



Road Traffic Implications of a second runway at Gatwick Airport

Prepared by a Senior Highway Engineer

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1. Introduction

1.1 For decades there have been discussions, reviews, commissions and debates about the perceived need for additional airport runway provision in the South East of England. Currently the region is served by 5 airports, Heathrow, Gatwick, Stansted, Luton and City (Docklands) Airport as well as a number of smaller airports at Eastleigh, Bournemouth and Southend.

1.2 Each of these airports have existing connections by road and rail to London and their immediate hinterland. Each is located near to the national motorway network and have rail connections to the central business and shopping districts of London. In the case of Heathrow these rail connections are both over ground and underground, it being the only major airport connected to the London Underground system.

2. Existing adjacent road network to London's airports

- 2.1 In considering the traffic impacts of any additional runway provision in the South East, it is informative to identify the surface access routes to the four major London airports. London City lies close to the centre of the city in the Docklands area so although road access is available the prime mode of access will be by public transport.
- 2.2 Heathrow lies in the western outskirts of London and is adjacent to both the M4 from London to the west and the M25 London Orbital Motorway. Both of these roads in the vicinity of the airport are very heavily trafficked giving rise to major congestion and delays at peak times. In the last 20 years or more the M25 in the vicinity of Heathrow has been widened to 7 lanes in each direction with the collector roads on each side and was the site of the first pilot of variable speed control which has progressed to the present smart motorways rollout. Access to the airport can also be gained from the A30.
- 2.3 Gatwick is adjacent to the M23 London to Brighton motorway which provides a direct connection to the M25 and to Central London via the A23. It also has connections to the A23 locally in the Crawley area, the A24 to Horsham and Worthing; and also to the A264 with access to East Grinstead. From these many more minor roads provide access over a wide area of south east England.
- 2.4 Apart from the motorways and other major roads, access further from the airport is inevitably diffuse as those wishing to take flights use local roads for the beginning as well as perhaps the end of their journeys to and from the airport even if coming by taxi. Some such journeys can include a significant distance on such lesser roads with the inevitable delays and frustrations. In particular, apart from the M25 there is no other east-west road serving Gatwick until the A27 South Coast Trunk Road is reached on the outskirts of Brighton. This road is being upgraded in sections but does not serve the Gatwick area. Nor is there an orbital rail route.

3. Existing traffic situation

- 3.1 Whilst all the airports are adjacent to the Strategic Road Network, this, of course, provides access to more destinations than just the airports. Consequently, these major routes carry high traffic flows which often give rise to delays due to sheer congestion and when any incidents such as breakdowns or traffic accidents occur these delays can become extended for hours.



- 3.2 Highways England, which is the government-owned company responsible for the Strategic Road Network, therefore has a programme to roll out smart motorway technology across the network which has proved itself to reduce journey times and to make them more reliable - something which is of vital importance to those wishing to catch a flight.
- 3.3 In addition, a study has recently been announced to look into controlling access to the M25 at peak times so as to reduce the possibility of congestion occurring by keeping traffic flow within the design capability of the motorway. This might make it difficult for those wishing to gain access to the M25 as part of their journey to the airport with a fixed check-in time.

4. Impact of the proposed new runway on traffic

- 4.1 The extra road traffic due to a new runway would come on top of a forecast growth in weekday car trips and distance travelled in South East England of 40% by 2041. Already running at near to capacity especially at peak times, the M25 often comes to a standstill caused by the combination of high traffic volumes and the occurrence of incidents, and has been described as 'the largest car park in Europe'. And the M23 near Gatwick has an 'on time' score of under 60%.
- 4.2 It is therefore surprising that the original Airport Commission interim report and consultation document only listed a few minor road improvements within a mile or so of the airport. Otherwise the Commission appeared to accept the contention of Gatwick Airport Ltd (GAL) that they can rely on improvements to the M23 and M25 that are already in hand. These improvements, such as smart motorway with hard-shoulder running on the M25 mentioned above, are required to deal with the forecast growth in road traffic without a new runway. As has been stated earlier in this paper there is already a lack of alternative high speed routes to the M25 which means that additional traffic created by any new runway will inevitably increase the flows on the M23 and M25 which will negate any improvements that are planned.
- 4.3 In my view the Airports Commission seriously underestimated the increase in road traffic. This is because their assessment –
 - a. was based on forecast road traffic in 2040, when the new runway would be operating at well under its full capacity; and
 - b. only included the extra road traffic caused by air passengers and on-airport staff, and excluded the road traffic due to catalytic and induced employment .
- 4.4 If we look at the situation when the airport was operating at full capacity there would be 95 million air passengers per year, 55 million more than at present. Assuming, as does the Airports Commission, that 12% would be transfer passengers, and that, as the consultation document mentioned above suggests, 54% would use public transport (with 43% by rail and 11% by bus) whilst 46% would arrive and leave by road. That would indicate around 22 million air passengers using cars or taxis. That is 61,000 per day.
- 4.5 On top of that it is necessary to add car journeys by airport employees, plus journeys by workers in the new catalytic firms in the Gatwick area. Also the car journeys due to the induced jobs - with the airport more than twice as large as at present there will be many more workers in the local shops. Assuming the calculation made by GACC

in response to the November 2014 consultation document of a total of 60,000 extra workers, and assuming 60% of them travel by road twice a day, gives 72,000 per day.

- 4.6 Adding together journeys by air passengers and workers gives a total number of road journeys (excluding buses and commercial) of 133,000 persons per day
- 4.7 If I then allow for more than one person per car, I reckon that there could be as many as 100,000 extra vehicles trips to and from the airport per day. On top of that would be the plethora of white vans and heavy goods vehicles generated by the activity of the new firms attracted to the area.

5. Possible new and improved highway requirements

- 5.1 One option to cope with this huge increase would be to widen the M23 and M25 in due course and before the additional traffic reached anywhere near its maximum level. Further there would be an increased justification to reopen the arguments that the M23 would need to be extended into central London. This was discussed under the South London transport study in the 1990s. At present it stops just south of Coulsdon, 13 miles south of central London. To extend it further through Streatham and Brixton would be extremely costly and environmentally damaging and is extremely unlikely to be considered as it would be totally unacceptable to the Mayor and most governments.
- 5.2 An issue omitted from consideration by the Airports Commission is that the substantial increase in traffic would also put pressure on many A roads and local roads within 20 miles around the airport. Gatwick lacks any good road connections to the east or west. Many local roads through the neighbouring towns and villages would become congested with queues at junctions, making journeys to work or to school frustrating and time-consuming. It is for that reason that I would expect pressure to mount to provide an alternative orbital route around London, parts of which are now under consideration (see para 5.7 below).



- 5.3 To deal with the extra traffic on the A roads and local roads would require many traffic engineering schemes which in many cases would cause damage to historic town and village centres, many of which have conservation area status. They would also put a substantial extra cost on West Sussex, East Sussex and Surrey County Councils. Gatwick have offered to contribute £10 million and West Sussex are asking for £30 million. That looks a sizeable underestimate. As I have said above, I do not think that in any case such minor improvements would fit the bill to provide adequate east-west access to the airport from towns south of the M25.

5.4 Horley is the town most affected by non-motorway traffic access to Gatwick. Additional housing planned at Horley is expected to generate up to 5,000 more local vehicles per day and as these will mostly belong to younger families many of them will be on the local roads daily in peak times for school runs, local employment trips and access to the M23. Traffic created by a second runway would come on top of this.

5.5 A new runway would be likely to bring forward the need for step changes in a number of local towns. For example, a new bypass or tunnel might be needed at Reigate on the A217, at considerable cost and causing substantial environmental damage. A new western bypass around Crawley is considered necessary by the



West Sussex County Council, resulting in more loss of countryside, and a further adverse impact on Ifield. The consultation document shows that there is no space for this new road on the southern side of the new airport boundary without demolishing more houses, more business premises, and possibly the main Hindu temple in the South East.

5.6 Additionally, should the new runway be built at Gatwick, many more passengers will be requiring to transfer to Heathrow, which would still have the major share of flights, and take onward flights from there. The current coach transfer system works up to a point given the current numbers but the existing congestion on the M25 makes the journey time between the two airports a bit of a lottery. This gives rise to the need to have extended transfer times between flights thereby extending the overall journey time.

5.7 To overcome this, greater provision will be needed on the M23 and M25 to give priority to the increased number of transfer coaches, such as the designation of a special bus/taxi lane which would be detrimental to the other users of the motorways. Failing this consideration should be given to a further partial provision of an outer orbital road as is under consideration at the Lower Thames Crossing and the new Varsity Expressway being considered between Oxford and Cambridge. One could envisage the completion of such an outer ring road but that would inevitably cause great disruption and environmental impact in communities affected by it. The cost of such a road, even if built in sections is likely to be at least £18m per km based on the cost of the dualling of the A21 between Pembury and Tonbridge which is in the same part of the country and under construction at the moment. If such a road were constructed from Tunbridge Wells to Guildford it would cost £1.33bn and the section from Guildford to Slough would be a further £740m making a total of £2bn+.

5.8 Bypasses on the approximate line of the A264 around the towns of East Grinstead and Tunbridge Wells might also be required to connect communities in Kent and East Sussex to the airport if it is going to develop a function as the main facility for the south east of the UK, thus relieving Heathrow of demand. Connections could then be made to the M20 and M2 possibly by joining up the improved A264 with the Lower Thames Crossing.

- 5.9 To the west on top of the large number of settlements that would need to be avoided, a bypass to the south of Guildford and a new road to the west of Bracknell might be needed in the long term to link up with the M4 and back into Heathrow.
- 5.10 Another option would be some form of orbital public transport heavy or light rail or bus rapid transit between the airports. It would not be ideal to expect transit passengers to brave the London underground with heavy bags, so a direct rapid public transport provision would be required. 'Heathwick', a new direct high speed rail link, has often been suggested, but has always been ruled out on account of the substantial environmental damage. Moreover, unless the connection is airside, it would still be necessary for passengers to take time on passport control and customs/security at both ends. Making the connection airside would involve substantial engineering problems and locked carriages. An alternative would be a connection to Crossrail 2 and connection from southern end of Crossrail 2 to Heathrow maybe as loop from Crossrail 1 connection to Heathrow.
- 5.11 Any of these options would be expensive and environmentally disruptive. Thus there seems no alternative to costly road infrastructure.

6. Additional costs of road improvement options

- 6.1 In this paper I have identified some improvements to the road network that may well be required over the time that the new runway comes up to full use. I therefore consider that the impact of the Gatwick option has been under-estimated. A similar study has been made for the rail system.
- 6.2 In the table below I have given very rough, back-of-an envelope estimates for the cost of these road improvements. These are not precise estimates, which would require such schemes to be worked up to a state to enable such estimates to be created, but merely informed assessments which should demonstrate the order of magnitude by which the cost of the Gatwick runway option should be increased above that given by GAL and by the Airports Commission. The first column gives the total cost; the second the amount that should be paid by Gatwick Airport Ltd; and the right hand column the approximate amount that might fall on the UK Exchequer and on the taxpayer.
- 6.3 Additional highway related costs of the Gatwick runway option above those given by Gatwick Airport Ltd.

	Cost approx. £ million	Attributable to GAL £ million	Attributable to Exchequer £ million
Widening M23, M25	1,000	250	750
M23 extension into London	1,000	250	750
Outer Orbital route	2,000		2,000
Bus lanes on M25	250	250	
Local roads	60	60	0
Total extra cost	4,310	810	3,500

- 6.4 To the extent that the extra road traffic was due to natural growth or to the catalytic or induced employment created by Gatwick expansion, the cost would fall on the Exchequer. To the extent that the traffic resulted from extra air passengers and extra airport staff after 2040, it should in theory be borne by Gatwick Airport Ltd. I accept, however, that it would be difficult to collect this money in advance, and therefore I have allocated the whole cost to be met by the taxpayer. Particularly the cost of a new orbital route which might well be needed to cope with existing traffic predictions and the inevitable choking up again of the M25 but the new runway would likely pull forward the date that it would be needed.
- 6.5 My assessment indicates that the total cost of the Gatwick runway option should be increased by at least £4 billion to take into account the cost of these additional road improvements.



This paper is based on the work done by the GACC but has been revised and added to by a senior highway engineer as a result of his long experience in road planning, design, construction, maintenance and management, much of which has been in the public sector. He currently holds a highly influential position within the industry both in the UK and internationally and for that reason wishes to remain anonymous. He holds a degree in engineering from one of the country's top universities and is a chartered Civil Engineer and a Fellow of the Chartered Institution of Highways and Transportation.

References

- ¹ Banks, Bayliss and Glaister. RAC 2007
- ² Department for Transport. February 2014
- ³ November 2014
- ⁴ Airports Commission: Surface Access: Gatwick Second Runway.
- ⁵ Catalytic employment is that caused by new businesses being attracted to the area due to the presence of the upgraded airport.
- ⁶ Induced employment is that caused by the additional employment in local businesses caused by the expansion of the airport.
- ⁷ Airports Commission: Surface Access: Gatwick Second Runway. Page 2
- ⁸ www.gacc.org.uk/research-studies



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