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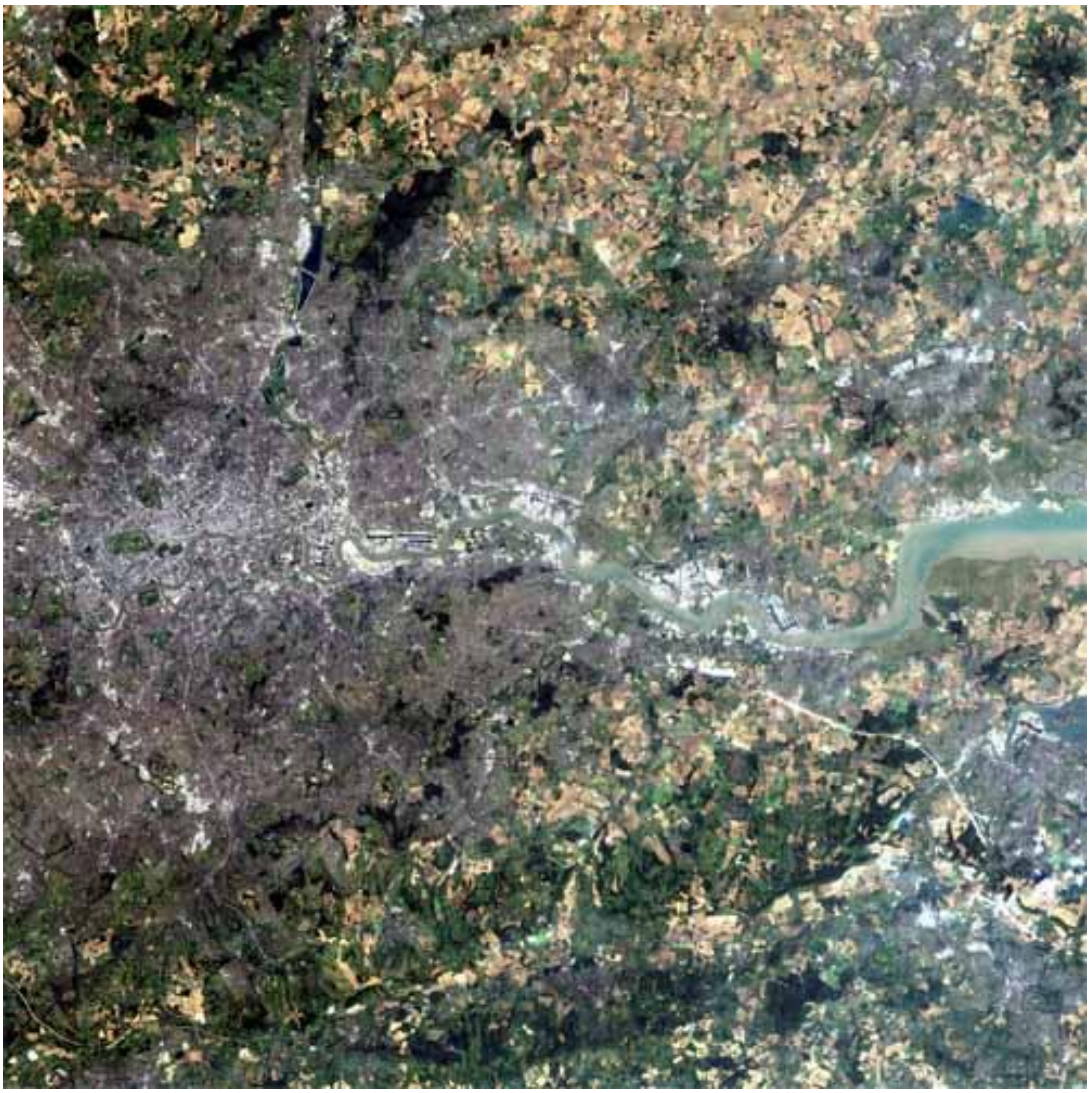
THAMES REACH AIRPORT – SERAS CONSULTATION SUBMISSION (a) 30.11.2002



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This document is an Addendum to the Thames Reach Airport Prospectus 09/02 - Bluebase

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THAMES REACH AIRPORT – ADDENDUM I – INFRASTRUCTURE WORKS

This is an infrastructure works addendum to the Thames Reach Airport Prospectus September 2002, taking into account on-going consultations.

1. CASTING BASIN FOR IMMERSED TUBE TUNNELS

a. The casting basin for the Lower Thames Tunnel might be located elsewhere and the tunnel sections towed to site and sunk into position. This allows the work to be directed to the most economic location with suitable local employment and environmental conditions, which could help reduce the time for construction. An independent casting basin would also permit laying the separate sections of the Lower Thames Tunnel in separate phases, and beyond 2030 the same casting facility could supply sections for the Sheerness road/rail immersed tube tunnel under the Medway.

2. AIRAIL HUB

a. Thames Reach Airport provides the strongest SERAS option for the integrated transport concept of Airail hubbing i.e. combining flights with high-speed train journeys. This takes the form of long haul air flights combined with high-speed regional train journeys. The resulting economic and sustainable journeys help to remove the least efficient short haul flights from the runways so increasing long haul capacity at the hub.
b. Airail hubbing through Thames Reach Airport would initially be operated via the rail link to the CTRL at Ebbsfleet. A CTRL connection to the new airport via Claylane Wood would provide an opportunity for a chord in the Paris direction and high-speed services direct from Thames Reach Airport to the Continent; Section 4c see below.
c. A high-speed line to the airport opens up the possibility of extending the line through the Lower Thames Tunnel and north along the A130 outer orbital route via Stansted to the North, enabling both Thames Reach Airport and Stansted to serve an Airail hub with a catchment extending from Scotland to the Ruhr Valley.

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3. LOWER THAMES FREIGHT CROSSING

a. The Lower Thames Tunnel provides a solution to the rail freight objectives of the recently published "Thames Gateway Freight Study". The rail freight tariffs provide an additional source of income for funding the tunnel.

4. NORTH KENT LINE RAIL CAPACITY

a. Rail capacity for access to Thames Reach Airport will be constrained by the existing capacity of the twin-track North Kent Line from the Isle of Grain Line through Gravesend to the new Coulton Avenue junction at Perry Street. Fast rail access between Waterloo International and Thames Reach Airport makes use of the North Kent Line through Gravesend, by re-opening 2.5 kilometres of dismantled railway from Fawkham Junction to the new Coulton Avenue junction at Perry Street, as described in Section 7 of the September 2002 Prospectus. Fast rail access between St. Pancras and Thames Reach Airport also makes use of the North Kent Line through Gravesend via the suburban line connection provided by the St. Pancras CTRL works at Ebbsfleet. (Omitted in error for the September 2002 Prospectus regional rail map). Both these routes assume there will be spare capacity on the North Kent Line through Gravesend once the St. Pancras CTRL and Crossrail lines open. Additional passenger capacity will also be made available when existing freight is re-directed through the Lower Thames Tunnel rather than around west London via the North Kent Line.

b. Should there be insufficient capacity on the North Kent Line for the later phases of Thames Reach Airport 2No. new tracks would have to be provided through Gravesend from Perry Street to the junction with the Isle of Grain Line. Gravesend Station, and the bridge adjoining to the west, already has 2No. through lines and 2No. platform lines so there is little impact here. West from Gravesend Station to the new junction at Coulton Avenue in Perry Street the chalk cutting can be broadened within the existing railway-land boundaries to accommodate 4No. tracks, subject to rebuilding 2No. road bridges and 2No. footbridges. East of Gravesend Station an existing narrow cutting with brick retaining walls would have to be widened on the south side to accommodate 2No. new tracks. This requires the demolition of 6No. buildings; The Railway Tavern (No.1A Railway Place), 2No. small shops (Nos. 15 and 16 Windmill Street), 2No.

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small houses now in office use (Nos. 7 and 8 Parrock Street) and the premises of S&G Motors on the north side of Saddington Street. The new tracks would run under the north side of Saddington Street, which passes parallel to the railway for 250m, and 11No. road bridges over the line would need to be reconstructed. Some carriageway reductions are required further east in Milton Road and Prospect Place, the broadening of an embankment between Milton and Denton and widening of the causeway over the marshes to the junction with the Isle of Grain Line. Grade separation is required towards the junction with the Isle of Grain Line so the twin tracks bound for the airport and Lower Thames Tunnel can cross over the twin-track chord bound for Rochester.

c. The SERAS/Cliffe airport proposes an alternative new rail route from the Isle of Grain Line to a junction with the CTRL line near Claylane Wood south of Gravesend in order to avoid the constraints of the existing North Kent Line through Gravesend. From 2007 when the St. Pancras CTRL comes into service, the existing twin-track CTRL line south of Gravesend will already be running at full capacity, without an airport service and consequently the SERAS/Cliffe proposal will require a new twin-track line bypassing Gravesend for some 11 kilometers from the Isle of Grain Line to the Fawkham junction of the St. Pancras and Waterloo CTRL branches, near Southfleet.

d. 4-tracking the North Kent Line through Gravesend requires less land purchase and arguably results in a smaller environmental impact than building a new twin-track rural line from the Isle of Grain Line to the CTRL Fawkham Junction via Claylane Wood. Upgrading the existing North Kent Line would also improve local services to and from Gravesend Station. A separate sum for 4-tracking the North Kent Line (£150m) is included in the Cost Consultant's Report.

e. Airail hubbing through Thames Reach Airport provides an argument for the SERAS/Cliffe CTRL connection via Claylane Wood. This route, together with a return chord at Claylane Wood in the Paris direction, would allow high-speed trains to run directly between Thames Reach Airport and the Continent; see Section 2 above.

5. COMMUTER RAIL CHORDS

a. Twin-track return chords heading east are proposed at the junctions with the Fenchurch-Southend line and the Shenfield-Southend line to provide a

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commuter service for employees from the South Essex conurbation, to Thames Reach Airport.

b. A twin-track return rail chord heading north is proposed at the Shenfield junction with the Great Eastern network to provide a route north from Thames Reach Airport towards Norwich and the east coast, for passengers and freight.
c. A twin-track rail chord at Lower Higham, from the Isle of Grain Line to Rochester, has already been shown in the September 2002 Prospectus.
d. Clearly these rail chords also provide a greater rail catchment for passengers.

6. FASTWAY COACH SERVICES

a. Extending the airport operations from 15 to 20, to 24-hours per day can increase the phased capacity of Thames Reach Airport. In the early phases there would not be sufficient demand to run train services through the night for airport employees alone. During these early-phase periods of lower demand a “Fastway” coach service, similar to that implemented for Gatwick, would provide airport access for employees through the night from local town centres north and south of the Thames, via the Lower Thames Tunnel. These services could be extended to passengers.

7. HIGHWAYS CAPACITY

a. The twin-section Lower Thames Tunnel can provide phased highways capacity from D2 (2-lane dual carriageway) to D4 (4-lane dual carriageway), similar to the existing combined tunnel and bridge Dartford crossing. The associated D2/D3/D4 highway will connect Sadlers Farm roundabout to the existing A289 and the Medway Tunnel, both D2. A D3/ D4 capacity highway from Sadlers Farm Roundabout to the tunnel would serve the combined capacities of the A130, A13 and A127. On the Kent side the A289 would have to be widened from D2 to D3 for the higher phases of airport capacity. From 2009 a Medway Ferry service would help relieve this capacity constraint. The optional Lower Hope Thames road tunnel, as part of a Lower Thames Barrier, together with an optional road and rail Sheerness Tunnel, could provide additional capacity and distribution beyond 2030.

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8. A12 IMPROVEMENTS AT CHELMSFORD

a. The current A12 London-Ipswich multi-modal study is proposing to widen the A12 to six lanes between the M25 and Chelmsford by 2011 under an £83m scheme and a second phase by 2016 will extend the work to Colchester. The first phase of work can be adjusted to combine the A12 works with the proposed A130 outer orbital works. This would allow the Chelmsford bypass D2 to D3 upgrade works cost of £12.6m to be removed from the A130 outer orbital costs. See Cost Consultant's Report Appendix 1 Item No.8.0.

9. MAINS WATER SUPPLY

a. The SERAS Stage Two Appraisal Findings report identifies water supply as a high-adverse problem for all phases at Cliffe, as there is inadequate local water supply and excessive pumping from aquifers at present. The SERAS/Cliffe solution requires pumping water from a new reservoir system at Bewl-Darwell in East Sussex. Thames Reach Airport will have a gravity-fed mains supply via the Lower Thames Tunnel from Hanningfield Reservoir in Essex, half the distance of the Bewl-Darwell system, and the airport mains can connect to an existing substantial, gravity-fed water main near to the north portal of the Lower Thames Tunnel, only some 6km from the central terminal area. The water supply solution for Thames Reach Airport via the Lower Thames Tunnel is therefore much closer, more economic and has no adverse impact.
b. The Medway Shore and Isle of Grain Thames Gateway Partnership "Zones of Change" and other areas on the Hoo Peninsula already have a water supply problem. It would be possible to pump a water supply from a covered reservoir in the airport terminal-box excavation, to serve the whole Hoo Peninsula and thereby solve the supply constraints for the "Zones of Change" while reducing the take from local aquifers. Water Company revenues from this new supply would contribute towards funding the Lower Thames Tunnel.

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10. WOOLWICH FERRY

a. The forthcoming Thames Gateway, Galleons Reach crossing of the Thames will effectively render the Woolwich Ferry redundant by 2009. The Lower Thames Tunnel and the first phase of Thames Reach Airport would be open by 2010. Before then there would already be considerable airport construction traffic, both vehicular and pedestrian. The boats and landing equipment of the Woolwich Ferry could be relocated to provide a Medway Ferry from Sheerness to the Isle of Grain every quarter hour. Much of the infrastructure for a ferry service already exists at Sheerness, requiring only the landings and a roadway on the Isle of Grain side to complete the 1.5km Medway crossing. Pier to pier the land route from Sheerness to the Isle of Grain is some 58km around the Medway Towns via the A249(T), M2, A289 and A228. From Sheerness to Thames Reach Airport along the same land route is some 49km, compared with 18km on a route via the ferry and this route would also serve the "Zones of Change" on the Hoo Peninsula. The Medway Ferry would provide a useful service for Thames Reach Airport commuters, for "Zones of Change" commuters, for airport bound freight from Sheerness Docks and for car and freight journeys heading from Sheerness Docks to the Lower Thames Tunnel and areas further North. The present Woolwich Ferry, working at 75% capacity, provides 6No. 10-minute crossings per hour each way and carries some 1.3m vehicles and 2.75m passengers per annum. The Medway Ferry would provide 4No. 15-minute crossings per hour each way so on similar load factors the ferry service would carry up to 1.2m vehicles and 2.5m passengers per annum, with scope for a higher frequency and significantly higher capacity, particularly for commuters. The service could be funded from the sale of existing assets and from tolls.

b. The Medway Ferry would assist the development of the Thames Gateway Partnership "zones of change" on the north Medway Shore, on the Isle of Grain and on the Isle of Sheppey, by providing a convenient and regular service between these development zones until a multi-modal Sheerness Tunnel could become viable beyond 2030. In the mean time the Medway Ferry capacity would help to postpone the D2/D3 upgrade of the A289.

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11. BEYOND 2030

a. Beyond 2030 there is an opportunity for a second Thames road tunnel under the Lower Hope carrying a highway from the A13/A128 junction near Orsett in Essex, via East Tilbury, Cliffe and alongside the Isle of Grain line to the southern portal of the Lower Thames Tunnel. There is time for The Lower Hope tunnel to be designed and incorporated within a new Lower Thames Flood Barrier (not bridge as noted in the September 2002 Prospectus), for which the overall costs would make the additional road tunnel cost insignificant.

b. Beyond 2030 there is also scope for an immersed tube road-and-rail tunnel under the Medway between the A249 near Sheerness on the Isle of Sheppey and the A228 on the Isle of Grain. This would complete a circuit of the Medway Towns, from Maidstone via Sittingbourne and Sheerness, providing a second route from the M2 and a rail route from Sittingbourne to Thames Reach Airport and the Lower Thames Tunnel. This Sheerness tunnel would bring the Isle of Sheppey into the fold and further encourage development of the “zones of change” identified by the Thames Gateway Partnership on the Hoo Peninsula, Isle of Grain and Isle of Sheppey.

c. Beyond 2030 the optional east-west Thames Gateway route described above crosses the north-south Lower Thames Tunnel route just below the Thames Reach Airport site, providing further confirmation that an East Thames marshland site in both the short and long term provides the most accessible location for a new airport within the Thames Estuary.

d. Beyond 2030 a high-speed line through the tunnel to the Midlands and Scotland would increase Airail hubbing from Thames Reach Airport.

12. INFRASTRUCTURE PHASING

a. Data will be provided in a suitable form for running comparative NAAM and SPASM outputs for each phase of Thames Reach Airport to determine the rail and highways capacities for serving growth in both the Thames Gateway region and access to the airport.

b. The outputs will also indicate the degree to which the Lower Thames Tunnel relieves congestion on the Dartford Crossing and the time when the crossing capacity again rises to present levels.

c. Subject to outputs and phasing there is scope to substantially reduce the early phase cost of the Lower Thames Tunnel.

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13. INFRASTRUCURE FUNDING

a. Thames Gateway Infrastructure Budgets
b. Dartford Crossing Tolls,
c. Lower Thames Tunnel Road tolls,
d. Lower Thames Tunnel Passenger-rail tariffs,
e. Lower Thames Tunnel Freight-rail tariffs,
f. Lower Thames Tunnel Utility company tariffs; water, electricity, gas, etc,
g. Lower Thames Tunnel Airport tariffs.

14. APPENDIX

a. Øresund Tunnel introduction sheet by Symonds; the technical precedent for the multi-modal Lower Thames Tunnel under Thames Sea Reach.
b. Rail infrastructure regional map: Indicating existing, proposed and optional rail routes associated with Thames Reach Airport.
c. Road infrastructure regional map: Indicating existing, proposed and optional road routes associated with Thames Reach Airport.

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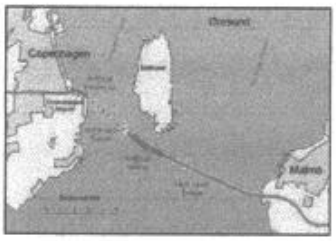
Symonds

ØRESUND TUNNEL, DENMARK - SWEDEN

The Øresund Tunnel forms part of the 16km fixed link between Denmark and Sweden. It was opened on time and to budget on July 1st 2000. The immersed tunnel is the largest in the world



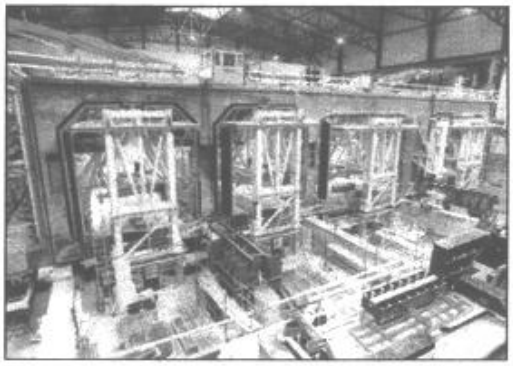
Symonds was designer to ØTC, a joint venture of NCC, Laing, Dumez GTM, Pihl and Boskalis for the £450m design and build contract.

Symonds worked closely with ØTC during pre-tender and tender stages to develop a design that took full advantage of the economies of scale possible with such a large scheme.

FACTS & FIGURES	
Tunnel Length	3510m
Scheme cost	£450m
Element size	175m long 41.7m wide 8.6m high
No. of elements	20
Element weight	approx 55,000T
Construction period	5 years

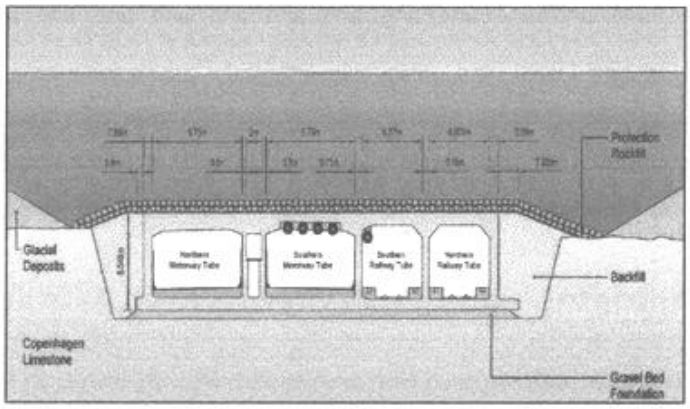
The 4km tunnel crosses under the Drodgen navigation channel from a new artificial peninsula adjacent to Kastrup Airport to a new 4km long artificial island where the route transfers to a bridge for the remainder of the crossing.

The tunnel lies in a trench dredged into the Copenhagen limestone beneath the sea bed. It carries a dual carriageway road and a high speed railway.



A tunnel element is positioned over the trench for immersion.

The unique full section casting and jacking of the tunnel elements was fundamental to the success of the project.



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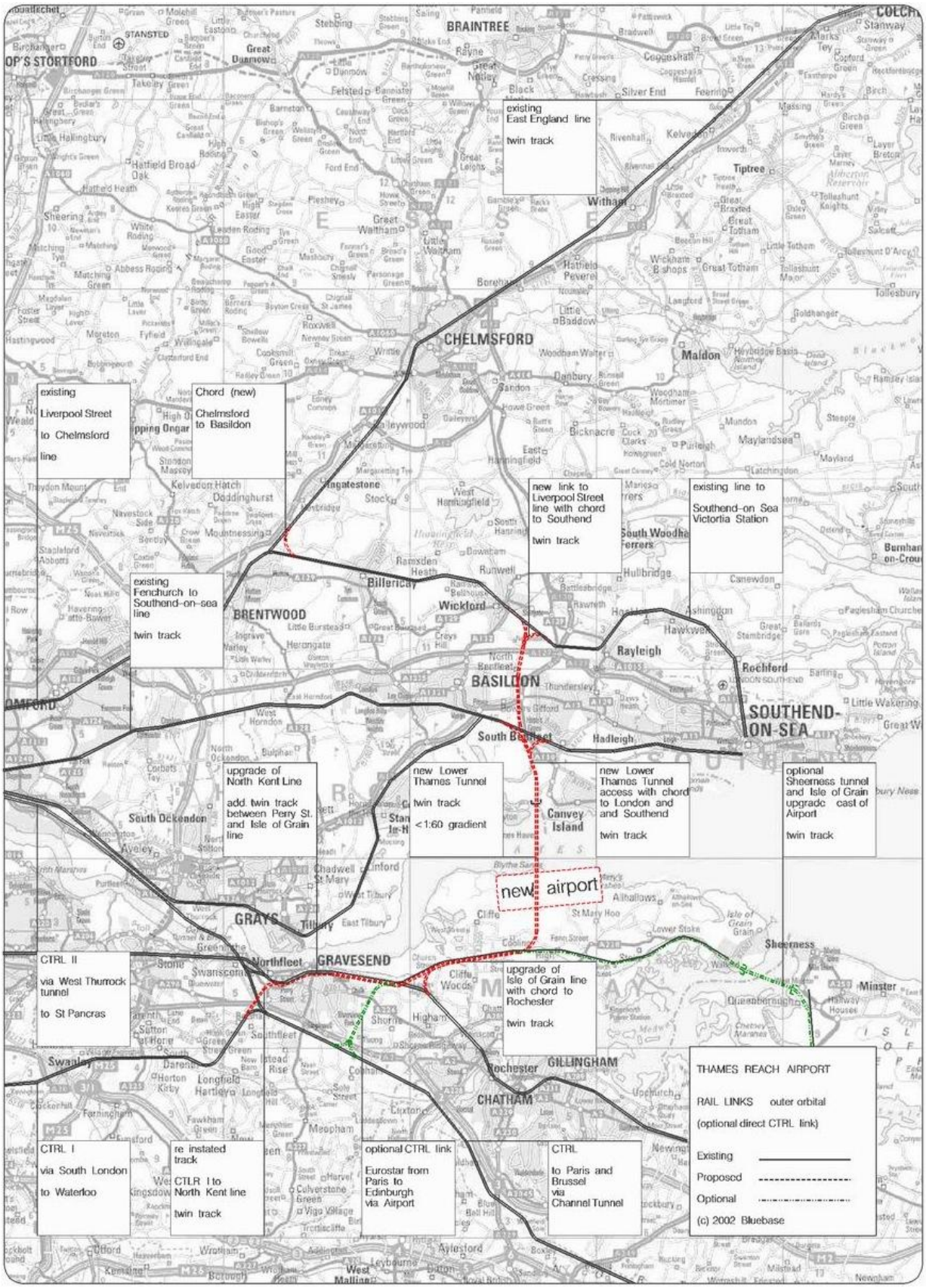

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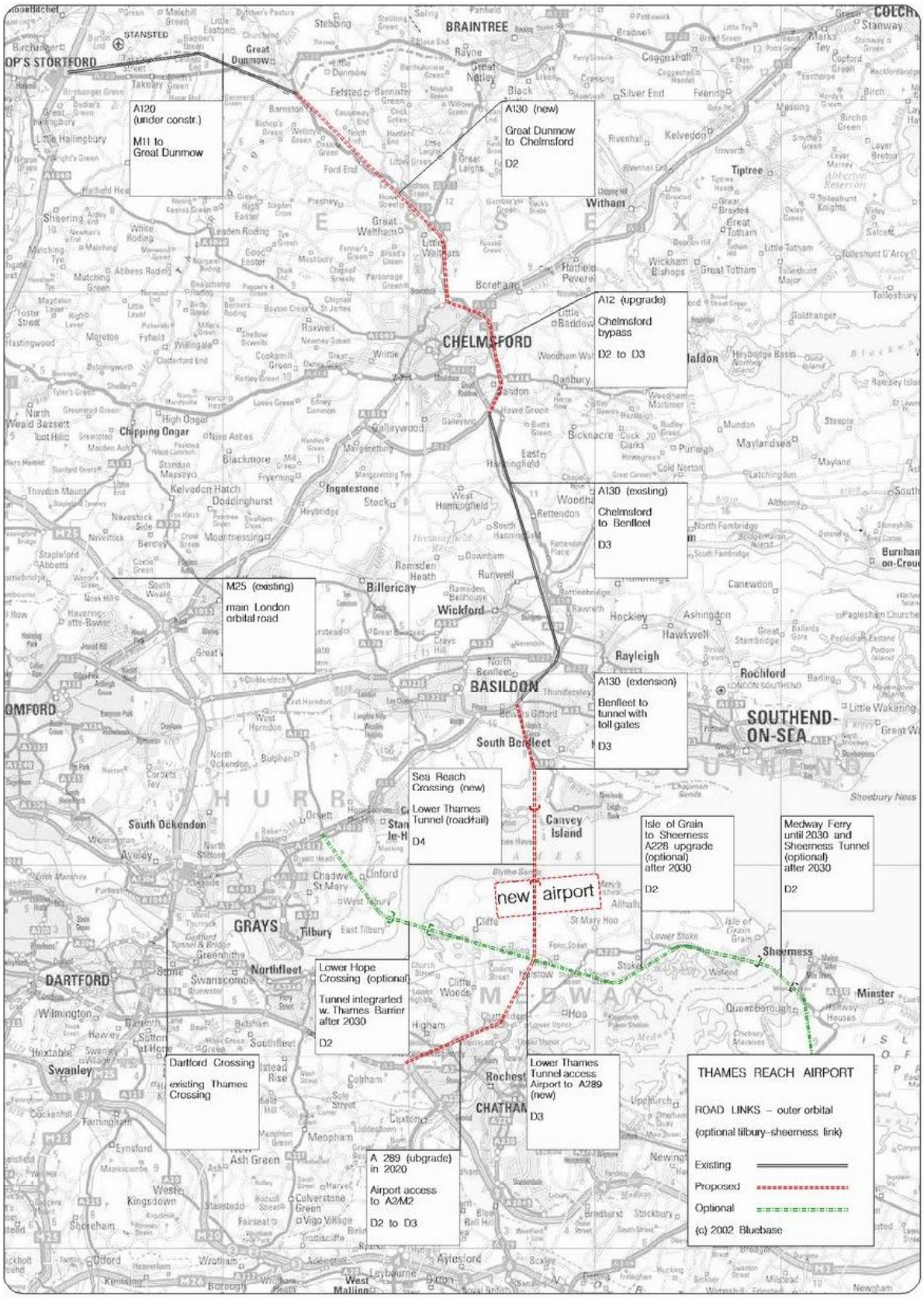

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THAMES REACH AIRPORT – ADDENDUM II – AIRPORT WORKS

This is an airport works addendum to the Thames Reach Airport Prospectus September 2002, taking into account on-going consultations.

1. THAMES REACH AIRPORT LINES OF DEVIATION.

a. By an analogy with railway enactments the Lower Thames Tunnel and Thames Reach Airport site are sufficiently close to the "Benfleet Crossing" and SERAS/Cliffe airport site to be within similar "lines of deviation" so that public consultations on the SERAS/Cliffe proposals can be deemed to have embraced the Thames Reach Airport proposals. In fact "lines of deviation" for Thames Reach Airport will be more restrictive than those for the Seras/Cliffe proposal.

b. The site of Thames Reach Airport is determined by the location of the Lower Thames Tunnel, which lies near to the OS TQ769 Easting (i.e. a north-south line some 100m west of OS gridline TQ77) and by a "line of deviation", from the junction of Pond Hill and Church Close in Cliffe to Parker's Corner in Allhallows, joining the northern fringes of Cliffe and Allhallows on the Hoo Peninsula. The proposed southern runway and flight path is laid out with a centerline parallel to and 500m from this southern "line of deviation", resulting in the flight paths being more than 500m from almost all habitation on the Hoo Peninsula except for Dagnam Farm, and the holiday village and caravan park of Allhallows-on-Sea some 6.5km east of the Lower Thames Tunnel. The southern airport perimeter is 180m from the centerline of the southern runway. A northern "line of deviation", parallel to the southern line, would be determined by the acceptable degree of Ramsar impact resulting from wetland reclamation. The whole airport site including the north and south lines of deviation can be translated further north or south subject to the balance of issues arising from Ramsar impacts to the north, and aircraft noise and nitrous oxide dispersal to the South (See Phasing below). Measures will be required to prevent ships from approaching the runways under the northern flight paths during high tide. Moving the southern line of deviation further south may require setting the southern runway further east and/or possible groundworks towards Allhallows, to maintain ground clearance under the southern flight path.

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c. Secure airside functions for cargo and maintenance are located within the airport perimeter west of the Central Terminal Area (CTA) while the public access areas with piers/satellites are laid out east of the CTA. The western "line of deviation" for the airport stays within the existing western course of Cliffe Fleet, to preserve the Cliffe Marshes and Redham Mead further west.

2. AIRSPACE INTEGRATION

a. Thames Reach Airport will require integration of airspace and air traffic control with the City Airport, Southend Airport and Heathrow.

b. If conflicts cannot be resolved for the higher capacities of Thames Reach Airport there comes a time when closure of the City and Southend airports and relocation of services to Thames Reach becomes an option, perhaps retaining a helicopter service from the City to Thames Reach for those few who need or prefer fast access, and retaining a local leisure and air-display role for Southend. There is time to programme the transfer of capacity from the City and Southend airports to Thames Reach and this capacity could assist the seeding process. Excess land at the City Airport site becomes a valuable waterside residential site, for which the infrastructure connections are already in place. Closure of the City Airport would also remove aircraft noise from a large and densely populated area of East London and lift height restrictions on development at Canary Wharf and elsewhere in the Thames Gateway.

3. PHASING

a. To reduce the cost per mppa it is necessary to phase the airport construction to match investment with demand. At Thames Reach Airport the first phase includes the tunnel access connections, the Central Terminal Area (CTA), the initial piers/satellites together with proportionate cargo and maintenance facilities, and only one runway, all requiring an initial site area of some 6sq.km. The first phase of enabling works will use spoil from the Lower Thames Tunnel and from an airport terminal excavation of some 2sq.km.to form the 6sq.km raised site. Further terminal box area, piers/satellites, cargo and maintenance facilities are added until the ATMs require construction of the second runway, bringing the total site area up to some 11sq.km. This helps phase not only the airport

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construction, including the airport terminal excavation and the airport capacity, but also the environmental impact since the noise nuisance and nitrous oxide dispersal to the South, or the Ramsar impact of wetland reclamation to the North, can be postponed some ten years subject to whether the North or South runway is built first. The Phasing Layouts of the Appendix indicate construction of the south runway first, to postpone the wetland reclamation. However if the effects of noise and nitrous oxide dispersal on Cliffe, Allhallows, High Halstow and the Northward Hill bird sanctuary take precedence then the North runway is built first. Sea dredged aggregates, delivered by ship, can be used to make up the spoil shortfall for raising the later phases of the airport site area. (Local agencies are already searching for a location to unload 4m cubic meters of sea dredged aggregates and these could be distributed over the site for settlement ahead of developing the later phases.)

b. A single runway with CTA, piers/satellites and proportionate cargo and maintenance facilities, provides a maximum capacity of 20mppa to 30mppa subject to hours of operation, i.e. similar to the present Stansted and Gatwick capacities.
c. The SERAS option capacities are based on 16-hour runway operations. The second runway at Thames Reach Airport can be postponed by increasing runway usage to 20-hour or full 24-hour operation.
d. The second runway can also be postponed by increasing the average load factor from the SERAS options level of 145 per plane to load factor of 160 allowing for a higher charter component, subject to demand.
e. Around 2012 a decision can be made to follow the 1500m widely spaced runway option (Version 2) or the 1035m equally-spaced runway option (Version 3). By around 2030 Version 2 leads to a third closely spaced runway with 450m separation from the widely spaced runways, whilst Version 3 leads to a third runway 1035m from the first two runways. Piers/satellites are provided for each of the options as required to meet demand.
f. A third 2km runway for the widely spaced runway option (Version 2) is provided by piling 450m further north over the wetlands or by raising the marsh site 450m further south, where the flight path would cross Cliffe and Allhallows. Again the choice is subject to the chosen “lines of deviation” and the balance of issues arising from aircraft noise and nitrous oxide or from the Ramsar wetland impacts. The third runway would be used for

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short haul and cargo flights allowing more long haul capacity with higher load factors on the main runways.

g. The 5km runways referred to in Section 9 of the Prospectus may only allow a small increase in ATM's since ATM's are largely controlled by airspace separation. However the 4No. take-off and landing zones would reduce the distance of aircraft ground movements to and from the piers/satellites and consequently reduce the time and cost of individual journeys and reduce the turn around time for aircraft; both direct benefits for passengers and airlines.

h. The main runways may be staggered in the final resolution of the airport layouts, not to provide any significant uplift in ATM's, but to help minimise aircraft ground movements, to provide additional flight path clearances over The Lower Hope and Hoo Peninsula, and to mitigate the Ramsar impacts on the wetlands and/or the noise/nitrous oxide dispersal on the residents of Cliffe and Allhallows.

i. The airport phasing options are summarised in the Thames Reach Airport Phasing Table where separate airport phasing layouts are provided for the widely-spaced and equally-spaced runway options.

j. Data will be provided in a suitable form for running comparative NAAM and SPASM outputs for each phase of the airport development.

k. Additional data will be provided to demonstrate the substantially lower cost profile and corresponding capital investment plan that can be achieved by phasing the airport construction.

4. ARCHITECTURE

a. Thames Reach Airport will be the first purpose-designed facility in the UK planned from the outset for a hub capacity in excess of 100mppa,

b. There will be greater clarity in the design of airport systems and circulation.

c. Passengers will first encounter the airport systems at remote check-in facilities located in Central London, around the Thames Gateway and onboard trains, to help disencumber them during their journey and simplify procedures on arrival at the central terminal area.

d. Outbound passengers will rise from the airport tunnel connections to the departure gates and inbound passengers will descend from the arrival gates to the airport exits.

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e. The central terminal area (CTA) will have wide, open areas, benefiting from natural daylight and will accommodate hotels, shops and offices to serve outbound, inbound and transit passengers.
f. Operations will be gate related to minimize transit distances within the airport perimeter.
g. CTA accommodation and departure lounges will have dramatic views over the airport and the outer estuary.
h. The overall development will have a long hull and low profile.

5. APPENDIX

a. Phasing Table: indicating mppa demand for the south east airports, by taking the mid forecast mppa, omitting the possible capacity created by high-speed rail links to Europe and later options to the North and assuming the existing airports operate to their maximum capacity. The central part indicates growth of demand at Thames Reach Airport. The right hand side describes the cumulative cost for the phased Thames Reach Airport development excluding the cost of the access infrastructure.
b. Indicative Phasing Layouts for Version 2 and Version 3: demonstrating options for phasing the airport development and phasing the wetland reclamation by starting construction with the south runway, with little or no wetland reclamation or Ramsar impact in the early years of the airport operation. Conversely commencement with the North runway would distance the nitrous oxide and noise issues some 2km north of the southern “line of deviation” in the early years of the airport operation.

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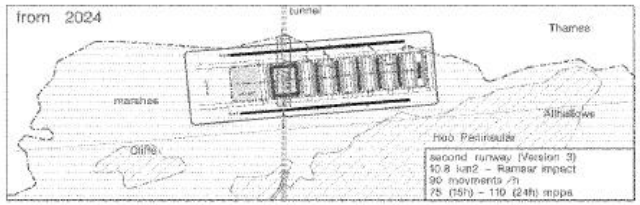
Phasing table: capacity demand in the South East - program and cost estimate for the proposed airport

	forecast (mid)		Existing airport capacity								Demand for Bluebase.TRAC @ cliffe								Program for Bluebase.TRAC (cost £b and action)									
			Luton		Gatwick		Heathrow		Stansted		volume	160	hourly runway movem			Terminal length (km)			total			infrastructure		airport			construction		landtake	
	mppa	rail	mppa	rw	mppa	rw	mppa	rw	mppa	rw	mppa	ATM p/m	15h	20h	24h	15h	20h	24h		£/mppa	cumulativ	cost	action	£/mppa	cumulativ	cost	action	cost	action
2000	114.3	0	6.2	1	31.9	1	64.3	2	11.9	1	-								2000										
	120.6	0	6.6		32.5		66.8		13.9		-								1						0.0				
	127.0	0	6.9		33.1		69.4		15.9		-								2						0.1			0.10	marshes
	133.3	0	7.3		33.8		71.9		18.0		-								3		0.9	0.35			0.6	0.50			road/rail -
	139.7	0	7.6		34.4		74.5		20.0		-								4		1.9	0.50	. Benfleet tunnel		1.1	0.50			corridor
2005	146.0	0	8.0	1	35.0	1	77.0	2	22.0	1	-								2005		2.8	0.50	. A130		1.5	0.40			
	151.4	0	8.4		36.0		79.4		24.6		-								6		3.3	0.25	. A289		1.8	0.25			
	156.8	0	8.8		37.0		81.8		27.2		-								7		3.8	0.25	. Fenchurch lines		2.0	0.25			
	162.2	0	9.2		38.0		84.2		29.8		-								8		4.3	0.25	. North Kent line		2.3	0.25			
	167.6	0	9.6		39.0		86.6		32.4		-								9		5.5	0.25	. Liverpool lines		3.3	1.00			
2010	173.0	0	10.0	1	40.0	1	89.0	2	35.0	1	-								2010		6.8	0.25	crossrail linkup		4.3	1.00	Rw1		
	178.8	0	10.0		41.2		89.0		35.0		3.6	23	4.1	3.1	2.6	0.5	0.4	0.3	11	2,014	7.3			1319	4.8	0.50	T1		
	184.6	0	10.0		42.4		89.0		35.0		8.2	51	9.4	7.0	5.9	1.1	0.8	0.7	12	915	7.5			610	5.0	0.25			
	190.4	0	10.0		43.6		89.0		35.0		12.8	80	14.6	11.0	9.1	1.7	1.3	1.1	13	605	7.8			410	5.3	0.25	T2		
	196.2	0	10.0		44.8		89.0		35.0		17.4	109	19.9	14.9	12.4	2.4	1.8	1.5	14	460	8.0			316	5.5	0.25			
2015	202.0	0	10.0	1	46.0	1	89.0	2	35.0	1	22.0	138	25.1	18.8	15.7	3.0	2.2	1.9	2015	375	8.3			261	5.8	0.25	T3		
	210.0	0	10.0		46.0		89.0		35.0		30.0	188	34.2	25.7	21.4	4.1	3.0	2.5	16	283	8.5			200	6.0	0.25			
	218.0	0	10.0		46.0		89.0		35.0		38.0	238	43.4	32.5	27.1	5.1	3.9	3.2	17	230	8.8			164	6.3	0.25			
	226.0	0	10.0		46.0		89.0		35.0		46.0	288	52.5	39.4	32.8	6.2	4.7	3.9	18	196	9.0			141	6.5	0.25	T4		
	234.0	0	10.0		46.0		89.0		35.0		54.0	338	61.6	46.2	38.5	7.3	5.5	4.6	19	181	9.8	0.25	road upgr.		134	7.3	0.50		0.25	RAMSAR
2020	242.0	0	10.0	1	46.0	1	89.0	2	35.0	1	62.0	388	70.8	53.1	44.2	8.4	6.3	5.2	2020	169	10.5	0.25			125	7.8	0.50	Rw2		
	248.2	0	10.0		46.0		89.0		35.0		68.2	426	77.9	58.4	48.7	9.2	6.9	5.8	21	158	10.8			117	8.0	0.25	T5		
	254.4	0	10.0		46.0		89.0		35.0		74.4	465	84.9	63.7	53.1	10.1	7.5	6.3	22	148	11.0			111	8.3	0.25			
	260.6	0	10.0		46.0		89.0		35.0		80.6	504	92.0	69.0	57.5	10.9	8.2	6.8	23	140	11.3			105	8.5	0.25			
	266.8	0	10.0		46.0		89.0		35.0		86.8	543	99.1	74.3	61.9	11.7	8.8	7.3	24	132	11.5			101	8.8	0.25	T6		
2025	273.0	0	10.0	1	46.0	1	89.0	2	35.0	1	93.0	581	106.2	79.6	66.4	12.6	9.4	7.9	2025	124	11.5			94	8.8	0.00			
	278.6	0	10.0		46.0		89.0		35.0		98.6	616	112.6	84.4	70.3	13.3	10.0	8.3	26	119	11.8			91	9.0	0.25			
	284.2	0	10.0		46.0		89.0		35.0		104.2	651	118.9	89.2	74.3	14.1	10.6	8.8	27	115	12.0			89	9.3	0.25	T7		
	289.8	0	10.0		46.0		89.0		35.0		109.8	686	125.3	94.0	78.3	14.9	11.1	9.3	28	109	12.0			84	9.3				
	295.4	0	10.0		46.0		89.0		35.0		115.4	721	131.7	98.8	82.3	15.6	11.7	9.8	29	104	12.0			80	9.3				
2030	301.0	0	10.0	1	46.0	1	89.0	2	35.0	1	121.0	756	138.1	103.6	86.3	16.4	12.3	10.2	2030	99	12.0			76	9.3				
																						3.10				8.90		0.35	

	South East	not factored in high speed rail Paris, Brussel, (Edinburgh)	160p/m higher load factor	runway phasing 1rw = 48m/h 2rw = 90m/h 3rw ~ 120m/h 4rw ~ 140m/h	135 p/gate/h 10 gates per km

over all cost incl. infrastructure

airport only cost incl. landfill



indicative layout

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space planning

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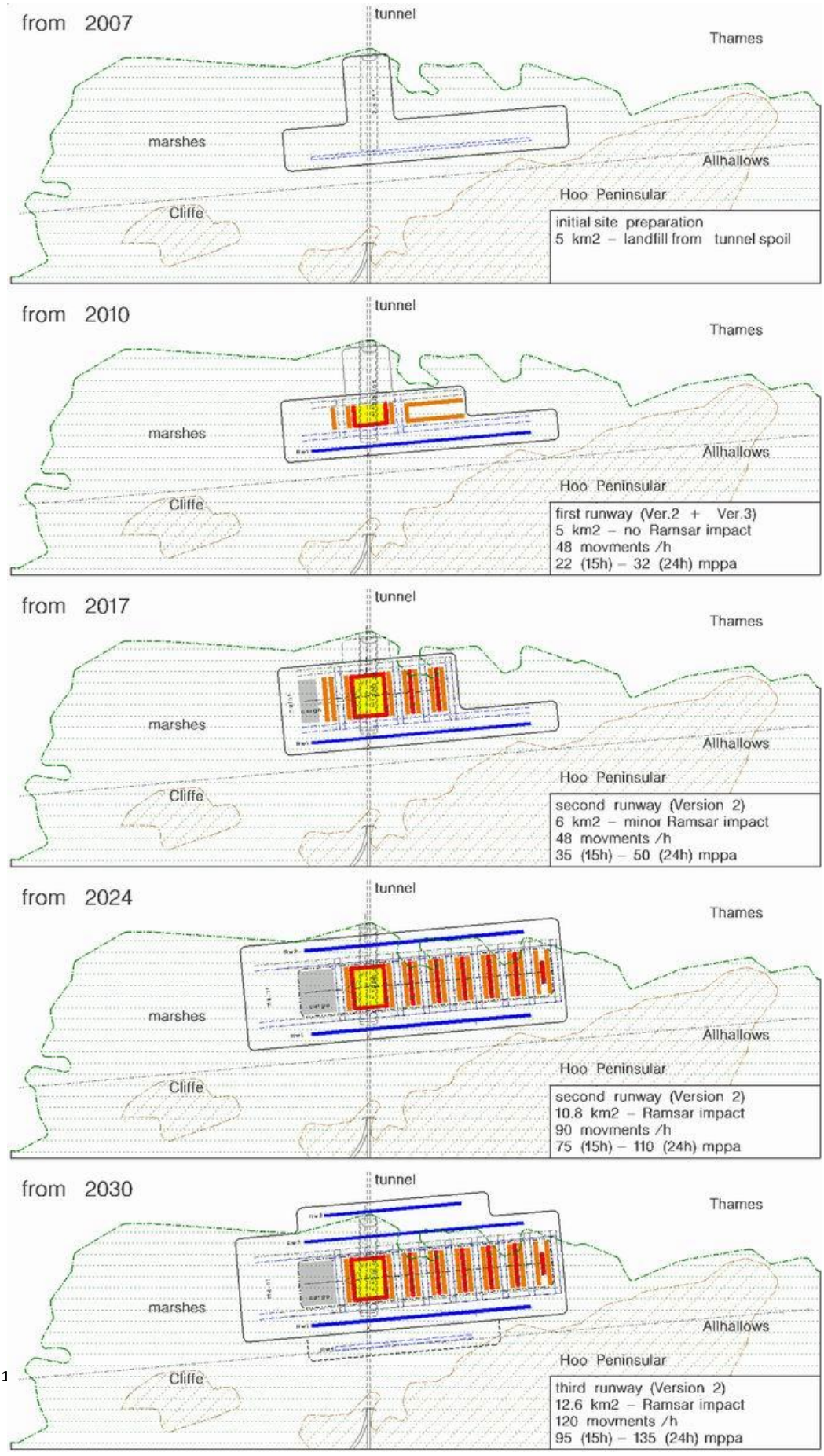

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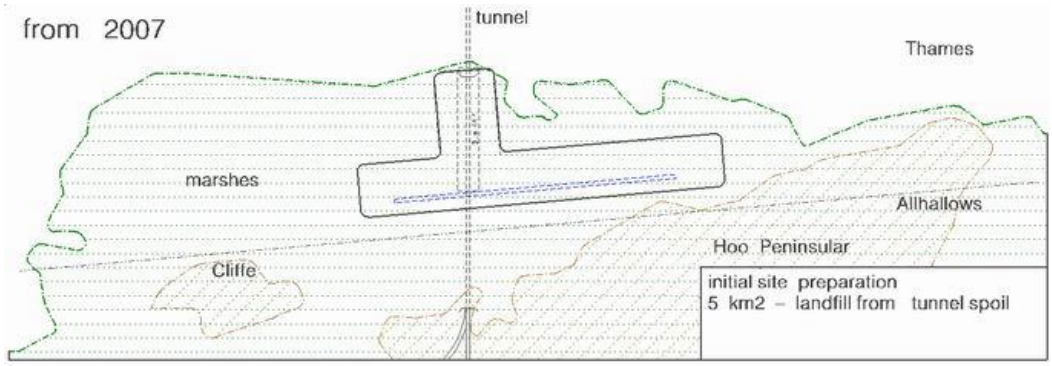

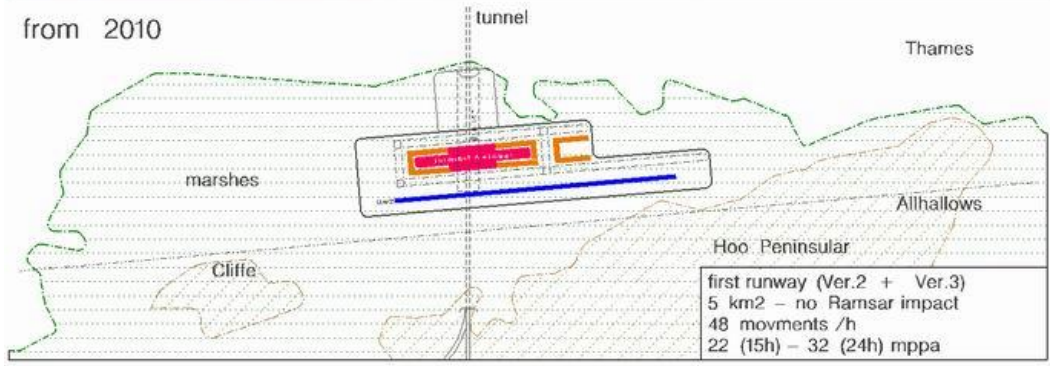

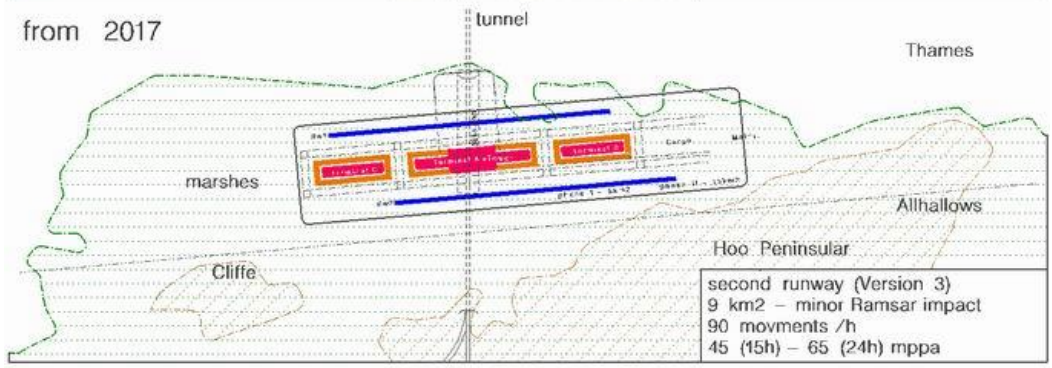

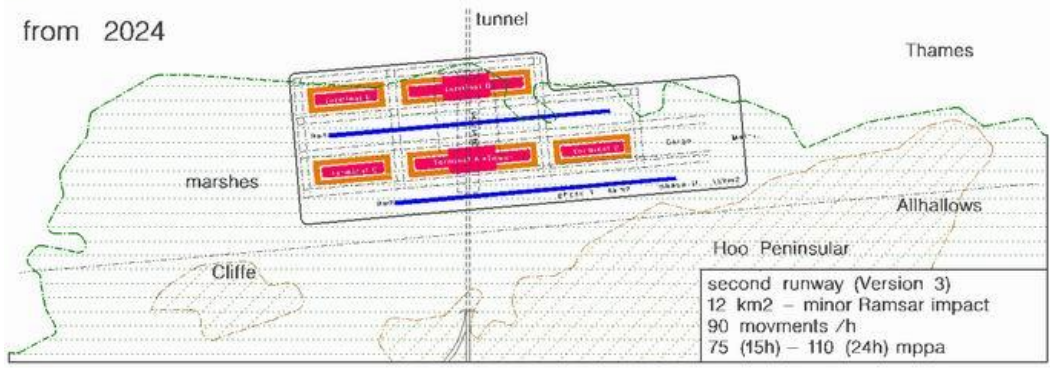

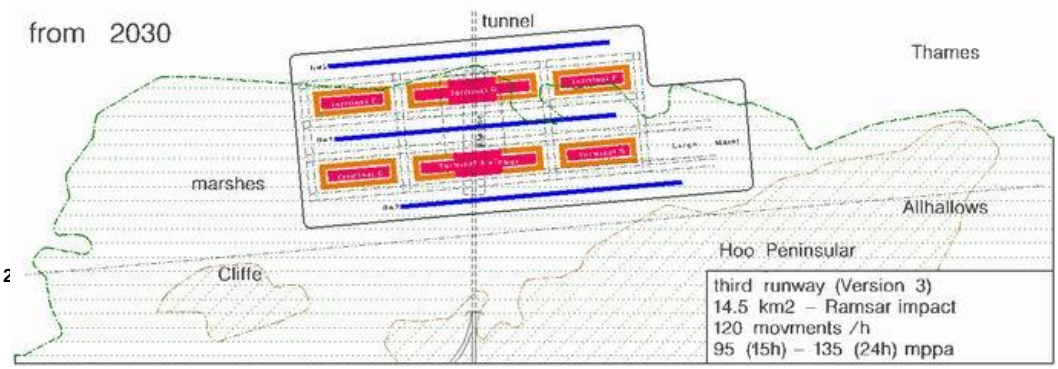

THAMES REACH AIRPORT – ADDENDUM III – Cliffe review

This is an addendum to the Thames Reach Airport Prospectus September 2002, comparing Thames Reach Airport with the Seras/Cliffe proposals and raising points on sustainable power and conservation policies.

1. TUNNEL v BRIDGE AND SEA REACH v LOWER HOPE

Set out below is the case for a multi-modal tunnel under, rather than a bridge over, the Thames and the choice of Sea Reach rather than The Lower Hope or Gravesend Reach for crossing the Thames: -

a. To serve Thames Reach Airport a new Lower Thames Tunnel or Bridge needs to be multi-modal, i.e. combining roads, rail and utilities across the estuary. Though access to Thames Reach Airport for passengers, employees and freight will be rail-led to a higher degree than for existing airports still it will be essential to provide substantial highways access for each of these categories, including provision for park and ride journeys.
b. A bridge is cheaper and quicker to construct than a tunnel, but can only carry a highway and a light-rail system excluding freight if the approach ramps are not to become too long, so a bridge alone does not provide a full multi-modal link including rail freight.
c. An immersed tube tunnel can combine the large cross sections needed for the highway with the smaller, shallower gradient sections required for a passenger and freight railway.
d. A bridge for the highway, combined with bored tunnels for the passenger and freight railway, provides a full multi-modal crossing but increases the land take and construction costs, so reducing the cost and time advantages over an immersed tube tunnel.
e. The depth of a tunnel beneath the shipping channels is significantly less than the height of a bridge over them so the ramps for a tunnel are shorter and more easily accommodated than those for a bridge. The form and extent of these ramps place constraints on the locations where a bridge can provide convenient and economic connections to existing roads and railways.
f. The long ramps and main span of a bridge have a much greater environmental and visual impact than the cuttings of a tunnel's

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approaches. The Queen Elizabeth II Bridge crosses the Thames through heavy industrial estates in Essex and Kent where the valley is uncharacteristically narrow and there is minimal habitation in the immediate vicinity of the bridge structures. Even so the long, swerving ramps and cable-stay, main span are widely regarded as crude and unsightly. The characteristic scale of the estuarial landscape develops downstream from Gravesend and from here the outline of a bridge with extended ramps rising high over estuary would disfigure the landscape and diminish the scale, while the night lighting of the carriageways and drone of traffic would have an environmental impact over a large and widely inhabited area.

g. A bridge introduces new obstacles in the river and height restrictions over the Thames shipping channel. With an airport proposal in the vicinity the bridge superstructure introduces a hazard to flight paths and restricts runway configurations. The Øresund Link from Denmark to Sweden was designed to pass through an immersed tube tunnel towards the Swedish end owing to the proximity of an airport by the Swedish coast.
h. A tunnel provides the closest and most convenient link to an airport since a bridge necessarily has to be some distance from the airport perimeter both for the runways and for the long ramps.
i. An immersed tube tunnel has higher capital and running costs than a bridge, for the mechanical and electrical systems. However Thames Reach Airport located on the estuary proposes to make use of solar, tidal, wave and wind power to offset these higher running costs and reduce the carbon audit.
j. The environmental impacts of an immersed tube tunnel, resulting from the casting basin and the dredging and handling of spoil, are mitigated by combining the tunnel construction with the enabling works for the airport site.
k. A tunnel under The Lower Hope would funnel vehicular traffic via the A13 on to the congested northeastern quadrant of the M25.
l. A tunnel under The Lower Hope would provide a rail connection to the slower, southern branch of the Fenchurch Street-Southend railway lines.
m. A tunnel under The Lower Hope would create long and disruptive transport corridors, with a high environmental impact on the Kent side, to reach the airport site further east and the M2 further south.
n. A tunnel under The Lower Hope cannot fundamentally change the historic, radial infrastructure north and south of the Thames.

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o. A Sea Reach tunnel transforms the radial infrastructure north and south of the Thames into an inner and outer orbital and circulatory system for both road and rail access.
p. A Sea Reach tunnel spreads transport loads more evenly over the Thames Gateway Region from Canary Wharf and the Blackwall Tunnel to Southend and the Isle of Grain, while relieving congestion on the M25/Dartford Crossing.
q. A Sea Reach tunnel provides shorter rail-commuter journeys to Thames Reach Airport for employees from South Essex and the Medway Towns.
r. A Sea Reach tunnel is well located for providing a gravity-fed mains water supply to Thames Reach Airport from Essex and for providing a new fuel pipeline between terminals in Essex and Kent, passing directly under Thames Reach Airport.

2. MARSHLAND SITE V HILLTOP SITE

A decision to proceed with a new airport on the Hoo Peninsula should also determine whether to build the airport on the hilltop, as outlined in the Seras/Cliffe report, or down by the Thames shore on the marshes. Set out below are the key issues in favour of the Thames Reach Airport site on the marshes beside Thames Sea Reach.

a. No infrastructure corridor spur is required from the Lower Thames Tunnel to the airport since the route passes directly under the Thames Reach Airport site. The marsh airport site consequently provides quicker and cheaper passenger, employee and freight journeys from both Central London and the Thames Gateway regions to the airport.
b. The marsh location assists with the enabling works for both the Lower Thames Tunnel and the airport.
c. Less movement of spoil is required to raise the marsh airport site.
d. The marsh airport site provides greater uniformity of ground conditions than the hilltop site. Both options require made-up ground levels, where the important engineering requirement is not the overall load bearing capacity of the made-up ground, which can be achieved through design, but the uniformity of the made-up ground, which is achieved largely through settlement. The airport terminal box and redistribution of spoil suits the marshy ground conditions, which are uniform over the whole site. The hilltop site requires cutting off ground from high areas and using the spoil

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to raise the lower areas. This will lead to differential settlement with additional groundwork costs prior to the casting of pavements.

e. The replacement habitat costs for the marsh site are lower than those for the Seras/Cliffe hilltop site, since the latter takes a similar area of marshland whilst also destroying the Northward Hill bird sanctuary.

f. The marsh airport site accommodates the runways some 1.5km further north than the hilltop site. This distances the flight paths further from the tall stacks of the Kingsnorth and Isle of Grain power stations and reduces potential aircraft noise and nitrous oxide dispersal on the Medway shore and Isle of Grain: both areas that are identified as “zones of change” with considerable development potential in the Thames Gateway Partnership plans.

g. The marsh airport site further north will have lower noise and nitrous oxide impacts than a hilltop site since very few people will live within 500m of the flight paths, the ridge of higher ground running along the Hoo Peninsula will help to screen aircraft noise from areas further south and nitrous oxide will be dispersed over the Estuary by prevailing south-westerly winds.

h. The Lower Thames Tunnel and marsh airport site acquires far fewer homes than the hilltop site (20 v 1,100) and takes Grade 3 or 4 agricultural land rather than valuable and productive Grade 1 agricultural land, including orchards on the hilltop. The 20No. dwellings acquired for Thames Reach Airport include those for the Lower Thames Tunnel and all associated infrastructure connections.

i. The marsh airport site is currently protected from the tides by sea walls built in 1982. With ground levels falling, sea levels rising and storm strength increasing, the land may have to be sacrificed to the tides by the end of the century to save sea defense costs. The present drained-marsh habitat would then face the prospect of radical change. The construction of an airport makes good use of flood-risk land and allows time to manage this inevitable change of habitat. (See Item 3d, below.)

j. The pattern of land ownership and compensation issues are more straightforward for the marsh airport site, where there will be far fewer individual cases to negotiate and the costs and risks of on-going sea defense maintenance need to be taken into account. With far fewer cases to negotiate the terms of compensation can afford to be more generous and in turn this should help bring forward the construction programme.

k. The Lower Thames Tunnel and marsh airport site do not require the demolition of any listed buildings.

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l. The marsh airport site mitigates disturbance of the £180m MoD PPP development of Chattenden Barracks and Lodge Hill.
m. The hilltop site involves removal of contamination from landfill sites that have been used for waste disposal including BSE carcasses.
n. The hilltop site requires the pumping of new water supplies to the airport from the Bewl-Darwell reservoir system in East Sussex while the marsh airport site can be gravity-fed from a main passing close to the north portal of the Lower Thames Tunnel.
o. The optional east-west Thames Gateway route beyond 2030 crosses the north-south Lower Thames Tunnel route just below the Thames Reach Airport site, providing further confirmation that the marshland site in both the short and long term provides the most accessible location for a new airport within the Thames Estuary.

3. DRAINED MARSH AND WETLAND RECLAMATION

a. Under Government grants in the 1970's to encourage draining of the marshes to grow cereals and potatoes, the proposed site for Thames Reach Airport was used until quite recently for the growing of wheat. The sea defenses were improved in 1982. Only in more recent times under the CAP set-aside policies has the land become pasture, an agricultural use that alone would not justify the expense of the sea defenses.
b. The current bird populations are the result of successful conservation management since the 1970's, and given time the same management techniques can develop bird habitats away from the airport site. Phasing of the airport construction allows up to 20 years for conservation management to direct existing bird populations away from the airport site to alternative habitats.
c. The proposed areas of wetland reclamation for the higher phases of airport capacity represent a small proportion of the total available wetland area in the region, which includes the Blackwater, Crouch, Medway and Thames estuaries, the Swale and other tidal foreshores.
d. The SERAS/Cliffe and Thames Reach Airport proposals occupy SPA and Ramsar sites that are protected by EC regulations prohibiting development unless there are no reasonable alternatives. Nitrous oxide levels are already unacceptable around Heathrow and will present difficulties for the other SERAS options. The low population in the vicinity of Thames Reach Airport and the prevailing south-westerly winds minimise the nitrous oxide

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issues, so providing a case for permitting some Ramsar impact. The SERAS report has already concluded that owing to noise there are no alternatives to the Cliffe location for a 24-hour airport operation, and recent European Court challenges to night operations at Heathrow help to endorse this view. Thames Reach Airport has an even lower noise impact than the SERAS/Cliffe proposal and consequently a stronger case for 24-hour operation, permitting additional Ramsar impact.

e. As noted in Section 2 above the construction of an airport makes good use of flood-risk land that is expensive to maintain and may in any event have to be sacrificed before the end of the century. Development now would allow time to manage the inevitable change of habitat.

4. SUSTAINABLE POWER AND THE RENEWABLES OBLIGATION

a. The Thames estuary location provides Thames Reach Airport with an advantage over the other SERAS options for the development of sustainable power supplies to meet the Government's Renewables Obligation.

b. With the support of Renewables UK, Thames Reach Airport could fund sustainable power supplies from solar, tidal, wave and wind power sources. The airport buildings and site perimeter present a large area for solar power generation. There are already schemes for wind power stations nearby on the south Essex marshes and the outer Thames Estuary. "Stingray", "Frond" and MCP, along with other sustainable energy technologies would be investigated for generating tidal and wave power supplies for the airport operations.

c. The development of sustainable power supplies from the estuary would open the way for the Isle of Grain power station to be closed and replaced by a mixed-use redevelopment including some housing and an area for nature conservation.

5. CONSERVATION

a. Conservation planning policies seek to preserve or enhance the character and appearance of a locality.

b. The Thames Estuary downstream from Gravesend is a quintessentially English landscape celebrated by Turner (1810 Blythe Sands; 1839 The

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Fighting Temeraire) Constable (1829 Hadleigh Castle) and Dickens (1860 Great Expectations) amongst many others to this day.

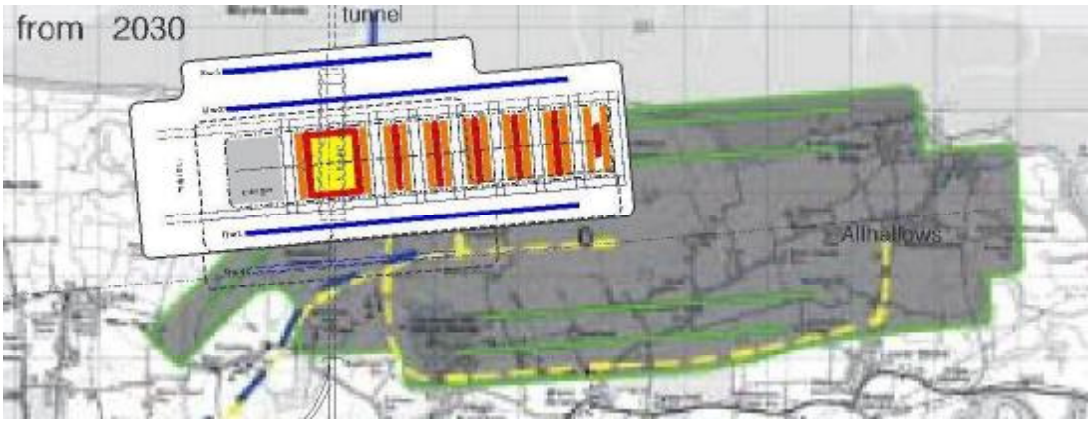
c. A Lower Thames Bridge with an airport on the Hoo hilltop would be intrusive, unsightly and would diminish the scale of the estuary.

d. The proposed form of construction for Thames Reach Airport is similar to the excavations and embankment of 19th century wet dock construction and the proposed hub operations would continue the long tradition of port and industry on the Thames.

e. The low profile and long hull of Thames Reach Airport, anchored to the shore with a moat and “ha ha” perimeter, would have a sublime scale commensurate with that of the estuary. Within the perimeter there would be the business of an international airport but oftentimes beyond, the marshes and tidal mudflats would merge as ever with a pale, estuarial sky on their journey to the Sea.

6. APPENDIX

a. Comparison: Bluebase.TRAC (Version 2) superimposed on the SERAS/Cliffe (4+1) proposal as indicated by SERAS report (Fig.11A)



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EPILOGUE: THE SERAS REPORT AND THE FUTURE GROWTH OF LONDON

Money and services, goods and people find their way around the globe, to and from London. The strength of the UK economy is often seen to depend on the strength of London's economy, from the financial services sector to the trading of goods and services through London, supported by a group of airports that provide frequent and economical flights to a wide range of destinations around the globe, enabling London to maintain its position as a world metropolis. A central issue of the SERAS study is that with limited runway capacity and associated aviation infrastructure a ceiling will soon be reached beyond which fares will rise, seats will become less available and, as the more profitable routes mop up capacity, fewer destinations will be served. The concern is that London then becomes less well connected so losing its status as a world metropolis and the UK economy falls into structural decline. At the same time London is facing a housing shortage together with projections for rapid population growth in the early part of this century. For much of the 20th century London's population was static or slowly declining, while other world cities were experiencing the doubling, tripling, even quadrupling of their populations. London's ageing infrastructure did not have to cope with the stresses encountered elsewhere. Now London is facing problems that seen in isolation appear exceptional; the rapidly rising immigration, unaffordable keyworker homes, inadequate capacity on the roads, rails and tubes; but seen together these problems indicate a return to the kind of growth not experienced in London for two generations, demanding a step change in the way we approach infrastructure planning. The result of the SERAS consultations will be a decision not only for aviation capacity but also for the future growth of London.

The issue of providing additional capacity at an overcrowded port, constraining London's growth, is a problem that has been encountered before, just over two centuries ago. Then it was not Heathrow but the Pool of London, not runway capacity but the capacity of the legal quays and warehouses around the Pool to off-load and handle goods. Since 1558 the Port had required all goods to be discharged at Legal Quays, on the north bank of the Pool from London Bridge to the Tower. Ships would anchor midstream in the tidal course of the Thames and their cargoes would be transferred to open lighters, which unloaded them at the legal quays. The duty on the goods would be collected before they were transported elsewhere, or the goods would be stored in warehouses with the duty becoming payable only when released. At first there were 17 legal quays, rising to 20 in 1665 then a number of "sufferance wharfs" were licensed on the south bank, to handle goods with low duties. Trade and the Port grew throughout the 17th and 18th centuries with warehouses stretching up and down the river from London Bridge along both banks of the Thames. By the late 18th century the Port of London had become the largest in the world handling two-thirds of

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the nation's seabourne trade. Up to 8000 vessels of various types could be found at any one time in the Port. The congestion would cause a ship to remain moored midstream for up to two months. 1775 ships were permitted to moor where space had been allocated for only 545. The double handling of goods encouraged pilfering and the goods would stand for weeks on the open quays due to inadequate warehousing. In 1797 an estimated £506,000 of cargo was lost, of which the West India Company alone lost £150,000, immense sums in their day. Various ambitious schemes were promoted to develop quays further downriver but they were still subject to the tides and the vested interests controlling the double handling and payment of duty on goods. Liverpool had already demonstrated the benefits of protected wet docks developed at the port's expense. However in London it was not the port authorities that met the challenge but the East and West India Companies, through the West India Dock Act of 1799 and the Commercial Road Company. William Pitt attended the laying of the foundation stone for the West India Docks on 12 July 1800, which opened in 1802, and the Commercial Road from the docks to the City opened in 1803. A marshy area of meadows on the Isle of Dogs within a bend of the river had become an immense system of wet docks. Ships could moor safe from the tides, besides miles of quays with warehouses protected by high dock walls. The ships no longer required the transfer of goods to lighters and could unload in four days rather than four weeks. Their goods were secure and could be stored in the warehouses or distributed to merchants in the City via the broad and straight thoroughfare of the Commercial Road. The docks were an immediate commercial success, even after paying heavy sums of compensation to vested interests controlling the old port operations. Steam power had been used in the construction of the docks and would soon arrive in the form of railways to further transform the capacity of the docks and the growth of the Port. London emerged from the Napoleonic Wars with a dock infrastructure that was the wonder of its age, enabling London to expand as a world metropolis.

The docks had solved the problem of port capacity and led to the transformation of London. The immense new handling capacity had not been provided by an expensive and disruptive attempt to expand existing facilities around the Pool but by the conception of entirely new infrastructure on the marshy reaches of the Thames. The SERAS report examines a variety of options to increase aviation capacity, from the expensive and disruptive expansion of existing capacity at Heathrow, where the M25 hinterland and M4 Corridor are already developed and congested, to the conception of entirely new infrastructure on the outer reaches of the Thames estuary beyond Cliffe. In the mean time Thames Gateway, an area north and south of the Thames estuary from the Isle of Dogs to the Isle of Sheppey, has been designated a priority area for economic and social regeneration, aiming to accommodate London's growth to the extent of 100,000 new

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houses and 100,000 new jobs by the year 2020. The SERAS options of expansion at Heathrow or Stansted do not provide the additional infrastructure required for this growth. The only SERAS option with the potential to address London's growth is the option of a new airport beyond Cliffe. Thames Reach Airport combines major new aviation capacity in the form of a new-build hub airport, with widespread infrastructure improvements for Thames Gateway and the Stansted/M11 corridor, at less cost than the SERAS/Cliffe option and with less environmental impact.

The Thames Reach Airport prospectus has been prepared for the formation of the Thames Reach Airport Consortium (TRAC) and submitted to the Government's South East Regional Air Services (SERAS) consultations. Thames Reach Airport is an independent private sector initiative whose key strategy is the alliance of a Lower Thames Tunnel under the Thames Sea Reach with an airport on the Kent marshes near Cliffe. Other locations for a Lower Thames Crossing have been examined but the alliance of a tunnel under Sea Reach, with Thames Reach Airport on the marshes, as far east as Canary Wharf is west of the present Dartford Crossing, not only provides key infrastructure benefits for the Thames Gateway region and Stansted/M11 corridor but also provides an economical strategy for the required PPP's and PFIs. The Government would lead the Lower Thames Tunnel and associated infrastructure works through PFIs with established construction companies, funded by tunnel tolls and tariffs together with an agreement on future tariffs payable by TRAC for the airport access, while TRAC would fund the construction and operation of the airport, unencumbered by the capital cost of the necessary access infrastructure. In short the tunnel needs the airport and the airport needs the tunnel and when both are mooted for the Thames Estuary they naturally come together. TRAC's strategy for the SERAS consultations is to encourage closer examination of the SERAS/Cliffe option, within the range of Government options, and then demonstrate that greater benefits for less cost and less environmental impact can be realised by Thames Reach Airport.

The development of the West India Docks, followed soon after by the London Docks, led to the uncontrolled ancillary development of the East End in an age before strategic planning. The relocation of London's premier port to Heathrow after the war, allied with the 1947 Town and Country Planning Act led to the relatively controlled ancillary development of Hounslow, Staines, Slough, Maidenhead and Reading, drawing London's growth westwards along the M4 Corridor, with mixed results. The outcome of the SERAS consultations has the potential to direct London's growth for the next century. Heathrow does not provide the best technical solutions for increasing aviation capacity and the already constrained M4 corridor is not the place to direct London's future growth. In any

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event SERAS is proposing to establish a second hub airport in the southeast. The Stansted/M11 corridor passes through countryside that is rightly protected by Green Belt legislation, the region of the airport is rural and the location is less well connected than the Thames Gateway. Development of a hub airport at Stansted would be unacceptable, resulting in the environs (Bishops Stortford, Great Dunmow, Stansted Montfitchet) becoming the Staines and Sloughs of the 21st century. London's new premier port should be located eastwards on the Thames estuary to regenerate the Thames Gateway regions, where the land area and much of the infrastructure already exists to accommodate the necessary growth and where there is the scope to shape a new metropolis.

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