier to modify and upgrade than tunnelled systems;
- The Gatwick Gateway interchange will provide a single, spacious and modern entry point to the national railway network and other transport networks; it will be capable of upgrades and reconfiguration to address future requirements. The below ground stations at Heathrow will be more challenging to upgrade if new safety standards require this;
- Road access for passenger, staff, service vehicles and cargo vehicles are segregated from other road uses and will be easily controlled if necessary via the motorway spur road;
- Each terminal has been developed with generous forecourt areas with grade level drop-off road systems which are relatively unconstrained by other infrastructure. These can be modified easily should new regulations require. Constrained elevated road systems such as at Heathrow will prove significantly more problematic and expensive to change.

8. Resilient

Objective: To ensure individual airport and airport system resilience

The Gatwick master plan provides the opportunity to create one of the world's leading airport facilities, which will enhance the resilience of the London airport system as a whole. The new and redeveloped facilities will provide flexible, secure spaces and accommodate new and emerging technologies. This, in combination with the necessary management and operational procedures, will ensure resilient and safe operations of the airport appropriate for a major nationally important transport system.

A future London airport system comprising a 2+2 solution alongside Stansted, Luton and City airports will have a significantly higher level of inherent resilience than if future increased capacity is focused in a three runway Heathrow. This is because disruption at Heathrow in 3+1, with 46% share of the traffic based on our forecasts, would deliver a greater shock to the system than in a more balanced airports system (the 2+2 solution) where no airport has more than 35% of the traffic.

The Gatwick master plan has a number of key advantages in resilience terms. A second runway, a third terminal and a midfield apron area will all introduce additional facilities which improve the system's ability to absorb shocks. The growth of the airport will of course increase complexity to some degree, but the master plan's overall simplicity with rapid and efficient connectivity between terminals will help when developing appropriate management and operational procedures to mitigate this.

8.1 Risk Evaluation

When considering specific headline risks identified by the Commission in the Appraisal Framework, the Gatwick master plan performs exceptionally well:

- Flooding – Necessary flood mitigation measures are included which will significantly reduce the risks of a recurrence of the flooding events experienced in December 2013. The key benefits will be derived by the rerouting of the River Mole, enhancements to upstream catchment systems and designing the surface water drainage to accommodate 100 year + 20% events;
- Power outages – The upgrade of the power grid will provide an additional High Voltage (HV) feed which will allow for improved geographical resilience as well as improved switching capability. Enhancements can ensure the power outage represents a minimal level of risk;
- Adequacy of fuel supplies – The current fuel supply network which can deliver 250% of Gatwick's current demand, provides a high level of resilience until 2040. The resultant level of risk from fuel supply is negligible and planned increases to both storage and pipeline capacity beyond 2040 can maintain the risk at this level;
- Terrorist attacks – These risks are complex to assess given the very low likelihood of occurrence and that mitigation is not solely the responsibility of the airport operator, but is dependent upon the support received from the police and other agencies. However, the master plan provides the opportunity to enhance resilience levels and drive down the residual risks through:
  - The inclusion of Secured by 'Design and Crime Prevention Through Environmental Design' principles across the built environment;

  - The inclusion of specific measures to counter agreed 'Design Basis Threats' in the protection of members of the public along with local and national infrastructure (some of which will form part of the Critical National Infrastructure (CNI));
  - The enhanced surface routes will enable faster response times to incidents in remote locations around the airport;
  - The avoidance of design features such as public road systems tunnelled below airfield or terminal infrastructure which would become a particular point of vulnerability;
- Overall the inherent terrorist risks are considered no greater than might occur at any equivalent international airport;
- Extreme weather events – The current risk is assessed as being minimal for single events and moderate for multiple ones, as occurred in December 2013. As part of developing a second runway we will adapt our operational procedure to ensure that risks are further reduced to be negligible;
- Adaptability to climate change – The master plan will mitigate the physical vulnerabilities associated with climate change whilst management system changes will mitigate the organisational ones. Overall, the risks associated with climate change to the future airport operations are minimal.

Gatwick is already developing the infrastructure and operational procedures to improve resilience through 'a learning organisation approach' to ensure Gatwick becomes a world leading airport in resilience terms. This has been demonstrated by its strong performance during recent exceptionally cold and snowy winters.

9. Economic and spatial strategy

Objective: To maximize the benefits in line with relevant long term strategies for economic and spatial development

There are three long-term economic and spatial development strategies germane to the expansion of Gatwick:

1. The London Plan;
2. The Gatwick Diamond strategic statement; and
3. The Coast-to-Capital Local Enterprise Partnership strategy for growth.

Expansion of Gatwick will support and help make each of these strategies become a reality and aid economic growth across London and the South East.

Despite being located outside Greater London, Gatwick Airport has long been recognised as an important contributor to the London economy. Consequently, the development of Gatwick is very relevant to the London Plan: the spatial development strategy for London.

The London Plan looks to rebalance spatially the capital's economy. The expansion of Gatwick Airport, through the provision of a second runway, can contribute to this rebalancing of London's economy, providing linkages and connectivity to areas that have been earmarked for regeneration or have capacity for growth.

Surface access linkages are an important means of converting the benefits of connectivity by air into actual economic flows to and from London with the associated benefits of employment and wealth. The economic and physical flows to key Opportunity and Regeneration Areas will be driven by the fast, frequent and reliable transport thus maximising regeneration benefits and catalytic effects e.g. increased employment, trade and foreign direct investment. Areas such as Croydon, Clapham Junction, London Bridge and Victoria are all within a 30 minute train journey, and key inner London areas earmarked for growth such as Victoria, Vauxhall, Nine Elms and Battersea, London Bridge & Bankside will all gain benefit from proximity to an expanded Gatwick. There will be a pull of economic geography South of the River Thames, rebalancing the spatial direction of the City in a way consistent with the London Plan.

Further north and centrally, within a 40 minute rail journey from Gatwick are key Central London nodes such as Tottenham Court Road, Farringdon, Kings Cross, Liverpool Street and Waterloo. The excellent North South rail services will help to support a revival of the North and North East London economies and support growth in the London - Stansted - Cambridge corridor, as highlighted in the London Plan. This growth has the potential to redress some of the historic and emerging imbalances in the London and South East economy.

Closer in, improved transport links to Gatwick will help bring forward growth in Tottenham and Finsbury Park, which arguably are at a tipping point to receive high levels of investment with their connections to many parts of the capital and the airports of both Stansted and Gatwick.

To the south, places like Croydon, Sutton and the Wandle Valley will see growth pulled south of the river, allowing for their development as business destinations to be realised. These parts of south London all have ambitious plans to deliver on jobs and growth and to see deprivation decrease. The expansion of Gatwick will accelerate their development as destinations and a source of workforce for the expanded airport. Gatwick's employment strategy will help ensure that the benefits of an expanded airport are spread directly to those areas.

At a more local level, with Gatwick Airport at its core, the informal boundary of the 'Gatwick Diamond' stretches from the southern edge of London to the northern boundaries of Brighton and Hove. Proximity to Gatwick airport, good surface access and connectivity has helped the Diamond to grow as a national and international business location. Economic development, stimulated by the good transport links, will also be felt by towns along the South Coast: jobs created, directly and indirectly, by Gatwick during the build and operate phases will provide major opportunities for many of these communities.

Growth at Gatwick Airport will deliver benefits for the local catchment area and boost the businesses within the Gatwick Diamond's growth. This growth will assist in delivering the visions in key economic development and planning documentation such as the Gatwick Diamond Strategic Statement and the Coast to Capital LEP Strategy for Growth. These documents include objectives such as development of a flourishing and competitive knowledge based economy with high levels of entrepreneurship, providing sustainable employment and operating in an environment which enables the Diamond to be recognised, nationally and internationally, as one of the top locations for businesses. Gatwick's expansion as a major international gateway will support these objectives.

10. Local economy

Objective: To produce positive outcomes for local communities and the local economy from any surface access that may be required to support the proposals

Gatwick has developed a comprehensive Airport Surface Access Strategy (ASAS) setting out Gatwick's visions to:

- Achieve the highest use of sustainable modes of transport: the aim is to achieve a 60% public transport mode share for customers and a 50% mode share for staff;
- Accommodate the needs of other transport users: in 2040 and 2050 there will enough road and rail capacity to serve the airport, background users and the economic growth generated;
- Provide access from the widest possible catchment area: 3.2m people live within 30 minutes and 14.8m within an hour – better than any other airport.

Supporting positive outcomes for local communities and the local economy is a key part of this vision.

Local connectivity will be supported by Committed and Planned road and rail schemes by Government, as well as Gatwick's commitment to fund specific road and public transport initiatives.

The local community uses Gatwick to connect their journeys by all modes of transport so as to access jobs, services and leisure activities across the South East. These plans will enhance this benefit further and help drive direct, indirect and induced economic growth, improve quality of life and support sustainable travel.

Gatwick rail station is already used by 1m local passengers a year and the new Gatwick Gateway transport interchange will deliver a whole range of new travel options for people across the region.

Local bus services have proven popular with staff, commuters and the community alike and the longer hours, better information and more frequent services are already much appreciated. The further extension of the Fastway programme of high quality bus services by Gatwick will take this further still, roughly doubling the 400 bus services of today. The local community will therefore gain from improved access, from more services that operate for longer hours, more frequently and go to more destinations.

The realignment of the A23 will deliver a dedicated cycle-way. This and other road changes that are made, will deliver less congestion, improved resilience and a better and more simple road system for local car users. Cycling and walking upgrades will create 9km more and better cycle routes, and will benefit airport users, local commuters and leisure users.

The airport currently operates an Airport-Wide Staff Travel Plan (ATP) which requires the production of an action plan to facilitate and promote sustainable travel to/from work. The ATP will be developed alongside plans for an expanded airport in order to continue the successful initiatives which benefit airport employees.

Supported by the excellent road and rail connections, the expansion of Gatwick will support the local economies by providing both direct and indirect employment opportunities. Within the "Top 20" most deprived areas in London and the South East, there are several which present significant potential for regeneration linked to expansion of Gatwick. These areas combine relatively high levels of deprivation and relative proximity to Gatwick. Of the six areas of greatest need, five (Brighton & Hove,

Eastbourne, Worthing, Greenwich and Rother) are currently within a one hour travel time of Gatwick with three within 45 minutes of the Airport. Brighton and Hove, Eastbourne and Worthing are already part of the Gatwick labour market and would benefit from targeted initiatives to meet the needs of the Airport. Arun, Adur and Croydon are areas which are relatively deprived and could benefit from further Gatwick opportunities.

Around 60% of Gatwick's current workforce lives within the six council areas of the Gatwick Diamond. It is an area that is likely to have even greater significance in the context of a two runway airport. It is expected that the majority of airport related jobs will continue to be in the Gatwick Diamond area, on the airport itself or close to it. By 2050 the proportion of airport related employment in the local area would increase from 3.5% to around 5.5%.

11. Environment and people

Gatwick's location in a relatively unpopulated area, compared to other major airports (and Heathrow in particular) along with the compact site and immediate access to major rail and road systems, means that the environmental impact of the airport overall, and when considered on a per passenger basis, is significantly better than most major airports, and especially Heathrow. Gatwick's master plan builds on this by seeking to reduce additional land take to a level that is as low as practicable. Broadly, this means that those effects which are directly related to land take are also minimised. By concentrating development in the midfield the master plan avoids unnecessary impacts to the north.

We have also identified opportunities to achieve environmental improvements; particularly the removal of the River Mole and Crawter's Brook from culvert which will have significant water quality and ecological benefits. This will also create wider benefits with opportunities to increase biodiversity and create new public footpaths and cycle ways.

11.1 Noise

Objective: To minimise and where possible reduce noise impacts

The noise associated with an additional runway should be a highly material consideration for the Airports Commission. It is not only the marginal additional noise that should be considered however, but also the total noise footprint of a 2+2 versus 3+1 approach. The Airports Commission should also take into account the absolute level of noise impact, how, and to what extent, it can be mitigated and finally, financial compensation. In the end it is the net effects that should be taken into account, but not purely on a numerical basis. Instead the Airports Commission should consider the impact of this issue with regard to the risks it may pose in relation to obtaining political support and also, just as importantly, maintaining political support for an extended period of time through to delivery.

Gatwick's location (and the alignment of the existing runway) with aircraft arrival and departure routes mostly over countryside, means that, unlike Heathrow, Gatwick affects relatively small numbers of people. For example, based on the 57dBA Leq noise metric only 3,200 people around Gatwick are currently affected by aircraft noise. In comparison, at Heathrow, the number is 240,000. Gatwick's current 'exposure' effect is therefore only 2% of Heathrow's.

Heathrow claim that the number of people affected by noise is falling. It is clear, however, that a third runway with an additional 260,000 aircraft landing and taking-off will produce more noise than a two-runway Heathrow without the additional take-offs and landings. The present measures to describe noise nuisance are considered to understate the true impact of noise at Heathrow. Many people are still significantly affected by noise outside the 57 leq contour. If the contour is expanded, the position is even more dramatic. For Gatwick, in 2012 there were only 11,300 people within the 55 Lden contour whereas there were 725,000 within the same contour at Heathrow, over 60 times as many. The fundamental issue is to identify the difference in noise between a three-runway and a two-runway Heathrow as, given the overflying of London, it is clear that many more people will be affected. Gatwick has supplied the relevant information for its expansion, but Heathrow has so far failed to do so.

It is also important to compare the total number of people falling within the relevant noise contours at Gatwick and Heathrow in 2040 and 2050, along with the number of people newly affected by noise, whilst taking account of peoples growing sensitivity to noise. This comparison needs to be done in the context of a 3+1 system compared to a 2+2 system.

As part of the master planning process, we have sought to minimise noise impact of the second runway proposals. The compact and efficient airfield layout, the design and alignment of the A23 diversion and the inclusion of noise bunds, a noise wall and perimeter landscaping corridors support this objective in respect of aircraft air noise, aircraft ground noise and surface access noise.

The alignment of the second runway, whilst closer to Crawley, will, as with the situation today, still enable flight paths to be routed over countryside and rural areas and avoid overflying the more densely populated towns including Crawley, Horley, East Grinstead and Horsham.

Air noise modelling, commissioned from the CAA using the ANCON model, covers the range of noise metrics contained in the Commission's Appraisal Framework and is presented in the Air Noise appendix. This shows, for example, that even with a second runway only 14,100 people in total will live within the 57dBA Leq noise contour in 2040. This number includes 4,300 residents of a future planned, but as yet unbuilt, new neighbourhood to the north east of Crawley.

Whilst overall populations affected by aircraft ground noise for Gatwick's master plan are low, appropriate mitigation will be provided for locations further to the south towards Crawley where impacts will be greater than at present. This includes the provision of noise bunds, a noise wall and landscaping corridors alongside the A23 and river diversions. The proposed layout of the airfield minimises aircraft taxiing distances, meaning more efficient operation of the airfield. The dual taxiway system also offers the flexibility to operate preferential taxiing routes during quieter periods maximising separation distances between aircraft operations and properties to the south. Gatwick will also commit to work with the members of GATCOM to explore the possibility of providing a ground engine testing facility within the master plan.

The planned route of the diverted A23 to the east of the airport will minimise road traffic noise impact on residential properties. But where the route comes closer to residential properties low noise road surfacing and roadside barriers will minimise and reduce road traffic noise.

The properties where ground noise impacts will increase also fall within the area covered by Gatwick's enhanced noise insulation scheme. Our commitment to innovate in tackling noise is exemplified by our intention to implement a Council Tax Scheme whereby every property within the 57Leq air noise contour will receive an annual £1000 (index linked) contribution towards their Council Tax.

11.2 Air Quality

Objective: To improve air quality consistent with EU standards and local planning policy requirements

Air quality conditions in the Gatwick area are good. In contrast, other parts of south east England - including large parts of London - experience annual average concentrations of NO_2 that are in excess of the EU limit value and UK Objective of 40µg/m^3. In the area around Gatwick, there are currently no locations where NO_2 concentrations exceed 40µg/m^3 although there is one Air Quality Management Area (AQMA) nearby (however, current measurements suggest that even here, concentrations are now below 40µg/m^3). Our assessment of the master plan predicts concentrations will remain well below the limit value, as will other regulated pollutants, such as PM_{10} and $PM_{2.5}$.

This is in contrast to the situation at Heathrow where all the local authorities around the airport have declared AQMAs indicating that nitrogen dioxide concentrations are expected to exceed the 40µg/m^3 level. Monitoring along the major transport corridors to the airport also shows that pollutant concentrations are often in excess of 50 µg/m^3 near to major roads.

SD2 Airport Master Plan

Gatwick's master plan inherently minimises exposure of local residents to air pollutants by:

- Achieving high public transport access and congestion-free road access;
- Concentrating future airfield activities in the midfield area which is remote from populated areas, particularly under prevailing wind direction conditions;
- Providing a range of further mitigation measures designed to decrease emissions of air pollutants, both during construction, e.g. through the use of low emission vehicles, and during operation, e.g. encouraging airlines to shut down an engine during taxiing.

Gatwick is also supporting ongoing technological developments and innovation, including industry research into the use of alternative fuels for aircraft.

11.3 Carbon

Objective: To minimise carbon emissions in airport construction and operation

Gatwick has been recording the carbon footprint of the airport since 2008 and during this period has actively taken steps to prioritise emissions reductions. During the period from 2008 to 2012 Green House Gases (GHG) emissions per passenger have reduced by 25% and absolute GHG emissions reduced by 14%.

By 2050, absolute levels of GHG emissions will increase due to increases in aircraft movements. However, GHG emissions per passenger will decrease significantly across all emissions scopes. Central to achieving this are the following master plan characteristics:

- Short and free-flowing taxiing conditions to access the runways with low energy LED runway lighting on the existing runway being deployed for the new runway as well;
- The incorporation of state of the art, highly efficient technologies into the design of infrastructure, terminal and ancillary buildings, allied with smart grid technology. BREEAM (Building Research Establishment Environmental Assessment Matrix) excellent or comparable building standard performance will be achieved;
- A range of renewable and low carbon technologies in our new energy centre, including Energy from Waste (EfW) plant using Gasification, Pyrolysis and/or alternative technologies;
- High sustainable travel mode share for both passengers and staff commuting;
- Low embodied energy choices in construction, where practical alternatives exist and a commitment to low carbon construction, this being a central tenet of our Sustainable Construction Strategy;
- Working with our airlines and operators to accelerate the deployment of hybrid/ electric /bio-fuels vehicles not just for staff use but for wider operations within Gatwick.

11.4 Landscape and heritage

Objective: To minimise impacts on existing landscape character and heritage assets

We have undertaken a Landscape Assessment which indicates that Gatwick's master plan can be developed without unacceptable effects upon landscape or townscape character. The master plan has embedded mitigation to reduce adverse effects and enhance some areas through a carefully defined landscaping strategy. In particular, our plans include enhancement of the southern boundary in a corridor along the river diversion, providing a visual buffer between the airport and north Crawley. A tranquillity assessment indicates that there will be local adverse effects close to the extended centreline of the new runway and under new departure routes; however, this is expected to diminish rapidly with increasing distance from the airport and these flight paths.

The compact nature of our master plan means that effects on the archaeological and built heritage are limited. 19 listed buildings are located within the master plan boundary. The Grade II* listed Beehive building is preserved within the master plan boundary and we are confident that further design work will enable other buildings to be retained.

11.5 Quality of Life

Objective: To maintain and where possible improve the quality of life for local residents and the wider population

Protection and enhancement of the quality of life for local communities has been a guiding principle for the master plan. Expansion has been designed to be largely contained within the current operational footprint of the airport, with the limited land-take required being secured from safeguarded zones to minimise impacts to local communities.

To further minimise the impact of land-take, however limited, a range of mitigation measures have been identified including financial support and compensation mechanisms (detailed under Housing Loss) coupled with an Engagement Charter and ongoing consultation to provide affected residential and commercial property owners with the support they need around relocation

Impact to community facilities has also been carefully minimised with re-provision and support, as appropriate, for ensuring facilities are maintained including re-providing the rugby club and support for the relocation of care homes and nurseries to ensure that the transition is handled sensitively and with minimal disruption.

Gatwick is developing a new ‘Community Asset’ initiative which maximises the benefit which the airport can generate to local communities through providing amenity space for events and reaffirming Gatwick’s approach to being part of its communities and a good neighbour. This augments the work of the Gatwick Community Trust and new Community Foundation.

In addition, enhancement of social amenity has been integrated through innovative features such as the new river corridor and linear park with investment in habitat management, in line with our award winning biodiversity management approach.

Impacts during construction phases will be proactively minimised through the implementation of our Sustainable Construction Strategy, management standards and Code of Construction Practice. The construction and operation of R2 will generate significant new employment opportunities. Gatwick will use targeted partnership working, local procurement and investment in regeneration priority areas, where the stimulus to local economic development and quality of life can be greatest.

Gatwick is creating a Life Long Skills, Development and Employment Programme to engage and up-skill working age sections of the community to position them to capitalise upon employment and career development opportunities.

11.6 Housing Loss

Objective: To manage and reduce the effects of housing loss on local communities

Expansion has long been anticipated at Gatwick, which is reflected in the safeguarding of land to the south of the airport for the eventuality of a second runway. As part of the master planning process, proposals have been developed which not only minimise the land take of the development and associated loss of housing but also respect the safeguarded area.

The land affected by the master plan footprint to the south and east is predominantly countryside between the airport and Crawley and the airport and the M23. It is therefore substantially free of residential development.

The only sections of the master plan which extend slightly beyond the designated safeguarded boundary are the corridors to the south of the proposed airport for the river and A23 road diversions and associated landscaping. Some land, to the east of the railway line that is in the designated safeguarded area has been excluded from the master plan boundary, thus avoiding the loss of some properties that were previously expected to be lost.

The objective to minimise housing loss has been achieved, through the compact and efficient master plan layout. Overall, 163 residential properties will be lost and all except two of these are located within the safeguarded area and therefore benefit from the existing blight schemes that came into effect when the land was originally safeguarded. In the case of the 99% of properties that are within the safeguarded area, the home owners will have been aware that their properties could well be purchased for runway development, thereby minimising the uncertainty and associated anxiety which the development gives rise to.

The master plan provides for local road diversions ensuring that no communities are severed by the development from nearly towns.

Beyond the residential properties affected, some 286 non residential and commercial facilities will be lost including one care home, two places of worship, one charity facility and four pre-schools/nurseries. No hospitals, doctor's surgeries, primary or secondary schools will be within the master plan footprint. The master plan includes land to re-provide, on a like for like basis, the footprint of commercial premises lost. In relation to the other non-residential facilities there are, for the most part, alternative facilities in the local area.

Conclusion

In developing its two-runway master plan, Gatwick starts from its position as the world's most efficient single-runway airport today. Our master plan strategy provides the capacity needed to deliver the government's connectivity targets, delivers excellent levels of passenger service, brings economic benefits to the region and achieves this with minimal impacts on the environment. The Strategic Argument scheme design report provides further details on how the Airport Commission's connectivity objectives are met through this master plan.

The existing airport benefits from a compact, one-runway, two-terminal configuration, with excellent surface access connections. The master plan develops these strengths further by focussing on ease of use, delivering quick journey times and by ensuring a safe and resilient operation.

The Gatwick master plan more than meets the Commission's objectives by:

- Delivering the capacity and connectivity identified in the Commission's assessment of need. Additionally, by opening a new runway as early as 2025, our master plan will address the London system capacity constraints earlier;
- Providing facilities that are suitable for all airline business models, thus better supporting the London airport system to promote the growth of short haul low cost carrier and charter traffic (which is not well served by a 3+1 model) as well as full service long haul traffic;
- Developing compact and efficient airfield systems that allow rapid turnaround of aircraft and, with close proximity and rapid connectivity between terminals, will enhance operational efficiency for all users of the airport;
- Creating an airport layout which has simplicity and clarity and helps users navigate through the three-terminal airport quickly and intuitively. Short door-to-gate distances and minimum level changes will make the journey convenient and simple for all;
- Creating a sustainable master plan that facilitates expansion within limited and mitigated impacts on the surrounding communities;
- Providing a New Terminal, a world-class Gatwick Gateway transport interchange, and upgraded existing airport facilities of high quality which, along with planned new trains and the redevelopment of London stations, will ensure the whole passenger journey is fit for purpose as a national gateway to the UK;
- The advantages provided by Gatwick's existing site and the safeguarded area for the second runway development, through the lack of significant physical onsite constraints and the relatively unpopulated surroundings;
- The minimised effects on neighbouring communities which will be significantly lower than at Heathrow. An extensive range of mitigation and enhancement measures have been developed to not only protect but actively enhance quality of life for our local communities and indeed beyond. This includes enhancing green-space, biodiversity and social amenities, utilising targeted investment and engagement to maximise access and uptake of employment opportunities, and ongoing and expanded investment in community projects;

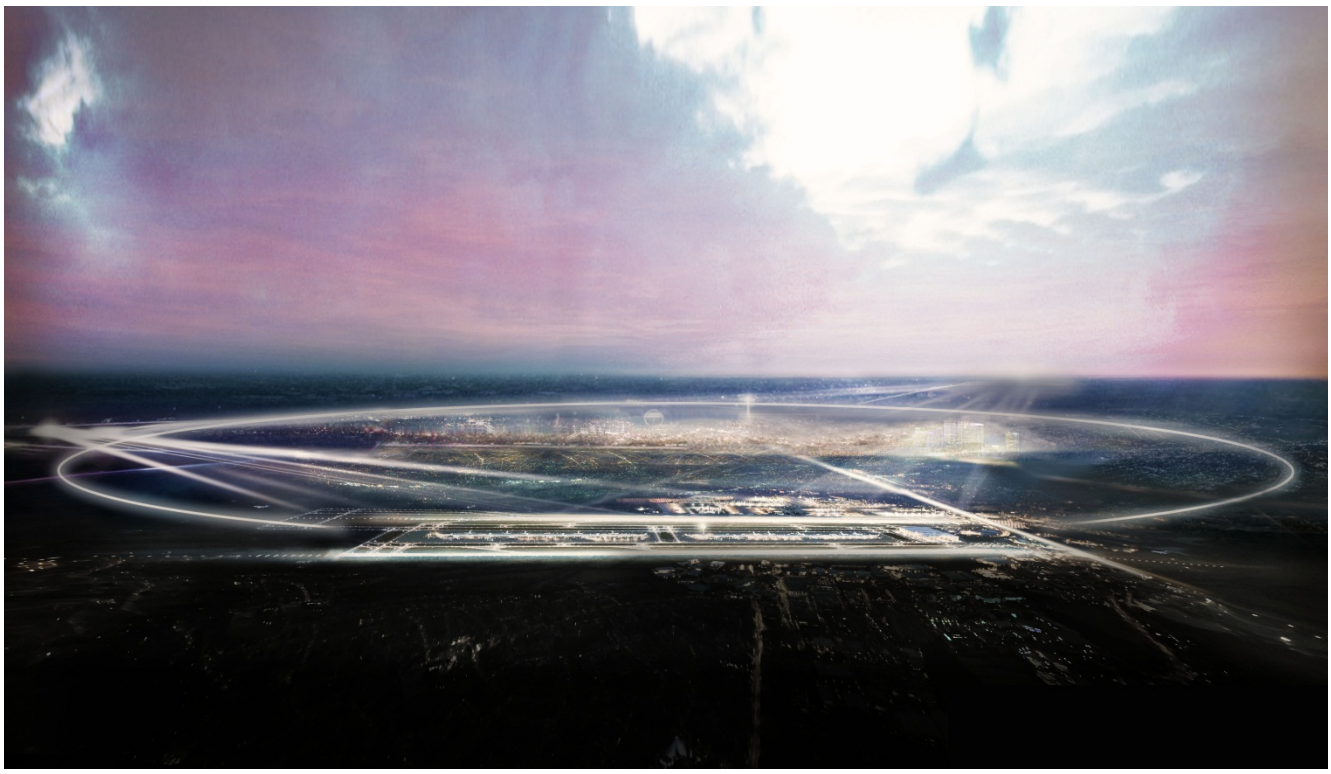
- The expansion of the airfield to the south of the existing runway which will allow the existing facilities to continue to operate with little disruption. This means that construction can be completed earlier, at lower cost and with less impact to local communities;
- The midfield area being planned as a simple modular system that can be developed incrementally to suit the growth and type of demand that develops and can be planned to be flexible and adaptable at the outset.

Since the change of ownership of Gatwick, significant progress has been made improving passenger service, air traffic growth and the quality of the airport facilities. Industry leading sustainability performance is being delivered through our Decade of Change strategies. These improvements are indicative of Gatwick's competitive ambitions and have prompted responses in performance from other UK airports. The implementation of our master plan will provide the opportunity to achieve another significant change that will meet and exceed the Commission's objectives – indeed Gatwick in 2030 will, in effect, be a new airport, providing a world-class international gateway to London and the UK.

The benefits of competition between airports are already being felt by passengers and airlines alike. We believe we have demonstrated in this document how we are able to inject innovative thinking into our master planning. Efficiency and flexibility are, and will remain, hallmarks of the way in which Gatwick will develop while maintaining a safe and secure operation that is resilient. In this way, Gatwick can continue to be a major source of local and regional economic prosperity while limiting the environmental effects to an order of magnitude less than Heathrow.

From an environmental perspective, noise is a key issue. Here, Gatwick starts from a position of strength. Heathrow claim that the number of people affected by noise is falling. It is clear, however, that a third runway with an additional 260,000 aircraft landing and taking-off will produce more noise than a two-runway Heathrow without the additional take-offs and landings. The present measures to describe noise nuisance are considered to understate the true impact of noise at Heathrow. Many people are still significantly affected by noise outside the 57 leq contour. If the contour is expanded, the position is even more dramatic. For Gatwick in 2012 there were only 11,300 people within the 55 Lden contour whereas there were 725,000 within the same contour at Heathrow, over 60 times as many. The fundamental issue is to identify the difference in noise between a three-runway and a two-runway Heathrow as, given the overflying of London, it is clear that many more people will be affected. Gatwick has supplied the relevant information for its expansion, but Heathrow has so far failed to do so.

FIGURE 25: GATWICK AT NIGHT



Source: Farrells