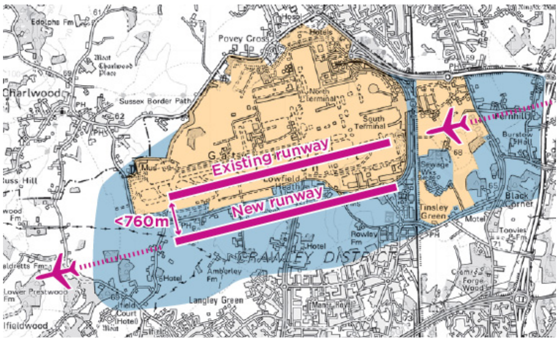
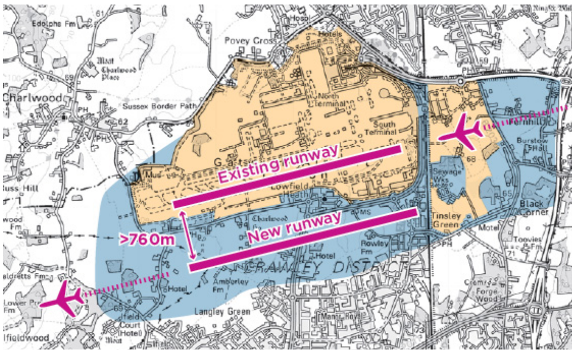
PROPOSAL TITLE:	London Gatwick Airport 2nd Runway Options	Group:	Dispersed
SUBMITTED BY:	Gatwick Airport Limited	Reference No.:	40

PROPOSAL

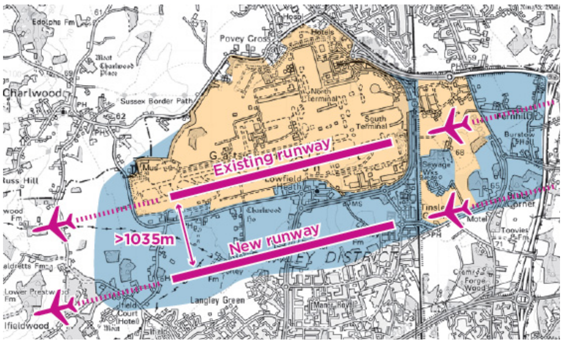
Three in-principle options to provide a second runway to the south of the existing runway, with three centreline separations permitting dependent segregated, independent segregated and fully mixed mode as the separation is increased between options. Details of the required supporting infrastructure have not been provided.



Option 1: Dependent segregated mode



Option 2: Indpendent segregated mode



Option 3: Mixed mode

ASSESSMENT SUMMARY

The scheme is to construct a second runway in one of three locations, with the widest centreline separation option providing the greatest operational flexibility and incremental capacity increase of up to 37mppa/245,000 ATMs.

Costs are estimated to be £13bn including various surface access improvements, marginally lower than for the 2nd runway schemes at Stansted (£14.1bn) and Birmingham (£14.8bn).

The scheme provides incremental airport capacity which may relieve pressure at Heathrow as well as meeting the organic growth at Gatwick and forming a constellation of airports with competing capacity. Airlines would be able to provide additional service frequencies and routes, including new long haul routes to destinations currently not served from UK airports (as other proposals may also be able to do), and resilience would be significantly improved. However, as Heathrow is one of the highest yielding airports in the world it is unlikely that significant traffic would transfer from Heathrow.

Economic benefits are derived through creation of additional jobs in the Gatwick area, increased connectivity and trade, and improved airline operating efficiency and passenger journey times due to improved resilience at Gatwick. Noise is likely to negatively impact a greater population than the Stansted or Cardiff schemes although fewer than at Birmingham. The scheme has the greatest loss of homes: c.220, compared with 40 at Birmingham and 90 at Stansted.

OVERVIEW

Approach	**Enabling legislation 2015-2019 with construction commencing after 2019 leading to opening in 2025** following established regulated mechanism.	Opening Year 2025

Capacity		Option 1 Airport	Option 1 Net	Option 2 Airport	Option 2 Net	Option 3 Airport	Option 3 Net
	Runways	**2**	**1**	**2**	**1**	**2**	**1**
	ATM (000)	**375-415**	**75-115k**	**470-515**	**170-215**	**500-545**	**200-245**
	pax	**60-66**	**10-16**	**75-82**	**15-22**	**80-87**	**30-37**

Cost		Airport	Access	Other	Sub Total	Including Risk/OB
	Independent cost analysis, based upon Option 3, assesses the scheme to cost around £10.6bn; however a further allowance has been made for the broader surface transport costs.	4.3	1.3	0.6	6.2	13.0

Surface Transport			
	▪ Poor access to cities north of London ▪ Current rail London access is congested and shared with commuters ▪ Proposal recommends rail service pattern and bottleneck capacity improvements. Verification required that these will cater for airport-related demand ▪ Would require widening of M23 and M25.	1 hr isochrone	14
		2 hr isochrone	20
		London centre	25 miles

Economic

Borough	Crawley	Mid-Sussex	Horsham	Reigate and Banstead	Tandridge	Mole Valley
Unempnt (%)	7.6	3.4	4.6	4.7	4.6	4.3
Ave. Salary (£/yr)	25,527	29,884	29,968	36,239	30,716	34,284

County	West Sussex	Surrey	East Sussex	Kent
GVA (£/cap)	19,241	25, 432	13,521	17, 185

Environment			Airport	Net
	Land required has been formally safeguarded since 2003 but around 100 residential and 120 commercial properties would be lost. 18 Listed Buildings within safeguarded area but no other significant designations. Environmental constraints for surface access potentially significant.	57 LA_{eq}	11,000	8,000
		55 L_{DEN}	30,000	

	SAC[1]	SPA[1]	Ramsar	CA[1]	AONB[1]	SSSI[1]	Listed Buildings	SAM[1]	Houses Lost
	-	-	-	1	-	-	18	-	220

[1] SAC: Special Areas of Conservation; SPA: Special Protection Areas; CA: Conservation Area; SSSI: Site of Special Scientific Interest; SAM: Scheduled Ancient Monument.

ECONOMY

Borough	Crawley	Mid-Sussex	Horsham	Reigate and Banstead	Tandridge	Mole Valley
Unemployment (%)	7.6	3.4	4.6	4.7	4.6	4.3
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Impact on Industry

A second runway at Gatwick would allow the airport to provide between 75 and 245,000 additional ATM p.a. depending upon the option. This would enable Gatwick to meet an additional 16m-37mppa by 2050, allowing it to meet its expected likely unconstrained demand. This would support higher frequencies, new routes and airlines at Gatwick particularly growth based on the existing major LCC and network carrier operations. Growth of European and other foreign network carrier services would likely be substantially dependent on continued constraint of capacity at Heathrow. However, expansion of Gatwick is unlikely to result in a significant transfer of services from Heathrow, but it could attract some peak services from Stansted and other London area airports. Expansion at Gatwick will support growth of industries in the airport vicinity, and employment in Crawley.

Airports	Adding a second runway at Gatwick would provide additional capacity from 2025, allowing the airport to meet its unconstrained demand through to 2050, enhancing its ability to compete with Heathrow, Stansted and Luton. In particular, Gatwick is likely to attract new LCC, charter and cargo services from other London area airports, and some incremental additional long haul and network services (although this is likely to be largely dependent on maintaining capacity constraints at Heathrow). Stansted and Luton are most likely to be impacted by expansion at Gatwick. Expansion of Gatwick is unlikely to significantly impact on demand for capacity at Heathrow. **Gatwick Airport claims it could attract one airline alliance to relocate from Heathrow**, however this could be considered challenging given existing airline commitments to Heathrow, commercial experience of airlines that have offered services at both airports and the fluid, cross-cutting and overlapping relationships and interlining dependencies between airlines within and across alliances e.g. many non-One World carriers have an interlining agreement with British Airways.
Airlines	Airlines currently using Gatwick, and others seeking to use it would benefit from the increase in capacity and reductions in delays due to greater resilience to offer more services, at times of peak market demand. This is most likely to benefit the main users of Gatwick primarily to expand services to Europe, and a few long haul services currently constrained by the lack of slot availability at peak times. It is likely to result in some transfer of services from Stansted and Luton at peak times, and a few operators at Heathrow choosing to realise the value of their Heathrow slots, by transferring a few lower yielding services to Gatwick so that those Heathrow slots can be leased/sold to other carriers, or utilised for "higher yielding" services.
Passengers	Passengers will benefit from increased capacity due to delay reductions and a greater choice of destinations/enhanced frequencies at Gatwick. Users in Sussex, Surrey, Kent and south London would particularly benefit, compared to options for expansion at other airports. Users of other London area airports would see little impact, beyond the incremental transfer of some services between airports.

Local & Regional Economic Impacts

An expanded Gatwick Airport would facilitate growth of new and existing industries in airport and aviation support services and travel, tourism, logistics and other related sectors, to service the growth in passenger and freight demand met by the new airport. Such growth is likely to be an incremental addition to existing industries in the vicinity. It would support modest levels of agglomeration in Brighton, and support employment at Crawley. Increased noise impacts in the immediate vicinity, may have a minor negative effect on some businesses. **Gatwick Airport claims that expansion could support an additional 19,000 jobs by 2050**, which is considered to be reasonable.

National Economic Impacts

The main national economic impacts come from allowing the currently constrained Gatwick Airport to expand to meet expected demand. This will have a small positive impact on connectivity by allowing airlines at Gatwick to offer more services, primarily to Europe, but also some long haul services.

SURFACE ACCESS

Time/Distance to Central London	1 hr isochrone population	Key required upgrade schemes	
28-46 mins 25 miles	14 million	▪ M23J9a junction improvement ▪ New grade separated junctions from M23 to terminals ▪ Local road improvements to A23 ▪ Remodelling of East Croydon Station	▪ Dedicated Gatwick express service ▪ Improvements to Gatwick rail station
Journey times to other population centres	**2 hr isochrone population** 20 million		

Rail Infrastructure Capacity Analysis

The proposal considers committed future rail investment of the Thameslink programme (**50% additional capacity by 2018)** and a new platform at Redhill. Key mid-term measures required to meet passenger demand (irrespective of a second runway): dedicated Gatwick Express in Thameslink Franchise; premium Gatwick Express service; and delivery of Brighton Mainline improvement schemes identified in the Network Rail Business Plan, January 2013, which should be brought forward in Control Period 6. These schemes include: Three Bridges signalling; Windmill Bridge Junction grade separation; remodelling of East Croydon Station to provide extra platforms and fast line tracks (bi-directional); Stoats Nest Junction improvements; Keymer Junction grade separation; Victoria Platform 8 alterations; and potential Clapham Junction signal alterations. GAL is reviewing options with Network Rail for additional investment at Gatwick airport railway station including: additional concourse capacity and platform access; improved passenger facility quality; and to meet passenger aspirations for seamless end-to-end journeys. GAL considers that these mid-term improvements will provide sufficient capacity for regional (non-airport) growth and a second runway and does not propose additional capacity improvements for the second runway. Given the currently congested rail line between Brighton, Gatwick and London, further validation is required to demonstrate that these service improvements and bottleneck improvement schemes are sufficient to cater for the increased demand from two runways, and that a more substantial and expensive new rail line is not required.

Highways Capacity Analysis

A range of relevant highway capacity improvements are already committed including M25 hard shoulder running (junctions 5-7), M25 controlled motorway junctions 7-8; Dartford Crossing free-flow tolling, the A23 Handcross to Warninglid improvement and M23 junctions 8-10 improvements. A Route Management Strategy for the M23 and M25 Junctions 1-10 is required to manage congestion prior to 2025 and incremental capacity improvements are required before 2025 (irespective of the second runway) to support the current airport and regional demand. Post 2025, to support the second runway, recommended enhancements are: improvements to the A23 in the vicinity of the airport to improve north-south access and support airport growth (options include existing alignment improvements or diversion to east of airport); the provision of an enhanced capacity M23 Junction 9a; and a grade separated connection to the north and south terminals with local road realignment. **GAL states that modelling indicates that these improvements will mitigate the traffic impact of a second runway and future regional demand**, however, it is possible that the second runway may require not only localised highway network capacity improvements, but widening of the M23 to the M25, widening long sections of the M25, and targeted capacity improvements to the A23 north of the M25 into London.

Accessibility to Population & Business centres

The submission states **2.5 million people live within 30 minutes of the Gatwick. All of London's population and over 25% of the UK population live within 60 minutes.** The airport provides 24 hour direct public transport passenger access. **Journey times by rail to Central London currently range from 28 – 46 minutes** and there is wider connectivity to Brighton, Reading, the North and East via the M23 and M25 respectively. However, the A23 provides comparatively poor quality highway access to inner London. The committed Thameslink Programme will provide new connections to Cambridge and Peterborough.

Accessibility to Transport Interchanges

Gatwick has direct connections to London Victoria, London Bridge, Kings Cross/St Pancras, Farringdon, City Thameslink, East Croydon and Clapham Junction and major stations in north London. There are major connections to Brighton, Reading, and Kent and a further 700 UK stations and the majority of the Underground are within one change. The delivery of the committed Thameslink Programme will provide consistent peak and off peak services to London Bridge station and enhanced interchange at Farringdon with Underground and Crossrail services.

Accessibility to Workforce

The proposal makes little mention of the accessibility of the workforce and does not identify a target modal split specifically for employees and how they would travel to the airport.

Potential Wider Use

Improvements to the Brighton Mainline will support peak demand for commuter capacity, whilst improvements to the M23 and M25 will support growth in regional demand.

ENVIRONMENT

Overall noise impact	**Additional 8,400 people and 26,700 exposed to 57dBALeq and 54dBALden respectively with second runway.**							Airport	Nett
							$57\ LA_{eq}$	**11,800**	
								11,000	8,000
							$55\ L_{DEN}$	**42,000**	
								30,000	
	SAC	SPA	Ramsar	CA	AONB	SSSI	Listed Buildings	SAM	Houses Lost
	-	-	-	1	-	-	18	-	220

Air Quality **Modelling results show that none of the main runway options would breach any existing legislative limits for NO_2, NO_x and particulate matter (PM_{10} and $PM_{2.5}$) in place around the airport, including in the Horley AQMA.** The maximum predicted NO_2 concentration in the Horley AQMA is 30.54 ug/m^3 (compared to the standard of 40 ug/m^3).	Mitigation Plan Objective to grow public transport mode share to 50%, primarily through improved rail links.
Noise **The Gatwick expansion proposed to form part of the concept for a constellation of airports as opposed to a hub and therefore mitigates the intensive noise impacts over a single heavily populated area as associated with Heathrow; the area of the $57dBA_{Leq}$ contour for runway Option 3 in 2042 would affect 5% of the population impacted by Heathrow.** New/revised flight paths would expose additional populations but would still avoid the more densely populated settlements closest to the airport (Crawley, Horley, East Grinstead, Horsham). Independent noise modelling results: ▪ 57dBALeq: 11,000 people; Nett: 8,000 increase. ▪ 54dBALden: 30,000 people Geographical areas affected by ground noise will extend further from the airport than at present with varying degrees of impact on parts of Charlwood, Povey Cross, Horley, North Crawley and Ifield.	Mitigation Plan Defining noise preferential routes, low noise operational practices, aircraft type restrictions, and extensions to existing noise insulation programme. Introduction of P-RNAV (awaiting CAA approval) will allow rotating noise respite.
Designations **With the exception of listed buildings, none of the main runway options will require land take from any sites designated at the national level or above, nor would they impinge upon significant areas of land in the Green Belt.** ▪ 1 SSSI located within 2km (Glovers Wood @ 1.7km) but not directly affected. ▪ 2 scheduled monuments beyond the southern boundary of the safeguarded area for the second runway but neither would be directly affected. ▪ 5 Grade II* and 13 Grade II listed buildings within the safeguarded area potentially lost. ▪ 4 Conservation Areas in close proximity to the safeguarded area; the setting for one could be impacted by further expansion to the west. ▪ 3 locally designated Areas of Archaeological Importance in safeguarded area. ▪ Potential impacts on designated sites from surface access improvements.	Mitigation Plan Effects on designated sites are not perceived to be a significant constraint, and mitigation would be developed as further environmental assessment work proceeds.
Climate Change **Total greenhouse gas emissions are predicted to increase for each of the main options, accompanied by greater passenger capacity.** Emissions data (tCO2e) are presented for ATMs, passenger transport and airport operations for the main options. Total predicted 2040 emissions increase from **832,698 tCO2e (base case with no second runway) to 1,533,413 tCO2e (Option 3) but emissions per passenger reduce from 0.0208 tCO2e (base case) to 0.0195 tCO2e (Option 3)**.	Mitigation Plan Gatwick has set itself a target to reduce the airport's carbon emissions by 50% (off a 1990 baseline) by 2020 through a range of measures detailed in their Fly Quiet and Clean programme.

Other Issues	Mitigation Plan
<u>The airport is currently at risk of flooding from the River Mole and its tributaries.</u> A section of the Mole is culverted through the airport and the second runway would impact on the unculverted section. The Environment Agency is currently implementing a number of flood risk management schemes in the Upper Mole catchment and Gatwick airport is contributing to the costs of these schemes. A number of sites in and around the airport have been identified as having minor or moderate potential for contamination. Loss of good quality agricultural land. AONBs located 3km to south-east (High Weald) and 8km to north-west (Surrey Hills) are unlikely to be significantly affected due to existing screening.	Diversion of the River Mole may present opportunities to address ongoing flood risk issues.

PEOPLE

Housing	Demolished
Land required has been formally safeguarded since 2003. The number of residential properties to be lost varies (50-300) depending on option. For option 3 (wide spaced mixed mode), estimated at 100 plus 120 commercial properties. 5 community buildings would also be affected.	c 220

Vulnerable Groups

There are few 'most deprived' ward areas in the local authority areas around Gatwick.

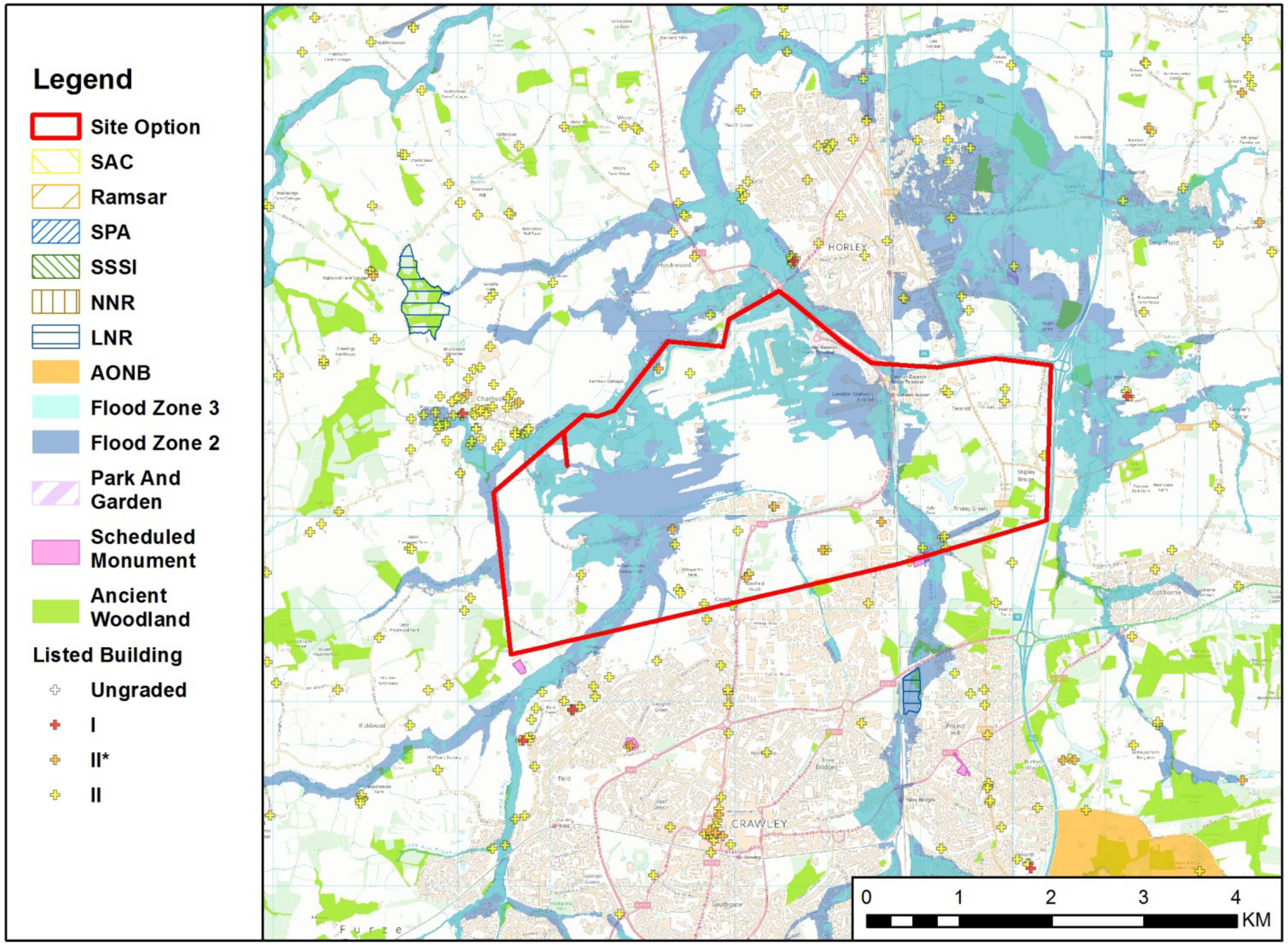
Quality of Life and Health

- Some additional noise impacts over base case without second runway, but these would avoid the more densely populated settlements closest to the airport (Crawley, Horley, East Grinstead, Horsham). Some additional areas would be affected by increased ground noise.
- Some change to character and setting of surrounding settlements from increased aircraft noise, traffic and surrounding ancillary development
- Possible additional benefits to the current accessibility and connectivity through new surface transport infrastructure and also from improved local services.

Significant benefits to local area as contributor to economic wellbeing and supporting social and economic objectives in wider area.

Wider Social Impacts

Benefits to Gatwick Diamond economic sub region and wider support to south and East London, South Coast and east to Kent.



Legend
Site Option
SAC
Ramsar
SPA
SSSI
NNR
LNR
AONB
Flood Zone 3
Flood Zone 2
Park And Garden
Scheduled Monument
Ancient Woodland
Listed Building
Ungraded
I
II*
II
HORLEY
CRAWLEY
0 1 2 3 4
KM

COST

Capital Cost

GAL estimates £5 to £9 bn, unadjusted for bias. Cost includes a contribution towards road and rail infrastructure. It is not clear if the cost includes allowances for risk or environmental/social mitigation measures.

Independent cost analysis, based upon Option 3, assesses the scheme to cost £10.6bn, however, broader surface transport costs may increase this to £13bn as shown.

	£ bn
Airport	4.3
Access	1.3
Other	0.6
Sub-Total	6.2
Risk	2.5
Optimism Bias	4.3
Total	13.0

Key Risks

- Surface access.
- Construction within congested operational environment.
- River Mole Diversion.
- Potential for unknown further environmental costs.

Risk and Contingency Allowances

40% contingency adopted to all costs. 50% optimism bias applied to risk adjusted cost.

Surface Access Costs

£0.3bn estimate for onsite road and rail links based on requirement for infrastructure identified by independent analysis. A further allocation of £1bnhas been made for the broader transport requirements.

Other Off-Airport Costs

Allowance of £0.1bn included for river diversion and flood attenuation. Additional allowance of £0.5bn has been included to cover typical environmental mitigations measures.

Summary Comments

In general the approach cost estimating is reasonable. The total may underestimate the wider cost however.

OPERATIONAL VIABILITY

Capacity

	Option 1		Option 2		Option 3	
	Airport	Net	Airport	Net	Airport	Net
Runways	2	1	2	1	2	1
ATM (000)	375-415	75-115k	470-515	170-215	500-545	200-245
pax	60-66	10-16	75-82	15-22	80-87	30-37

Resilience, Reliability and Efficiency

Resilience depends on a number of factors: utilisation rates; mode of operations; and schedule shape. The mode of operation is dependent upon the option, with the widest, option 3, likely to provide the greatest potential resilience.

Safety

Options 1 and 2 will require runway crossings to access the southern runway. This reduces capacity, but also reduces the safety of operations, although this type of operation is standard and acceptable.

Scalability

Additional capacity could be developed if required with a 3rd and further runways to the north of the aerodrome.

Airspace

The proposal would not require significant airspace design. The boundaries of the London terminal manoeuvring area (LTMA) and Gatwick's SIDs, STARS and interfaces with en route airspace would be amended to include the second runway. However, given the long-term nature of the options and the likely airspace and air traffic management developments under SESAR, restructuring could be achieved as part of the on-going development process. There would not need to be any change of international boundaries.

DELIVERY

Timescale

Enabling legislation 2015-2019 with construction commencing after 2019 leading to opening in 2025.

Commercial Deliverability

Commercial/financial structure unclear but RAB approach appears implicit. Cost estimate means RAB value increase of circa 2 - 4 times from March 2013 level assuming all costs added to RAB. This is a significant incremental increase. GAL may finance airport expansion without public funding, however, evident that a portion of airport access infrastructure would need to be funded separately. Also unclear whether any government commitments/underwriting or regulatory changes needed. RAB pre-funding may be required. Financial viability may also rest upon key assumption that only one runway constructed in SE England at any time.