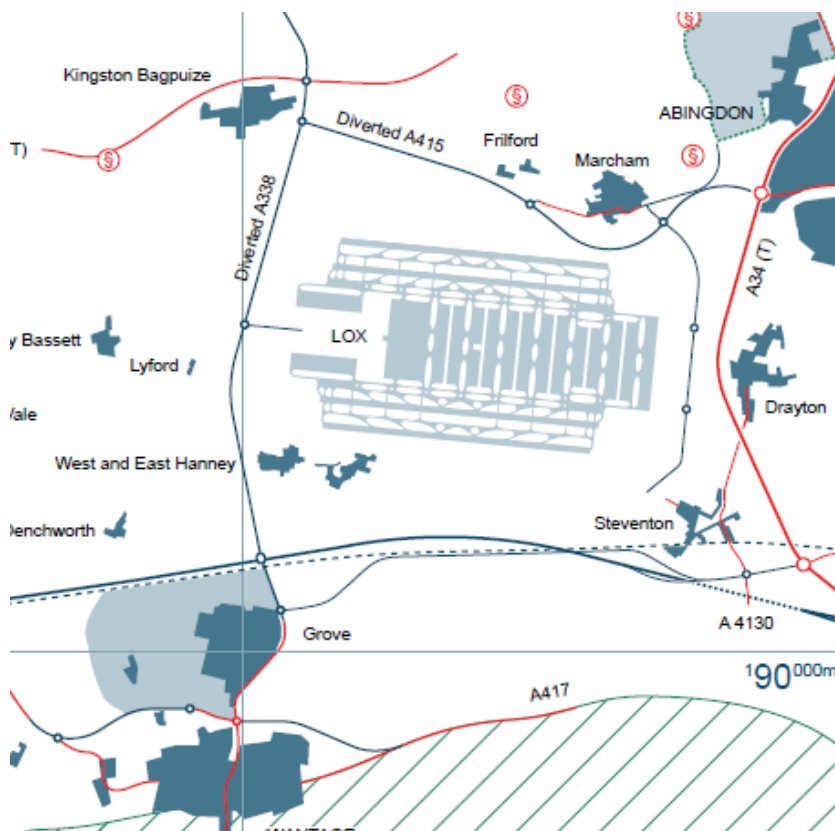
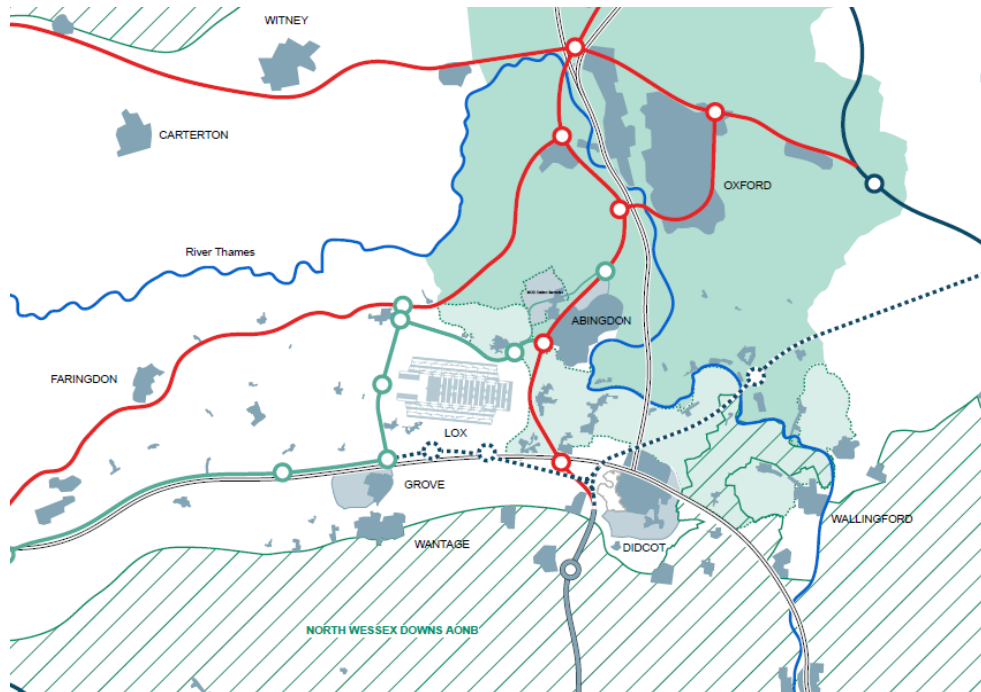


PROPOSAL TITLE:	LOX	Group:	New
SUBMITTED BY:	Pleiade Associates	Reference No.:	49

PROPOSAL

New 3 or 4 runway airport near Abingdon in Oxfordshire approximately 55 miles west of central London, which would operate in competition with Heathrow, or as a dual-hub.

The three runway option provides two dependent runways and one independent runway; the four runway option adds a further close spaced runway to provide independent pairs. Runways would be 4km long in an East/West orientation served by one terminal building with satellites linked by rail. A new rail passenger station would adjoin passenger terminals and link to the Great Western Main Line (GWML). There is also potential to link to HS2 via a spur.



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ASSESSMENT SUMMARY

Submission sets out a detailed proposal for delivery of the airport. The location is as far west from London as the outer Thames estuary schemes are to the east.

Its rural location would achieve the lowest noise impacted population of the three new hub locations, other than Thames estuary proposals. This assessment is based on the closure of Heathrow as it deemed necessary from a commercial perspective to enable another hub to promote the demand required to pay for it. This proposal therefore offers a substantial reduction in noise for affected populations due to the closure of Heathrow. Its rural location means it has the highest capital cost of the three non-estuary locations with costs broadly similar to the Hoo Peninsula schemes. The fewest number of houses are required to be demolished of the non-estuary new sites.

Its capacity is partially constrained in order to reduce noise impact. The proposed early phases of development will only replace the lost capacity at Heathrow. A fuller build-out is required to add capacity to the system.

Although the scheme full build-out adds to capacity without significantly weakening competition in the London system, its high cost and location are challenging.

OVERVIEW

Approach	Enabling legislation to be provided 2015-2017. Construction starts in 2018 and start of operations end 2022/start 2023. With the closure of Heathrow an opening date towards 2030 is realistic.					Opening Year
Capacity	Early phases as proposed would not replace the capacity lost at Heathrow. However the full build-out would add to system capacity.					Net
		Runways	ATM	pax	Airport	Net
					4	2
					720,000	240,000
					125	35
Cost £bn		Airport	Access	Other	Sub Total	Including Risk/OB
		21.4	7.2	0.8	29.4	61.6
Surface Transport	Improved capacity on the Great Western Main Line, an extension to Crossrail and an expansion of Paddington station would be the minimum rail improvements required. An extensive network of major highway capacity improvements, including widening, realignments, grade separation and new link roads, for the A34, A415, A338, would be required to ensure high quality connections to the M4 and M40. Further new roads are proposed to connect the M40 to the M1 and A1(M), and other capacity improvements may be required.				1 hr isochrone	12
					2 hr isochrone	33
					London centre	55 miles
Economic Borough	Vale of the White Horse	Oxford	West Oxfordshire	West Berkshire	South Oxfordshire	
Unemployment (%)	4.2%	6.1%	4.1%	4.9%	3.7%	
Ave. Salary (£/yr)	30,914	26,853	28,387	29,708	26,125	
Borough	Swindon UA	Reading				
Unemployment (%)	7.6%	6.5%				
Ave. Salary (£/yr)	26,426	30,488				
County	Oxfordshire	Berkshire	Swindon UA			
GVA (£/capita)	22,163	31,057	27,616			
Environment	Loss of large area of agricultural land (>3,000 ha). Impact on river and loss of flood plain (>1,000 ha) will require river diversion and significant compensatory storage provision. Major urbanisation of a rural area.					Net
				57 LA_{eq}	Airport	(232,000)
				55 L_{DEN}	8,000	
					31,000	
	SAC¹	SPA¹	Ramsar	CA¹	AONB¹	SSSI¹
					Listed Buildings	SAM¹
	-	-	-	1	23	1
				-	12	205
						130

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

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ECONOMY

Borough	Vale of the White Horse	Oxford	West Oxfordshire	West Berkshire	South Oxfordshire
Unemployment (%)	4.2%	6.1%	4.1%	4.9%	3.7%
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County	Oxfordshire	Berkshire	Swindon UA		
GVA (£/capita)	22,163	31,057	27,616		

Impact on Industry

A new airport with two pairs of close parallel runways to the SW of Abingdon in Oxfordshire would provide a net increase of 2 runways assuming Heathrow is closed, although these runways will not be fully independent. This creates benefits by allowing new services and reducing operational costs from a more efficient airport. However these cost benefits may be offset in part by increased landing charges to recover capital costs of construction, and significantly increasing surface access costs for many users, due to it being less well located for the airlines' prime passenger market. It would free up land at Heathrow, thereby potentially helping to meet demand for housing land.

Airports	The larger capacity of the airport would attract network traffic away from Gatwick. Likely to impact on the markets for Birmingham and Bristol airports, possibly even Southampton, due to relatively good connections to these areas, therefore increasing competition between airports.
Airlines	As with any other major new hub airport replacing Heathrow, airlines currently using Heathrow, and other airlines seeking to use Heathrow, would benefit from the increase in capacity allowing new direct routes, higher frequencies and reduced delays achieved through increased capacity. Greater competition and reduced airline 'slot' values will have a compensating effect on the profitability some airlines. Interline traffic would have greater potential to increase, enhancing the viability of more direct routes, particularly by airlines based at the new hub. It is likely that Low Cost Carriers (LCCs) and charter airlines would have a greater choice of airports, as some network traffic may transfer out of Gatwick to this airport, although the increased distance from London may reduce this effect.
Passengers	As with any other large new hub airport, passengers will benefit from increased capacity at the new site via delay reductions, a greater choice of destinations/enhanced frequencies, more competition (reducing fares) and faster terminal throughput times. However, travel times and costs would increase on average for typical customers in London and most of the SE, but with reductions for passengers in Central Southern England, W Midlands and the SW.

Local & Regional Economic Impacts

The airport is located in Vale of the White Horse district, and is close to West Oxfordshire, South Oxfordshire, West Berkshire and Oxford city - all areas of low unemployment. It may be close enough to Reading and Swindon to attract employment from those areas (two cities with elevated levels of unemployment for the region). Berkshire and Swindon have high economic output, but Oxfordshire is relatively low for the region. The new site, which would provide an expanded airport with sufficient capacity to meet expected medium term demand, would facilitate growth of new and existing industries in aviation, airport and aviation support services. The same would be true for travel, tourism, logistics and other related sectors which would service the growth in passenger and freight demand met by the new airport. Many of these businesses would be required to relocate from the vicinity of Heathrow though some could remain in the Heathrow area. The immediate effect would be to increase commercial property development in the vicinity of the new site. There would also be significant potential to redevelop the Heathrow site for commercial and residential purposes. The agglomeration effects of the existing Heathrow/Thames Valley/M4 corridor will only be slightly diminished. Reduced noise impact is likely to have a modestly positive effect on land prices to the east of the Heathrow site, though there would be a negative impact closer to the new airport. Employee relocation would be required, with many having to move to an area of relatively high house prices. Although the airport would be located adjacent to the Great Western Main Line, transport services would have to be remodelled to allow some workers to remain where they currently live.

National Economic Impacts

These come from the provision of new capacity, enabling more flights and connectivity, and the increase in business and leisure trips, and trade in goods and services and the indirect effects on inward investment. Increased choices of flights and airlines, with reduced travel times and fares, should generate significant consumer benefits. These benefits would be offset by higher access costs for the majority of users, who would come from London.

PROPOSAL TITLE:	LOX	Group:	New
SUBMITTED BY:	Pleiade Associates	Reference No.:	49

SURFACE ACCESS

Time/Distance to Central London	1 hr isochrones population	Key required upgrade schemes	
55 miles	12	<ul style="list-style-type: none"> New 8 platform station at the airport adjacent to passenger termini on the GWML Grade separated rail junction at Didcot New 50km rail spur to feed into HS2 at Wendover Enhanced capacity on GWML Additional London Paddington platform capacity Extension of Crossrail West 	<ul style="list-style-type: none"> New D4 road from A34 at Didcot to the M40 New D2 road from A34 to A419 at Swindon New D4 road from M40 to M1 near Luton New D2 road from M1 at Luton to A1(M) Divert and widen the A415 and A338 Widen the A34 from M4 J13 to Abingdon
Journey times to other population centres	2 hr isochrones population		
	33		

<p>Rail Infrastructure Capacity Analysis</p> <p>The airport would be located adjacent to the Great Western Main Line and would have its own station providing direct access to London, the South West and Wales. The station could also be connected to HS2 via a new 50km spur and to Crossrail with a western extension from Maidenhead. A connection to the West Coast Main Line is proposed at Leighton Buzzard, which could then be connected to the Midland Main Line. Additional capacity at Paddington is also proposed. The sponsor has been asked to clarify which of the strategic rail improvements are necessary to provide sufficient capacity to meet demand, and to identify what analysis has been undertaken to test this. Clarification is also required as to whether there would be sufficient demand to justify integration with HS2 and a Crossrail extension. The proposal lists a number of new rail lines and it is unclear which are required to cater for the airport-related demand and which are useful, but non-essential. It is likely that the costs of essential schemes will be high.</p>
<p>Highways Capacity Analysis</p> <p>Local access to the airport would be provided by the A34, A415 and A338, with an extensive programme of upgrades to increase capacity on those roads and their connections to other major strategic roads to meet expected demand. It is also proposed to connect the M40 to the M1 and A1(M) to improve connectivity to the north and east Midlands. The proposal lists a number of new highways and it is unclear which are required to cater for the airport-related demand and which are useful, but non-essential. It is likely that the cost of essential schemes will be high.</p>
<p>Accessibility to Population & Business centres</p> <p>The airport site lies adjacent to the Great Western Main Line providing a strategic rail link to London Paddington, South Wales and intermediate population and business centres. An HS2 (and West Coast Main Line) connection would provide a key link to Birmingham and the West Midlands. Strategic road improvements would improve accessibility to Abingdon, Didcot, Oxford and Swindon.</p>
<p>Accessibility to Transport Interchanges</p> <p>Connection to the Great Western Main Line would provide connectivity to London Paddington and South Wales. A Crossrail extension to the airport would improve access to London interchanges.</p>
<p>Accessibility to Workforce</p> <p>The airport's core catchment area for employees would include Abingdon, Didcot, Oxford, Reading, Swindon, Thame, Wallingford, Wantage/Grove, and Witney. Connection to the GWML and potential road and rail improvements would provide strategic access routes to the airport for employees.</p>
<p>Potential Wider Use</p> <p>Strategic rail improvements, such as additional London Terminal capacity and enhanced capacity on Great Western Main Line, will improve links between London Paddington, South Wales and intermediate population and business centres benefitting their economies. Strategic road improvements, such as widening the A34 to dual 4-lane motorway (M4 Junction 13 – A34 Abingdon junction) and the construction of a dual 4-lane motorway from the A34 (Didcot) to the M40 will improve the accessibility of Didcot, Abingdon and Oxford, would deliver wider economic benefits.</p>

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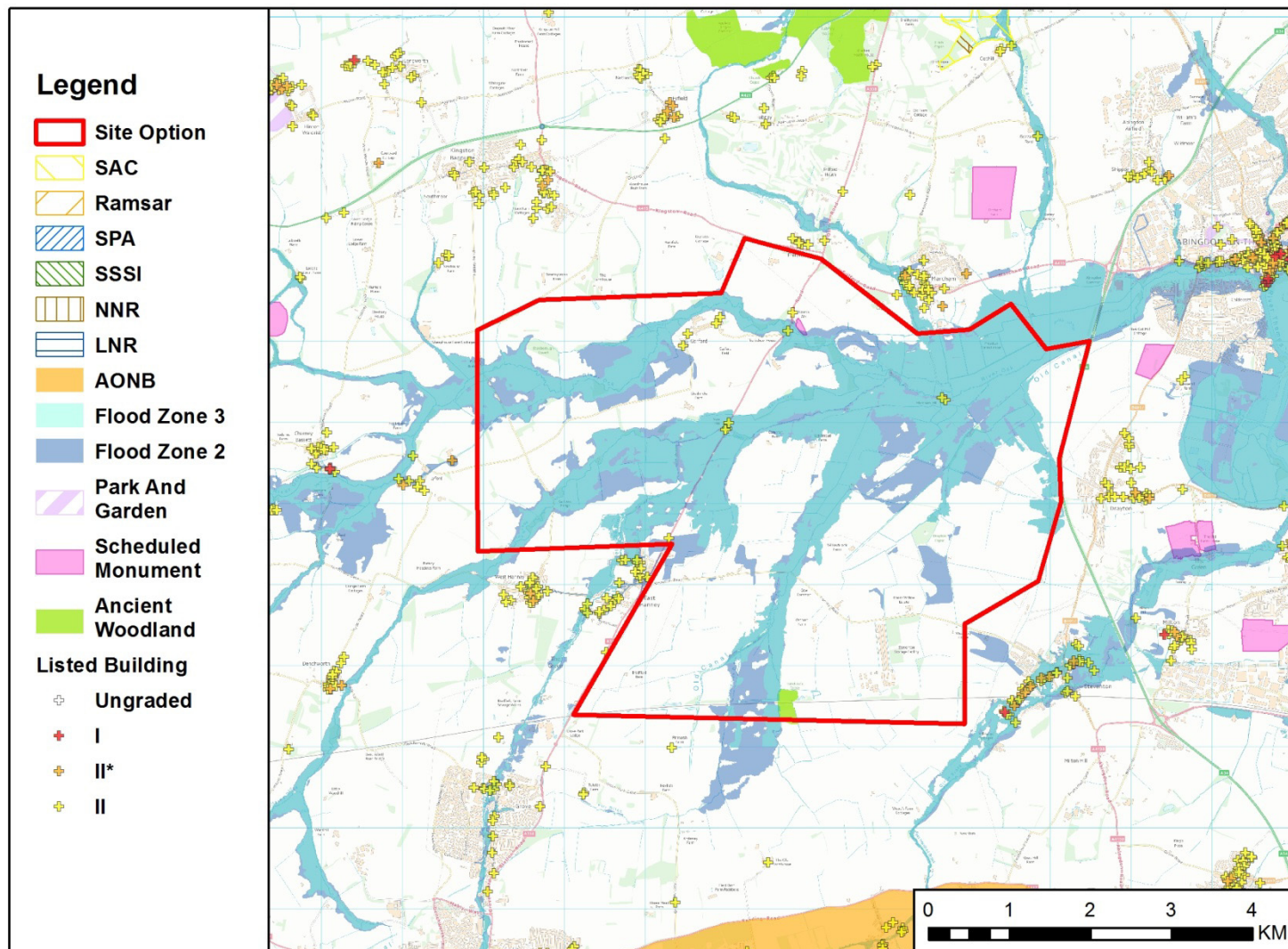
ENVIRONMENT

Overall noise impact	Significant system reduction, achieved without impacting a significant population.						Airport	Net	
							57 LA _{eq}	8,000	(232,000)
							55 L _{DEN}	44,000 31,000	
	SAC	SPA	Ramsar	AONB	SSSI	CA	Listed Buildings	SAM	Houses Lost
	-	-	-	-	-	1 -	23 12	1	205 130
Air Quality <u>It is estimated that less than 300 people would be exposed to excessive levels of NO₂ by 2050.</u> However, there would be an increase in traffic due to the employment and business opportunities generated by the airport. As for all new hub options, potential for some local air quality benefits through the removal (or reduction) of Heathrow airport’s contribution to local NO ₂ .							Mitigation Plan		
Noise <u>A population of 19,000 will be affected by noise over 57 dB and 40,000 people exposed to 55dB.</u> However, independent noise modelling for comparison provided the following results: ▪ 57LAeq: 7,000 people affected ▪ 55Lden: 68,000 people affected The population affected by 57LAeq would be a net reduction of 232,000 due to the closure of Heathrow. The new hub would be expected to generate growth in the area. Careful planning controls would be needed to avoid developments leading to significant increase in the population affected by noise.							Mitigation Plan <u>Extensive acoustical bunds to the airport.</u>		
Designations <u>23 Grade II listed buildings affected, 20 ha of East Hanney Conservation Area.</u> Separate GIS analysis of the proposed footprint of the proposed airport identifies 12 Listed buildings and 1 Scheduled Ancient Monument. However additional heritage sites may be adversely affected by surface access, with other such sites affected by the change in setting.							Mitigation Plan <u>Listed buildings to be taken down and re-sited.</u>		
Climate Change <u>The proximity of LOX to the centres of demand will result in lower surface access costs (in the broad economic sense) and thus proportionately lower emissions from those activities.</u> Expected to be similar to other new hub options in terms of construction of the airport and surface access, and operational carbon emissions will relate mainly to air traffic movements irrespective of location.							Mitigation Plan		
Other Issues ▪ Large area of agricultural land loss (3,213 ha). ▪ Large area of flood plain (1,055 ha) lost requiring significant compensatory water storage. ▪ Large-scale diversions of the River Ock and several brooks, with resultant loss of biodiversity and amenity value. ▪ Impact on local high landscape value area.							Mitigation Plan <u>A replacement flood plain, on-airport temporary ponds, holding pond. Treatment of runway/taxiway/apron runoff will be by means of a Constructed wetland (18 ha) discharging into the River Thames via an underground drain.</u> Limited scope to reduce agricultural land loss.		

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PEOPLE

Housing <u>205 residential properties and a hotel.</u>	Demolished <u>205</u> 130
Will generate significant additional pressure for housing in the region.	
Vulnerable Groups Impacts on health, vulnerable groups and local communities are not specifically addressed other than through general noise and employment opportunities. The airport would not be located in a region of high social deprivation.	
Quality of Life Major urbanisation of a largely rural area will bring significant change to the surrounding villages and towns compared to new hubs in more developed settings. Significant loss of recreational amenity for the surrounding population.	
Wider Social Impacts <u>The levels of urbanisation which would be generated by the airport are in excess of the provision of the Regional Planning Guidance. New urban expansion at Swindon, Didcot, Abingdon (potential redevelopment of Dalton Barracks) Wantage/Grove. The intensity of [employment] diminution for other airports, by rank, are greatest for Luton, then Stansted and least for Gatwick</u> Significant and in-migration of population likely to increase housing and infrastructure and demand for services in the area.	



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COST

Capital Cost	£bn
<u>Proposed scheme would cost approximately £20 bn, unadjusted for bias but includes a contingency/ design risk of 5%. This cost is inclusive of Airport Capital Costs and Airport Surface Access but does not account for possible HS2 and Crossrail links.</u>	Airport 21.4
	Access 7.2
	Other 0.8
	Sub-Total 29.4
	Risk 11.7
	Optimism Bias 20.5
	Total 61.6
Key Risks	
<ul style="list-style-type: none"> Major flood compensation storage and water course diversions required. Substantial investment required for new surface transport to serve greenfield location. 	
Risk and Contingency Allowances	
40% contingency adopted for all costs. 50% optimism bias applied.	
Surface Access Costs	
£7.2bn estimate for road and rail links based on requirement for infrastructure identified by independent analysis.	
Other Off-Airport Costs	
An allowance of £0.3bn has been included within the independent cost analysis for flood compensation storage and water course diversions. A further £0.5bn has been included to cover other typical environmental mitigation measures.	
Summary Comments	
The approach to costing was reasonable, but the updated cost may underestimate the wider total. Costs associated with the closure of Heathrow have been excluded.	

OPERATIONAL VIABILITY

Capacity	Runways	Airport	Net
Early phases as proposed would not replace the capacity lost at Heathrow, but the full build-out would add to system capacity.	ATM	4	2
	pax	720,000	240,000
		125	35
Resilience, Reliability and Efficiency			
The proposal supports independent parallel approaches on the two centre runways and segregated operations/independent parallel departures on the two outer sets of runways. It is not clear when this operational configuration will become a limit on capacity. The ATM pa throughput retains a buffer below theoretical maximum usage adding to resilience of operations.			
Safety			
The runway configuration requires runway crossings to access the outer runways. There does not appear to be any need to overfly significant population centres on final approach or immediately after departure. The closure of Heathrow means that aircraft will not have to overfly central London.			
Scalability			
Although the proposal is defined within an identified boundary, it appears that additional capacity could be developed if required. More flexible modes of runway operation should support additional movements before further development is required.			
Airspace			
The proposal would require significant airspace design in terms of relocating the boundaries of the London terminal manoeuvring area (LTMA) and creating the new airports SIDs, STARS and interfaces with en route airspace. The LTMA would extend from the new airport in the West to Gatwick in the South, and Luton and Stansted in the North. The airport would also interact with local military airspace and dangerous and prohibited zones. 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.			

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DELIVERY

Timescale

Enabling legislation to be provided 2015-2017. Construction starts in 2018 and start of operations end 2022/start 2023.

The proposal assumed LOX would compete with Heathrow. With the closure of Heathrow an opening date towards 2030 may be more realistic in line with other new hub schemes after a longer period for enabling legislation, tendering, construction and transfer of operations.

Commercial Deliverability

Even with government grant the scale of private financing challenge is very significant, but may be achievable subject to regulatory structure and comprehensiveness of government support package. Raises major taxpayer value for money questions plus could impact government balance sheet treatment. Without grant funding landing charges would need to rise to levels that are likely to be unsustainable if the airport were to remain competitive.