KINGSKERSWELL ALLIANCE

Rebuttal Proof of Evidence

To

Public Inquiry

Regarding

A380 SOUTH DEVON LINK ROAD

(KINGSKERSWELL BYPASS)

COMPULSORY PURCHASE ORDERS

and SIDE ROAD ORDERS 2008

Prepared by: Karen Frith

Date 29th June 2009

The Kingskerswell Alliance

1. Introduction.

1.1. My name is Karen Frith. I have lived in Kingskerswell since 2001 having moved to Devon from Basingstoke. I am a graduate in Occupational Psychology with Chartered status and worked for British Airways as a manager for 12 years. I have no qualifications in transport planning.

2. Journey Times

2.1. I am a Kingskerswell resident who frequently uses the stretch of road between Pen Inn and Kerswell Gardens at a variety of times during the day.

2.2. In Proof DCC/A/4 a graph (figure 5) shows journey times collected by automatic cameras (see text in DCC/P/4.3.9.2 to 3.9.4). Section 3.3.9 describes 'the results of the analysis clearly show that the route offers poor levels of service and poor journey time reliability. For much of the day the route operates slowly.'

2.3. My 'subjective' experience is that although there can be delays, particularly in the morning and evening rush hours, the road operates reliably. I wanted to know why the data would suggest otherwise.

2.4. The Kingskerswell Alliance (of which I am a member) conducted a journey time survey to get some simple quantification of the delays on the stretch of road which would be bypassed Penn Inn to Kerswell Gardens. (already submitted)

2.5. I took the Alliance Journey Time figures (average delay + free flow time) and drew them on Figure 5 (line in red on the attached diagram [encl 1]) . I have tried to reason why the data from DCC appears so different from our observed times. I noticed that

a. There are journey times of about 20 to 23 minutes recorded at 03:00am and some readings of 37 minutes. These times look spurious.

b. There are 2 petrol stations along this stretch of the A380 (one northbound and one southbound). If cars stop to use these services or the shops along this part of the route would their times be excluded from the analyses? Otherwise, how else could the extremes of the journey times be explained?

c. There are a significant number of readings along the free flow time line at all times of the day indicating very short delays indeed.

d. The DCC survey was carried out between January and March 2009, during which time St Marychurch Road (a parallel route) was closed for a week in February causing disruption to traffic.

e. Did the road closure in the period January to March skew the data presented? I would like to know what allowance was made for this to ensure the analyses presented are as fair as possible (that is, comparing like with like).

f. The average ANPR journey times in Table 4 DCC/P/4 3.9.8 page 25 do not seem to correspond to the data plotted in Figure 5 DCC/A/4. The AM peak average is 9.36 minutes. Subtracting 2 minutes for the approximate free flow time from Ware Cross, this gives an average journey time of 7.36 minutes. Plotted on the second graph in Figure 5, the average now appears to be well below the majority of plotted points. Plotting an average of 11.19 minutes (13.19 minutes minus 2 minutes again) in the inter peak period leaves most of the plotted data below the average. I do not understand how this can be so.

3. Inconsistent Reference Points

3.1. I realised that the graphs, tables and texts in the proof did not consistently refer to the same stretch of the A380. When I was looking at the traffic data, I noticed that it would sometimes refer to Ware Barton to Lawes Bridge. However, often the phrase ' north of Kerswell Gardens' was used making it difficult to accurately track back to which section of road the data alluded to.

3.2. For example, DCC/P/4 section 3.3 Traffic Flows Annual Trends describes Automatic Traffic Count data collected between 1988 and 2008 (Table 2 Historic Traffic Growth on A380 North of Kerswell Gardens.) These data are used to prove the road is so congested that further traffic growth is negligible because it is operating at capacity. Does this refer to A380 up to Penn Inn or Ware Barton?

3.3. Section 3.4 uses flow profiles comparing M5 to A380. At first glance this gives the impression the A380 is nearly as heavily trafficked as a motorway! As this is not my experience, I decided to look at DfT website to see what information I could find out about the AADTs and relate it to my subjective experience.

4. AADT / AADF

4.1. I found out it is possible to identify where Traffic Count points are along a particular road, and to obtain estimated AADFs (annual average daily flows)[1]. I identified the count points at Penn Inn about half way along the A380 in Kingskerswell and at Kerswell Gardens. I found data for 2007 as this was the most up to date available at that time. The AADF figures shown for the A380 through Kingskerswell were 27906 - 26606 - 26606. Data for 2008 was available on DfT website on 1st July 2009, the AADF figures shown for the same section of the A380 were 28457 – 30917 – 30917. I printed off a map to show this data (see [encl 2]) . Page 18 para 4.5.1 Report of Surveys and LMVR uses a figure of 33, 448 vehicles for 2007. I could not identify this figure from the DfT website tables. In 2008, Count point 99360 shows an AADF of 33, 484 vehicles on the DfT website. Count point 99360 is located north of Ideford.

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[1] Source Great Britain Road Traffic Survey, DfT http://www.dft.gov.uk/matrix/

4.2. I looked at the DMRB Volume 13 part 5 to see what volume of traffic may be expected on a single carriageway A road to see how this data may compare to other roads.

4.3. I saw that DCC consider A380 through Kingskerswell to be a single carriageway rural road Class1. This is used in the traffic modelling I assume.

4.4. I wondered why this was so when COBA Chapter1 COBA Road Classes Volume 13 section 1 part 5 chapter 1 para 1.2 [encl 3] describes a Class 9 road as 'used in towns and villages for routes subject to a .... 40 mph limit' (see [encl 4] for associated page on Small Town Roads from same manual). This classification is used to allow transport modellers to predict average speeds and capacity on a road for any given flow.

4.5. DCC/P/4 3.10 para 3.10.3 to 3.10.11 goes on to illustrate that the existing road can operate above its 85% capacity value and hence affect journey time reliability.

4.6. I did wonder how using a different road class classification (which would more accurately describe the road) could affect these flows.

4.7. I also read the November 2007 SQW Economics Report. 4.3 EIR worksheet [encl 5] says the proposed link road will affect travel times 'reducing journey time from the A38- A380 junction (on the western side of Exeter) to Torquay by 2 minutes and reducing the journey time in the opposite direction by 6 minutes in the AM peak period (0800- 0900).This seems to be a huge investment for the sake of such minor reductions in journey times.

5. Jury's Corner Queue Length

5.1. I found there were other journey time graphs in the Local Model Validation Report (LMVR) TUE43444A/10/2 (May 2009) While looking at these, I discovered an analysis of queue lengths at junctions along the route.

5.2. Figure 22 in the LMVR {encl 6] shows queue lengths at Jury's Corner in the village. I noticed that

a. I noted that the recording mechanism can only record queues up to 180m southbound and 140m northbound, but most of the average line shown on the graph is below those levels. I wondered about the definition of a queue

b. The peaks and troughs in queue length seem to correspond quite well to the delay times recorded on the Alliance survey i.e. reducing during the middle of the day.

c. During the morning peak the southbound average queue length seems to be around 140m. Measuring the length of our car to be about 4.5m and adding 1.5m for the gap between vehicles, I realised that 140m equates to about 23 car lengths! I deduced that this does not include the slow moving traffic joining the back of the queue.

d. During the day, the average queue length on the graph seem to be around 70 – 80 m which would equate to about 11-13 cars.

e. Looking at Coffinswell Lane, one of the side roads at Jury's Corner, the queue lengths there seem to be around 10m (1 or 2 cars maybe) for most of the day with peaks which corresponded to the times children arrive at and leave school.

5.3. If the road is heavily congested throughout the day, I would expect the queue lengths on Figure 5 at Jury's Corner to be high throughout the day. They are not.

5.4. Where I used to live, queues of 10 to 20 cars at traffic lights would not be unusual. I usually encounter queues of this order going through Newton Abbot, by the schools from the Ashburton Road to access the A38 Expressway.

Enclosures:

[1] DCC/A/4 page 5 Figure 5 with journey times annotated in red from Alliance Survey.

[2] Map showing AADF through Kingskerswell year 2008, from Great Britain Road Traffic Survey, DfT (dft.gov.uk/matrix) printed 1st July 2009

[3] COBA 11 User Manual currently DMRB Vol 13 Section 1 Part 5 Chapter 1 COBA Road Classes page 1/1 (May 2002)

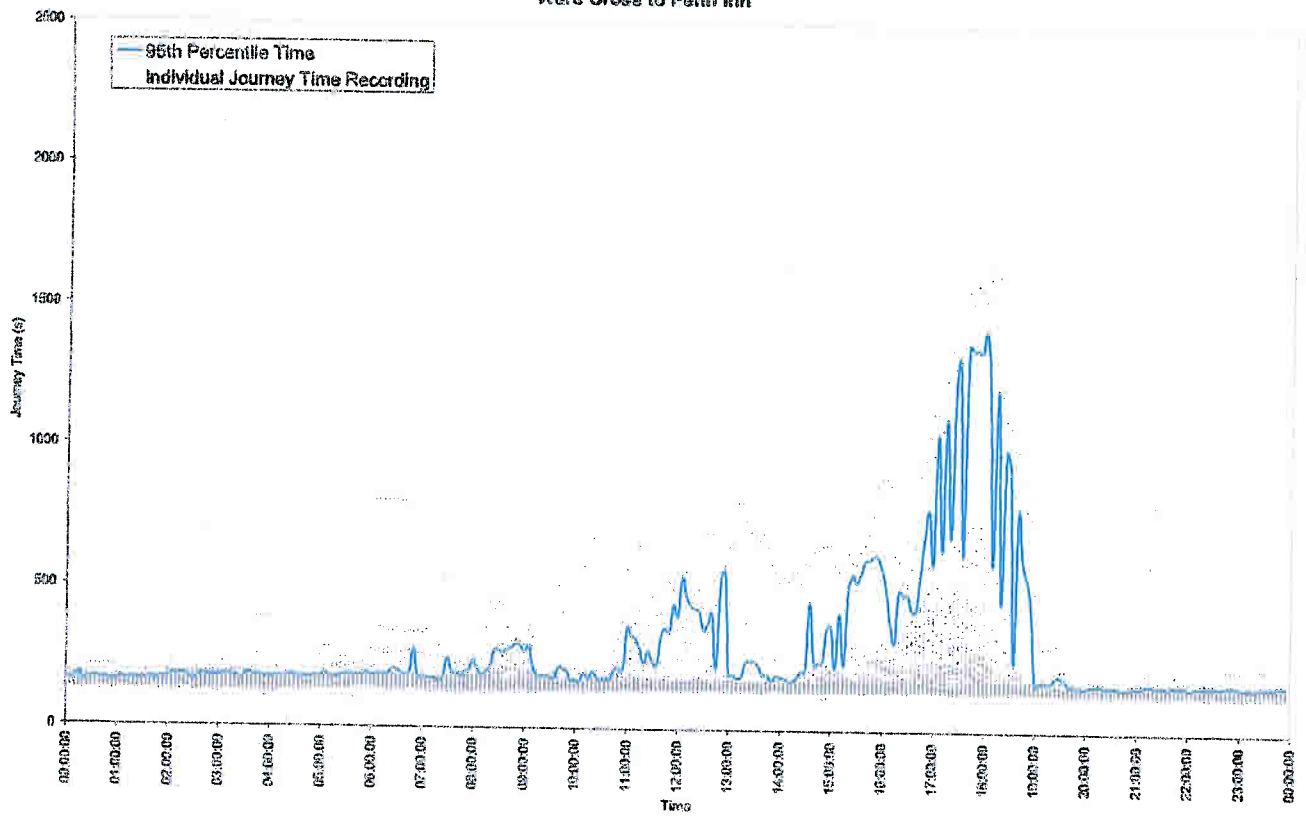
[4] COBA 11 User Manual currently DMRB Vol 13 Section 1 Part 5 Chapter 5 Small Town Roads (Road Class 9) page 5/1 (May 2002)

[5] SQW Economics Report November 2007. page 23 para 4.3

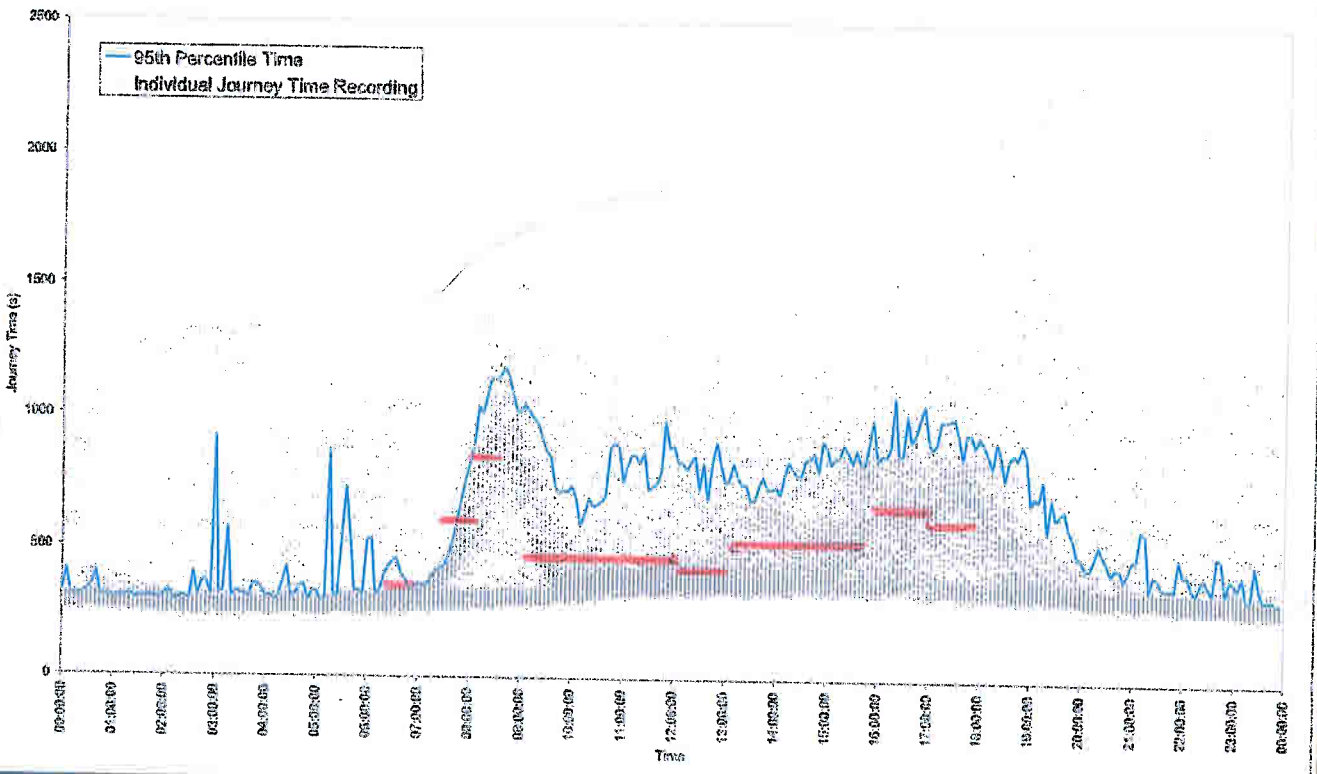
[6] Local Model Validation Report (LMVR) TUE43444A/10/2 (May 2009) Figure 22

ENCLOSURE [1]

Ware Cross to Penn Inn



Penn Inn to Kerswell Gardens



Devon County Council

TORBAY COUNCIL

PROJECT
A380 South Devon Link Road
Proof of Evidence - Traffic and Economics

TITLE
Ware Cross to Penn Inn and
Penn Inn to Kerswell Gardens
Southbound ANPR Analysis

Note:Individual journey times are recorded for all vehicles in a single 5 minute period

DATE
June 2009

SCALE
Not To Scale

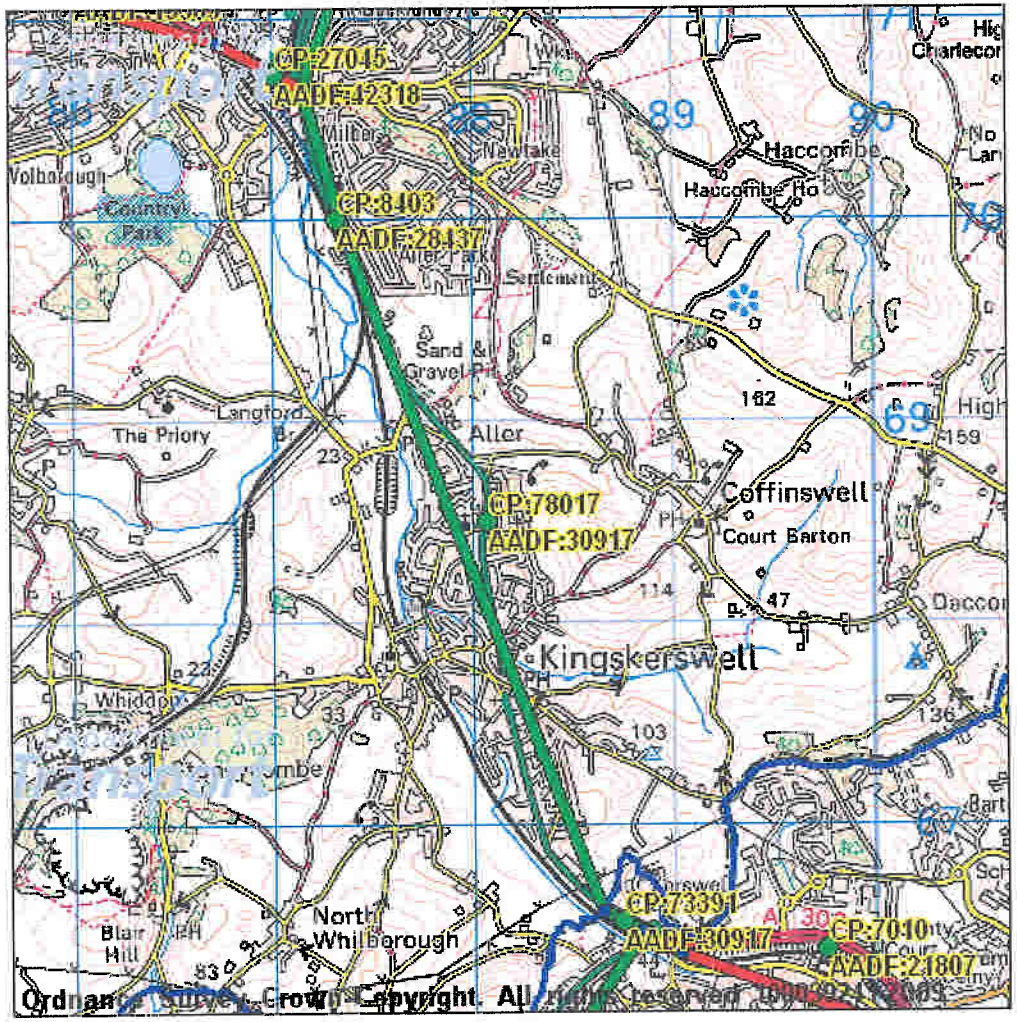
PRODUCED BY
MH

CHECKED
CS

APPROVED
IB

Figure 5

Great Britain Road Traffic Survey, DfT AADF year 2008



Map Layers

- Count Point

Map generated on 01/07/2009 20:42:48

Department for Transport

ENCLOSURE [2]

ENCLOSURE [3]

1. COBA ROAD CLASSES

1.1 Savings in journey time are generally the main source of COBA benefits following a highway improvement. The assessment of time savings requires knowledge of likely traffic flows and knowledge of the behaviour of the network under varying traffic loadings. It is the flow dependence of traffic speeds, and their variability from one occasion to another, that limits the direct use of observations of speeds on existing roads. The COBA approach is therefore to use nationally-derived two-way relationships wherever possible to predict traffic speeds.

1.2 Different speed prediction relationships are selected in COBA by allocating a link to a particular road class. Table 1/1 lists the COBA road classes.

Road Class	Description
1	Rural single carriageway
2	Rural all-purpose dual 2-lane carriageway
3	Rural all-purpose dual 3 or more lane carriageway
4	Motorway, dual 2-lanes
5	Motorway, dual 3-lanes
6	Motorway, dual 4 or more lanes
7	Urban, non-central
8	Urban, central
9	Small town
10	Suburban single carriageway
11	Suburban dual carriageway
12-14	User defined all-vehicle relationships
15-20	User defined light/heavy vehicle relationships

Table 1/1: COBA Road Classes

Classes 1 to 6 are used for all-purpose roads and motorways that are generally not subject to a local speed limit. Classes 7 and 8 are used for roads in large towns or conurbations subject to 30 mph (48 kph) speed limits only. Class 9 is used in small towns or villages for routes subject to a 30 mph (48 kph) or 40 mph (64 kph) speed limit. Classes 10 and 11 are used for major suburban routes in towns and cities that are generally subject to a 40 mph (64 kph) speed limit.

1.3 The method of predicting speeds in COBA differs between rural roads, where there is little interaction between different links and junctions on the network, and urban and suburban roads, where delays at junctions tend to be inter-dependent. On rural roads, relationships are used to predict the speed of traffic on each link according to link geometry and traffic flow; delays at junctions are separately assessed using junction delay models. In urban areas, the road network has to be considered as a system rather than as a set of links and junctions. Accordingly COBA uses area wide urban speed relationships based on average journey speeds observed in towns and conurbations in England. For small town roads COBA models an average speed for the route.

1.4 The basic form of the speed/flow relationships varies between road classes. For rural, suburban and small town roads the speed of vehicles reduces as flow increases until a critical flow level is reached at which the rate of speed reduction increases until a minimum speed cut-off is reached. The relationships for urban roads have a uniform negative speed/flow slope for all flow levels above the minimum speed constraint. The other major difference is that rural and suburban relationships provide separate estimates of the average journey speeds of light vehicles and heavy vehicles, the urban and small town relationships provide a single estimate of the average vehicle speed. Light vehicles are defined as cars and light goods vehicles (LGV); heavy goods

ENCLOSURE [4]

5. SMALL TOWN ROADS (ROAD CLASS 9)

5.1 The main urban relationships do not apply to towns with a population of less than 70000, for villages and for rural roads with short stretches of development. The small town speed/flow relationships have been developed for these locations from the results of a study of speeds in small towns (Journey Speeds through Small Towns, 1982 - Halcrow Fox and Associates). Like the suburban speed/flow relationships (COBA Classes 10 and 11) they do not apply to individual links, they model traffic speeds over the whole of a route that is subject to a speed limit of 30 or 40 mph. Unlike the suburban relationships, however, they do not distinguish between light and heavy vehicles, and they specifically exclude junction delays; junctions where the route loses priority must be modelled separately. The user allocates links to Routes and COBA will calculate a Route specific speed/flow relationship which is applied to all the links on that route. Table 5/1 defines the variables used in the relationships and ranges of typical values.

SYMBOL	VARIABLE DESCRIPTION	TYPICAL VALUES Min	Max
DEVEL	Percentage of route with frontage (%)	35	90
P30	Percentage of route subject to a 30 mph speed limit (%)	0	100
V	Average vehicle speed (kph)	25	64
V_B	Average vehicle speed at Q_B	38	57
Q	Total flow, all vehicles, per standard land (vehs/hour/3.65m lane)	0	1200
Q_B	Breakpoint: the value of Q at which the speed/flow slope changes (vehs/hour/3.65m lane)	700	
Q_C	Capacity flag: defined as the maximum realistic value of Q (vehs/hr/3.65m lane)	1200	

Table 5/1: Definition of Variables Used in Speed Prediction Formulae for Small Town Roads

5.2 The breakpoint flow Q_B is taken as 700 veh/hour/3.65 metre lane. The maximum realistic flow at which the COBA capacity flag (Q_C) is triggered is 1200 veh/hour/3.65 metre lane. As with the main urban formulae, there is no correction for traffic composition.

5.3 The average speed in kph of all vehicles for flows below the breakpoint (Q_B) is given by:

$$V = 70 - DEVEL/8 - P30/8 - 12Q/1000,$$

where DEVEL is the percentage of the length of route that has frontage development, counting business and residential development as 100% and open space as 0%: the value will normally lie in the range 35% to 90%.

5.4 For flows greater than Q_B the average speed in kph of vehicles is given by:

$$V - V_B - 45 (Q - Q_B)/1000,$$

until the minimum speed cut-off of 30 kph is reached.

ENCLOSURE [5]

4: EIR Worksheet

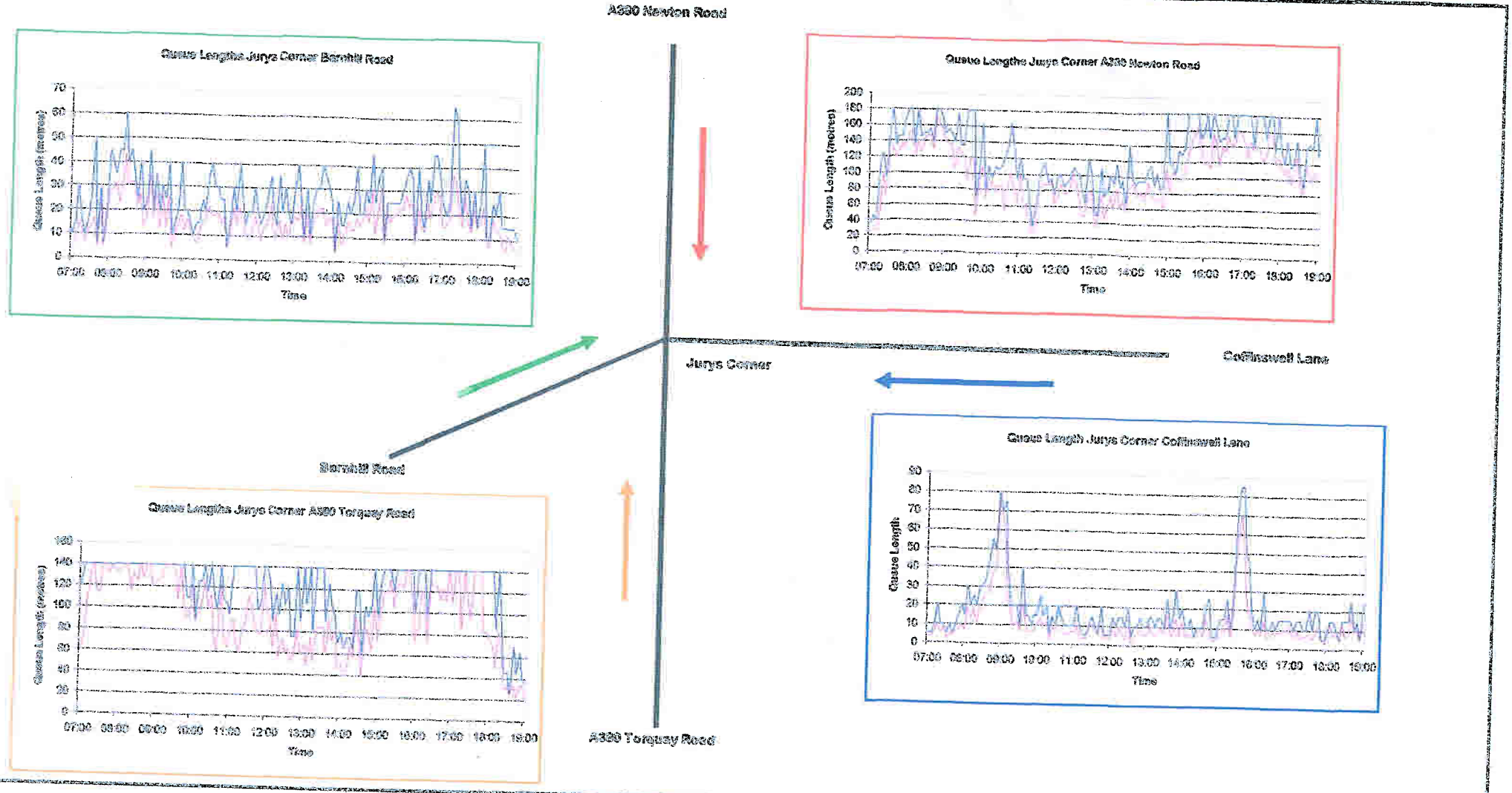
4.1 This final chapter of the report summarises and interprets the results of the Economic Impact Report (EIR) Worksheet analysis based on the previous chapters of the report and the DfT Guidance on EIRs. It then presents a revised Appraisal Summary Table for the proposed South Devon Link Road and the EIR Worksheet itself.

4.2 The supplementary assessment of the economic impact of the proposed A380 South Devon Link Road presented in this report is based on the "preferred option" described in Chapter 1 and Question 1 of the EIR Worksheet. The "preferred option" comprises a 2 lane dual carriageway between the southern edge of Newton Abbot and the northern edge of Torquay. A brief commentary on the likely economic impact of the "next best option" and the "low cost option" for the proposed link road is presented later in this chapter of the report.

Summary and interpretation

4.3 The key findings of the EIR Worksheet analysis are that:

- Without the proposed road scheme, there are currently 55,874 "accessible jobs" for residents of the RA of which 47,266 of which are located in the RA.
- Without the proposed road scheme, the "accessible workforce" is currently 67,488 of which 58,258 live in the RA.
- The proposed link road will affect travel times, reducing the journey time from the A38-A380 junction (on the western side of Exeter) to Torquay by two minutes and reducing the journey time in the opposite direction by six minutes in the AM peak period (08:00 – 09:00).
- The proposed link road will enable 1,564 residents of the RA to access jobs in the HL but it will also enable 1,100 of the HL workforce to access jobs in the RA.
- The proposed link road is estimated to create an additional 7,960 jobs through the expansion of existing businesses, the attraction of inward investment and an increase in the available workforce.
- Some 3,096 of these additional jobs are expected to be created in the RA and 4,864 are expected in the HL - it is estimated that 2,506 of the jobs created in the RA and 584 of the jobs created in the HL will go to RA residents.
- The total gain in employment for the RA as a result of the proposed link road is estimated to be 4,654 jobs but 1,100 existing RA jobs are likely to be taken by HL residents because of improved accessibility to the RA - the net change in employment is estimated at 3,554 jobs.



Key

Maximum Queue Length

Average Queue Length

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CLIENT/PROJECT
Devon County Council
A380 South Devon Link Road

TITLE
Queue Lengths: Jurys Corner

DATE
May 2009

SCALE
Not To Scale

PRODUCED BY
ZP

CHECKED
KM

APPROVED
IB

Figure 22

ENCLOSURE [6]