

# Submission to ORR inquiry; Charging Framework for Heathrow

## INCREASING VIABILITY and CONNECTIVITY for HEATHROW SPUR with Light Rapid Transit



### **BENEFITING THE HEATHROW SPUR WITH INCREASED MASS TRANSIT with LARTS**

#### **1.1 Introduction**

- 1.1.1 The ORR is seeking the views of stakeholders on proposed charges for the 8.6 kilometre railway infrastructure owned by Heathrow.
- 1.1.2 This submission is from a potential 'future stakeholder', *LARTS RapidRail*, and we are responding as a GROUP as required by Paragraph 66 of the Consultation Document.
- 1.1.3 A light rapid transit link between Staines and Heathrow, permits every train at Staines Station to be a Heathrow train, and resolves the Southerly Rail Access at half the capital cost and thrice the frequency of services proposed by Network Rail proposal.
- 1.1.4 Our proposal is capable of being a free-enterprise solution that eventually becomes an orbital Light Rapid Transit running beside the M25, M1 and M23 motorways, using tried and tested technology and transportation strategies.

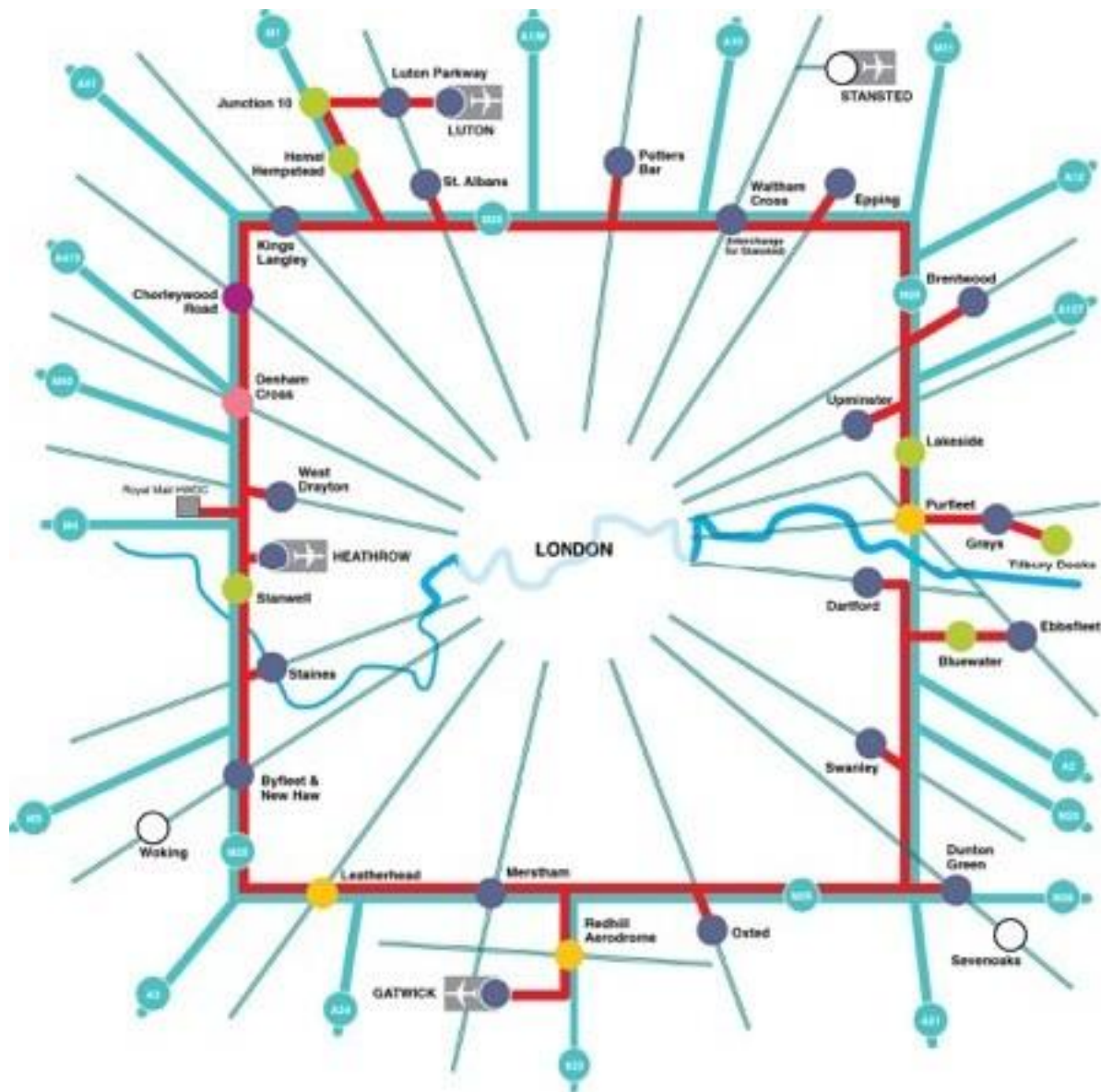
1.1.5 We are **Interlinking Transit Solutions Ltd**, a group of engineers and other professionals who have had experience of light rapid transit systems in other countries. Our proposal is known as the **London Air Rail Transit System - LARTs or LARTs RapidRail**.

## 1.2 Outlining the advantages of *LARTs* as a qualifier for us to comment on the ORR Charges.

- 1.2.1 Admittedly, the influences of a Southerly Rail Access with *LARTs* are at proposal stage, but the benefits of *LARTs* to the northern spur will be long term with in economic terms of capacity, connectivity, resilience and pollution reduction.
- 1.2.2 *LARTs* will compliment mass-transit links provided by Crossrail and Piccadilly Line.
- 1.2.3 *PARK n' LARTs* combined with the Southerly Access increases the ridership to sustainable levels and the viability of *LARTs* over heavy rail options.
- 10,000 passengers per day between South West Trains and Heathrow based on *LARTs* linking with every train at Staines Station, 24 hours a day
  - 2000 bus passengers per day from improved links around Heathrow with *LARTs*
  - 2500 car parking passengers per day with *PARK n' LARTs* (park and ride)
  - 500 Staines bound passengers per day with *PARK n' LARTs* to relieve grid-lock at rush hour traffic in Spelthorne
- 1.2.4 Elevated guideways and small tunnels permit a light rail system that is manageable in financially deliverable with construction predictable techniques and timetables
- 1.2.5 *LARTs* fares match bus fares and revenue streams are based on network charges.
- 1.2.6 Reducing local road traffic all around Heathrow is a prime benefit of *LARTs*
- 1.2.7 Heathrow Express, is then maintained as the high-yield surface access scheme.
- 1.2.8 *PARK n' LARTs* located near Heathrow on brown serves both the airport and Spelthorne.



# LARTs RapidRail



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Interlinking Transit Solutions Ltd  
18th July 2013

### 1.3 How *LARTs* integrates with existing railways to add benefit to Heathrow

- 1.3.1 *LARTs* can be integrated with existing railway stations beside or close to the motorways using an elevated guideway and elevated platforms above the stations.
  - 1.3.2 Of the railway lines radiating from London and crossing the M25, one third of those considered have stations within 300 metres of the M25.
  - 1.3.3 **Appendix 2** shows the railway stations that can potentially be linked by *LARTs* and total journey times taken to get to them from Heathrow T5.
  - 1.3.4 Time savings are important for all types of passenger using the light rapid transit, but equally important for airport passengers with luggage. Also valued is the 99% predictability of journeys 'to the airport' along the M25 corridor provided by *LARTs* – a corridor that commonly causes significant risk for those using the M25 to catch a flight, and for those who share the road with them.
  - 1.3.5 Light Rapid Transit technology permits quick reversal of trains at spur stations. Therefore, a series of spurs into each airport terminal is possible with either small bore tunnels or an elevated guideway. Total journey times are minimised because of short walking distances and short waiting times for passengers as a result of architecture and high frequency of service.
  - 1.3.6 The strategy can be applied to the movement of air-cargo at Heathrow, with a proposal to create off airport depots and a reduction in ring-road congestion.
  - 1.3.7 *LARTs* provides capacity, connectivity, convenience and also contingencies for Heathrow users, which in turn frees up capacity on the tracks, platforms, and carriages of the Heathrow Express.
- 1.4.0 Integrating *LARTs* with existing railways, highways and buses aids railway charges**
- 1.4.1 There are specific locations around the M25 corridor where traffic congestion is a daily problem. Much of that traffic is going to Heathrow or a nearby railway station, or areas of business



near the M25. *LARTs* can be the one solution that improves commuter journeys to Heathrow or elsewhere and improves choice and convenience for commuters who will have to consider routing through Heathrow via the Great West Mainline, on Crossrail or other trains.

- 1.4.2 The above image of *LARTs* at Staines station indicates how the footprint of an existing railway station is not adversely affected. This can be achieved elsewhere because of the ability to construct the elevated guideway with versatile architecture and prefabricated construction.
- 1.4.3 Windsor passengers are given two choices to travel to Heathrow, either via Staines and *LARTs* or via Slough and the Great West Mainline.
- 1.4.4 Iver passengers can link with Heathrow via *LARTs*. That enables Iver passengers to choose mainline trains for services to London and to choose *LARTs* for travel to Heathrow, with overall benefit to the Great West Mainline, and residents of Iver Heath and Richings Park.
- 1.4.5 Combining the *LARTs* network with bus networks can be achieved at sites for *PARK-and-LARTs*, beginning with Stanwell and secondly near Langley on the M4. This also reduces car parking demand at railway stations such as Staines Station.
- 1.4.6 The image below demonstrates how construction techniques cause minimal disruption and are well proven, to permit viable delivery of the scheme with private finance.



## 2.0 Influences of *LARTs* on the charging Framework for Heathrow's northerly spur

- 2.1 *LARTs* has an independent corporate structure that integrates with roads, rail and air while using a grade-separated infrastructure. *LARTs* does not have level crossings nor shares platforms with existing trains and that creates a business model suitable for a free-enterprise solution that assists Heathrow and the DfT with the EU legal hurdles of State Aid. (ref: OXERA and the Transport Select Committee; Airport Surface Access Schemes 26.02.2016)

- 2.2 The Benefit to Cost (BCR) would be better than 2 to 1, for phase one of *LARTs*, based on market sensitivity reports produced for WRAtH and Airtrack. And there is every reason for this BCR to be maintained for the sustainable development of metropolitan London.
- 2.3 The business case for *LARTs* lies in its ability to provide a reasonable financial return and provide passenger friendly surface access system for Heathrow that compliments the needs of passengers and the roads and railways, to maintain London's hub status.
- 2.4 HS2 will eventually make demands on Heathrow, and the above ground strategy of *LARTs* can either be used to create underground capacity for HS2 or act as a shuttle to remote HS2 station as per the Heathrow Hub proposal.
- 2.5 Although a modal change at Staines is small penalty to pay when compare with the benefits:
- diverting airport journeys away from central London particularly when *LARTs* expands
  - accommodating luggage and wheelchairs with bespoke architecture
  - Network Rail delivers a more frequent and convenient service for the Southerly access
  - Capital Costs of Southerly Access to Heathrow, are half with *LARTs*
  - Staines-upon-Thames gains a desirable hub because of *LARTs*
  - level crossings, tunnelling and pollution liabilities are all easier to resolve with *LARTs*
- 2.6 **The ORR is well informed about Heathrow's issues to draw conclusions about historical issues that would permit *LARTs*, as a mass transit system, to benefit the Heathrow Spur and the charging framework in particular.**
- 2.7 **Heathrow Express gains viability with *LARTs*, providing mass transit capacity that runs both parallel and perpendicular to Crossrail and Piccadilly Line.**

### 3.0 CONCLUSION

- 3.1 *LARTs RapidRail* is free-enterprise option for metropolitan London and Heathrow. It is not yet a Stakeholder at Heathrow, but these comments are made as a potential future stakeholder.
- 3.2 Linking Heathrow to Richmond, Barnes, Clapham Junction and Vauxhall, Waterloo and Staines is the first aim of *LARTs*, as a railway connector.
- 3.3 Viability for *LARTs* is enabled by its future proof technology and ability to provide both park-and-ride and air-cargo services as well as linking railways to Heathrow, using a driverless train system, 24 hours a day.
- 3.4 *LARTs* adds mass-transit capacity to Heathrow on unique routes, which in turn frees up capacity for the Heathrow Spur and improves the yields of Heathrow Express.
- 3.4 Benefits to the revenue models and historical obligations for the Heathrow Spur are fundamentally aided by *LARTs*, and without State Aid. It is designed as a PPP project using Stakeholder Construction.
- 3.5 The complexity of the influence of *LARTs* on the business model for the Heathrow Spur is greater than can be commented on in isolation.
- 3.6 If the ORR sees potential to quantify the benefits of *LARTs* as an integrated benefit to the Heathrow Spur, we are available for further comment.

**The purposes of these Appendix points is to demonstrate to ORR in this instance, the longer term viability for *LARTs RapidRail*.**

## **APPENDIX 1**

### **SUMMARY OF BENEFITS OF *LARTs* FOR HEATHROW AIRPORT**

- Railway links to South West Mainline at Staines make every South West train there a Heathrow train
- Byfleet & New Haw (Brooklands) and Iver Station would provide the next mainline links
- *Park-and-LARTs* on M25 at existing junctions are combined with bus networks
- Motorist journeys to the airports are cheaper, more reliable with *PARK-and-LARTs*
- Bus links add viability to private bus companies and County subsidies to them
- 12% increase for public transport is predicted for airline passengers by this
- 22% increase for airport employees will result from automated transit 24 hours a day
- Phase 1 establishes *LARTs* at Staines and T5 with *PARK-and-LARTs* for both

## **APPENDIX 2**

### **RAILWAY STATIONS CONNECTED TO *LARTs* AND JOURNEY TIMES**

Below are listed existing railway stations that could connect to the *LARTs* orbital and the time to travel to them from Heathrow T5 via *LARTs*. Times include 10 mins dwell time at Heathrow:

#### **0 Clockwise from Heathrow**

15 mins	Iver Station on the Great West mainline for West Country and Wales
28mins	Kings Langley on the West Coast mainline for Birmingham and Manchester
43 mins	Luton Parkway on Midlands line (via the M1) to Sheffield
44 mins	Potters Bar on the East Coast mainline to York
50 mins	Waltham Cross on the Stansted Express line
66 mins	Epping on the TfL Central line
75 mins	Brentwood on Southend & Ipswich line
79 mins	Upminster on the District Line Underground and Southend line

#### **0 Anti-clockwise from Heathrow**

14 mins	Staines-upon-Thames on the South West line from London Waterloo
20 mins	Byfleet & New Haw on the South West mainline to Woking and Southampton
29 mins	Leatherhead on the Southern line to Horsham and Chichester
34 mins	Merstham on the Southern mainline to Gatwick and Brighton
43 mins	Gatwick station (via the M23)
44 mins	Oxted on the Southeastern line to Uckfield and potentially Lewes
54 mins	Dunton Green on Southeastern mainline to Sevenoaks
70 mins	Swanley on the Southeastern line to Thames Estuary
78 mins	Dartford on the Southeastern line to Kent

81 mins Ebbsfleet International Eurostar Station

### APPENDIX 3

#### TIME SAVED TO DESTINATIONS BY USING LARTs INSTEAD OF TRAVELLING VIA CENTRAL LONDON

Compared with travelling into London using the fastest available method (Heathrow Express, Piccadilly line, Crossrail and then various underground lines) to get to the appropriate for London termini or Crossrail stations, the time savings using LARTs to get to the relevant station at the M25 and make the transfer to National Rail below.

The times are for total journey time, which includes transfer time, and are calculated using current National rail timetables and train frequencies. The *LARTs* times include an allowance of 10 mins dwell time at Heathrow.

Birmingham	53 mins saving
Manchester	53 mins saving
Glasgow	53 mins saving
Sheffield	40 mins saving
Leeds	29 mins saving
York	29 mins saving
Newcastle	29 mins saving
Edinburgh	29 mins saving
Sevenoaks	22 mins saving
Ashford International	18 mins saving
Gatwick	36 mins saving
Brighton	15 mins saving
Woking	45 mins saving
Guildford	47 mins saving
Southampton	36 mins saving
Bournemouth	37 mins saving
Bristol	12 mins saving
Exeter	- 2 mins no saving
Cardiff	- 23 mins no saving

These time savings are accompanied by vastly greater travel convenience, firstly because, unlike transfers in central London, there are no steps to negotiate when transferring via *LARTs*, and secondly because of the punctuality and reliability of *LARTs* which is unaffected by congestion or weather. As for breakdown, its proven record is 99% reliability.



## APPENDIX 4

### AIRPORT TO AIRPORT CONNECTOR

An airport-to-airport service can still benefit from technical features in the overall proposal, and particularly an ability to incorporate both express shuttles and stopping trains, with:

- automated trains and signalling accommodating time-tabling for both express and stopping
- moving block protection and automated train control permit safety and reliability
- small radius turns for tracks onto sidings or returns permits a small structural footprint
- lightweight elevated guide-ways and structures permit the architecture
- platforms for stopping trains are segregated from through trains

Airport-to-airport train services are only anticipated at peak times, and this makes it viable.

This analysis of a minor portion of the business model for *LARTs* was prompted by the Airports Commission which prejudicially relegated our proposal to the category of 'anti-airport'. However, we have now demonstrated that predicted demand is well below any viable passengers numbers required for a dedicated airport-to-airport link unless it performs the myriad of tasks that *LARTs* achieves. *LARTs* is the best option available for linking air airports-to-airports but this can not be a primary reason for proposing it.

DESTINATIONS ADDED BY LINKING THREE AIRPORTS															
	Business destinations				Total	Holiday and minor business				Total	All possible destinations				
	LHR	LGW	LTN			LHR	LGW	LTN			LHR	LGW	LTN	Total	
Existing destinations	163	103	49		315	12	110	43		165	175	213	92		480
Added by LHR	-	96	134			-	5	7			-	101	141		
Added by LGW	36	-	29			103	-	71			139	-	100		
Added by LTN	13	13	-			6	6	-			19	19	-		
Total added	49	109	163			109	11	78			158	120	241		
Increase %	30%	106%	333%			908%	10%	181%			90%	56%	262%		
Possible destinations	212	212	212		212	121	121	121		121	333	333	333		333

DESTINATIONS ADDED BY LINKING FOUR AIRPORTS																		
	Business destinations					Total	Holiday and minor business					Total	All possible destinations					
	LHR	LGW	LTN	STN			LHR	LGW	LTN	STN			LHR	LGW	LTN	STN	Total	
Existing destinations	163	103	49	75		390	12	110	43	72		237	175	213	92	147		627
Added by LHR	-	96	134	127			-	5	7	7			-	101	141	134		
Added by LGW	36	-	29	21			103	-	71	66			139	-	100	87		
Added by LTN	13	13	-	4			6	6	-	5			19	19	-	9		
Added by STN	15	15	15	-			29	29	29	-			44	44	44	-		
Total added	64	124	178	152			138	40	107	78			202	164	285	230		
Increase %	39%	120%	363%	203%			1150%	36%	249%	108%			115%	77%	310%	156%		
Possible destinations	227	227	227	227		227	150	150	150	150		150	377	377	377	377		377

Table showing added destination pairs for each airport by connecting them together. In theory passengers at each airport have access to 377 destinations if they accept the *LARTs* transfer times. Between Gatwick and Heathrow this would be 33 mins, including dwell time.

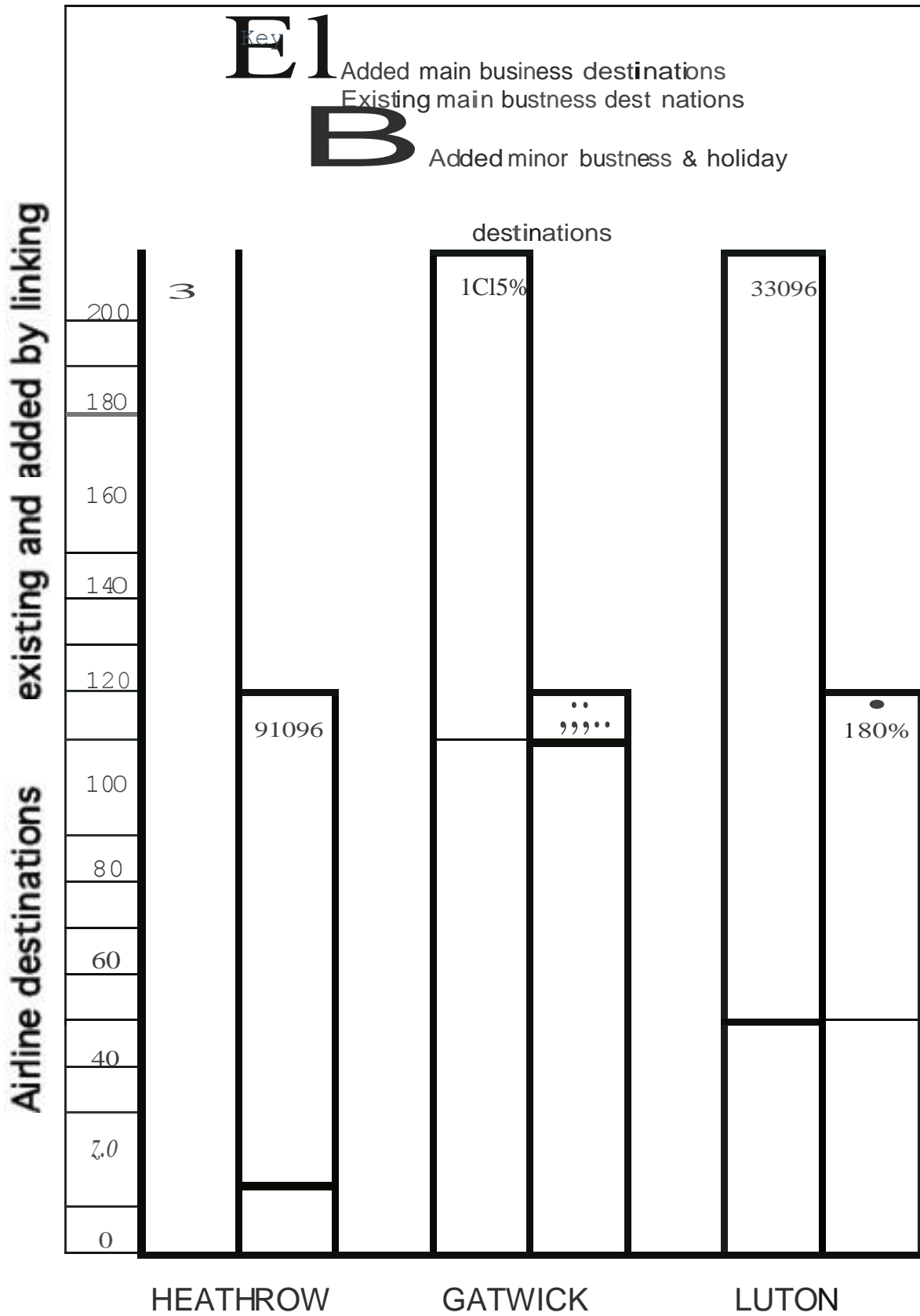


Chart showing the number added destination pairs on left scale for each airport and the percentage increase in destinations for each airport by linking them together

## **APPENDIX 5**

### **ABOUT INTERLINKING TRANSPORT SOLUTIONS**

Interlinking Transit Solutions Ltd (*ITSL*) is a small group of independent engineers and other professionals dedicated to improving transport connectivity around London. Our work for the past nine years has concentrated on a low environmental impact solution to London's aviation capacity issue and railway connectivity.

Members of the group have previous experience with the planning and building of an elevated light rail system similar to the one we are proposing. The group also has experience of M25 construction, bridge design, building design, airport and airline operation, railway operation and automation systems.

For this project, we have had help in modelling the operation of the proposed light rail system from one of the world's largest designer and manufacturer of transportation systems.

Our evidence relates making the best use of existing surface access to London's airports and adding a new one that will provide necessary capacity and connectivity for this century.

Interlinking Transit Solutions Ltd  
Grove Park Studios  
188 – 192 Sutton Court Rd  
London  
W4 3HR

