Review of the Adjustment Ratio for DLE FRIACO

Statement

Issued: 11 November 2004

This is the non-confidential version of the statement.

Confidential information and data have been redacted. Redactions are indicated by "[✂]".

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Summary

S.1 Flat Rate Internet Access Call Origination (FRIACO) is an unmetered interconnection service available from BT that is used by other Communications Providers to provide unmetered narrowband Internet access services.

S.2 The Adjustment Ratio is used in the derivation of the regulated charges for FRIACO and captures the average number of Local Exchange Call Origination (LECO) circuits per FRIACO port. The average number of LECO circuits required can be measured by the ratio of the Erlangs Per Circuit (EPC) of FRIACO ports to the EPC of LECO circuits.

S.3 In November 2003, The Director General of Telecommunications ('the Director') determined BT as having significant market power ("SMP") in the fixed wholesale call origination market and imposed inter alia, an SMP condition on BT requiring it to provide FRIACO at Digital Local Exchanges ('DLE FRIACO') and at tandem switches ('ST FRIACO') as a consequence. (http://www.ofcom.org.uk/legacy_regulators/oftel/narrowband_mkt_rvw/fixednarrowbandstatement.pdf). In that statement at paragraph 9.12, the Director said that he was setting the value of the Adjustment Ratio for DLE FRIACO at 1.78, but that updated traffic information was being collected to allow a separate consultation on the Adjustment Ratio to be published. In the same statement at paragraph 9.17, the Director said he was setting the value of the Adjustment Ratio for ST FRIACO at a level of 2.

S.4 On April 8, 2004, Ofcom published its consultation document on the review of the Adjustment Ratio for DLE FRIACO and ST FRIACO (http://www.ofcom.org.uk/consultations/past/dle_friaco/friaco/?a=87101). In that document, Ofcom consulted on

- the appropriate methodology to derive the value of the Adjustment Ratio; and
- the updated value of the Adjustment Ratio for DLE FRIACO.

S.5 Ofcom proposed that the methodology to calculate the Adjustment Ratio be changed from

$$AR = \frac{\text{EPC of FRIACO ports in the FRIACO Busy Hour}}{\text{EPC of LECO circuits in the network Busy Hour}}$$

to

$$AR = \frac{\text{EPC of FRIACO ports in the network Busy Hour}}{\text{EPC of LECO circuits in the network Busy Hour}}$$

S.6 Ofcom also proposed that, since the existing value of the Adjustment Ratio lay within the plausible range of values that could be calculated through the use of the changed methodology, for reasons of stability and sustainability, the current figure of 1.78 remained appropriate. Ofcom therefore proposed that the figure of 1.78 for the Adjustment Ratio for DLE FRIACO be retained.

S.7 Ofcom also noted that there was very limited take-up of ST FRIACO. Since there was not sufficient evidence to show that the value of the Adjustment Ratio for ST FRIACO needed to be changed, Ofcom proposed that the existing value of 2 should be retained.

S.8 This Statement concludes Ofcom's review of the methodology and the value of the Adjustment Ratio for DLE FRIACO. It also concludes on the value of the Adjustment Ratio for ST FRIACO. In doing so, Ofcom has, among other things, taken account of the requirements set out in Sections 3 (General duties of Ofcom) and 4 (Duties for the purpose of fulfilling Community obligations) of the Communications Act 2003.

S.9 Ofcom concludes that the methodology to calculate the Adjustment Ratio for DLE FRIACO should be based on the ratio of the FRIACO EPC and LECO EPC in the network busy hour as this is the period on which the cost of providing for FRIACO ports should be calculated. In previous Determinations and in the April 2004 Consultation, Ofcom has made use of monthly average EPC data provided by BT to state (and make calculations on the assumption) that the afternoon period was the network busy hour. Following responses to the April 2004 Consultation regarding the busy hour of the network, Ofcom has subsequently obtained network wide data disaggregated into 15 minute periods of the day for individual days, and made calculations of the Adjustment Ratio on the basis of the network busy hour in all the individual days, irrespective of whether the busy hour occurred in the afternoon period or not.

S.10 Based on an analysis of the latest information from BT on the network busy hours on different days, Ofcom considers that there is insufficient evidence to conclude that the current value of 1.78 for the Adjustment Ratio for DLE FRIACO is incorrect and needs to be changed. The analysis of the latest data from BT, which is a sparse data set because it has not been possible to collect further historical information at this time, shows that the value of 1.78 lies within the possible range of values of the Adjustment Ratio. Sections 3 and 4 of this Statement provide further details.

S.11 Therefore Ofcom concludes that the current value of 1.78 for the Adjustment Ratio for DLE FRIACO should be retained until it is next reviewed. This issue will be considered in the review of the next Network Charge Controls that is currently underway.

S.12 Ofcom has noted that there is no significant change in the take-up of ST FRIACO since the previous Determination. The April 2004 Consultation proposed that, due to the limited information on traffic patterns and the EPCs at the tandem layer, it was not possible to determine a more appropriate value of the Adjustment Ratio for ST FRIACO. Ofcom concludes for this reason that the value of the Adjustment Ratio for ST FRIACO should be retained at a level of 2.

Section 1

Introduction and background

1.1 Flat Rate Internet Access Call Origination (FRIACO) is an unmetered interconnection service available from BT that provides virtual capacity from originating customers to the point of connection of another communications provider.

1.2 Communications providers may choose to purchase FRIACO at Digital Local Exchanges ('DLE FRIACO') or at tandem switches ('Single Tandem (ST) FRIACO'). DLE FRIACO was made available following a direction (the "First Direction")[1] on 26 May 2000, requiring BT to provide DLE FRIACO. Single Tandem (ST) FRIACO was made available in 2001 following a second direction (the 'Second Direction')[2].

1.3 A new regulatory framework for electronic communications networks and services entered into force on 25 July 2003. The framework is designed to create harmonised regulation across Europe and is aimed at reducing entry barriers and fostering prospects for effective competition to the benefit of consumers. The basis for the new regulatory framework is five new EU Communications Directives:

- Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services ("the Framework Directive");
- Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities ("the Access Directive");
- Directive 2002/20/EC on the authorisation of electronic communications networks and services ("the Authorisation Directive");
- Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services , ("the Universal Service Directive") and;
- Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector ("the Privacy Directive").

1.4 The first four Directives were implemented in the UK on 25 July 2003. This was achieved via the Communications Act 2003 ("the Act").The fifth Directive was adopted slightly later than the other four Directives and was implemented by Regulation which came into force on 11 December 2003.

1.5 As a consequence of this 'new' regulatory regime, a number of market reviews were carried out by the Director-General of Telecommunications (the

[1] http://www.ofcom.org.uk/static/archive/oftel/publications/internet/fria0500.htm

[2] http://www.ofcom.org.uk/static/archive/oftel/publications/internet/fria0201.htm

"Director"). The Statement on the *Fixed Narrowband wholesale exchange Line, call origination, conveyance and transit markets*, November 2003[3] (the "Narrowband Market Review") concluded that BT has Significant Market Power ("SMP") in the wholesale market for fixed call origination.

1.6 One of the regulatory remedies imposed on BT to address its SMP in the market for wholesale call origination is the requirement to provide DLE FRIACO and ST FRIACO – this requirement is set out in the SMP Condition AA12 (see page 122 of the November 2003 Statement, the "FRIACO Condition").The charge for DLE FRIACO, as set out in the FRIACO Condition, is calculated by the following formula:

[D(i) x AR(DLE)(LECO)] + D(ii) + D(iii)

where:

"AR (DLE) (LECO)" means the Adjustment Ratio (Local Exchange call origination (LECO)) which measures the number of LECO circuits that are needed for each FRIACO port at the DLE. The AR (DLE) (LECO) Adjustment Ratio is 1.78.

"D (i)" means the charge for the LECO circuit as referred to in Condition AA4.1(f)(i).
"D (ii)" means the charge for the FRIACO port at the Local Exchange as referred to in Condition AA4.1(f)(ii).
"D (iii)" means the charge for PPP per FRIACO port as referred to in Condition AA4.1(f)(iii).

1.7 The Adjustment Ratio (AR) is used in the derivation of the regulated charges for FRIACO. For example, in the case of DLE FRIACO it captures the average number of LECO circuits required per FRIACO port at the DLE.

1.8 The value of the Adjustment Ratio reflects the pattern of FRIACO traffic and its relationship to the pattern of other traffic carried on LECO circuits. The initial value of the Adjustment Ratio was originally set in the First Direction at a level of 2 using a proxy in the absence of detailed information on FRIACO traffic patterns. The Director stated that he would review the value of the Adjustment Ratio when such information became available. As the market matured and FRIACO traffic became measurable, taking into account observed utilisation patterns in June/July 2001, October 2001 and January, February and March 2002, the Director concluded in his final Determination in July 2002[4], that the Adjustment Ratio should be 1.78. In his statement on the SMP conditions for FRIACO in the narrowband market review (see paragraph 1.6), the Director stated that he was setting the value of the Adjustment Ratio at 1.78, but was collecting updated traffic information on the utilisation of FRIACO ports and intended to publish a separate consultation on the Adjustment Ratio.

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3 http://www.ofcom.org.uk/legacy_regulators/oftel/narrowband_mkt_rvw/nwe/fixednarrowbandstatement.pdf

4 http://www.ofcom.org.uk/static/archive/oftel/publications/internet/2002/dlefriaco0702.htm

The Consultation

1.9 On April 8, 2004, Ofcom published a consultation document regarding the methodology for, and the value of, the Adjustment Ratio for DLE FRIACO (http://www.ofcom.org.uk/consultations/past/dle_friaco/?a=87101) (the "April 2004 Consultation"). In the same document, Ofcom also consulted on the value of the Adjustment Ratio for ST FRIACO. The consultation closed on 21 May 2004. Ofcom received 5 responses from the industry[5]. Ofcom has considered the responses to the consultation carefully and taken them into account in coming to its final decision on the appropriate value for the Adjustment Ratio.

1.10 The April 2004 Consultation did not consult on the methodology for the Adjustment Ratio for ST FRIACO, because the limited take-up of ST FRIACO meant that traffic flows had not reached a mature and stable level. Therefore there was insufficient evidence to suggest that the methodology set in the Second Direction, upon which the current value of the Adjustment Ratio for ST FRIACO is based, was incorrect and needed to be assessed.

This Statement

1.11 This Statement concludes Ofcom's review of the methodology and the value of the Adjustment Ratio for DLE FRIACO. It also concludes on the value of the Adjustment Ratio for ST FRIACO.

1.12 Section 2 of this Statement discusses the proposals of the April 2004 Consultation and the responses received to the Consultation.

1.13 Section 3 of this Statement discusses Ofcom's analysis of the responses. It concludes on the appropriate methodology to be used for the calculation of the Adjustment Ratio and the appropriate data to be applied to this methodology. It also discusses the calculation of the value of the Adjustment Ratio for DLE FRIACO, through the use of data provided by BT during this Consultation.

1.14 Based on an analysis of the latest information from BT on the network busy hours on different days, in Section 4 Ofcom considers that there is insufficient evidence to conclude that the current value of 1.78 for the Adjustment Ratio for DLE FRIACO is incorrect and needs to be changed. The analysis of the latest data from BT, which is a sparse data set because it has not been possible to collect further historical information at this time, shows that the value of 1.78 lies within the possible range of values of the Adjustment Ratio. Sections 3 and 4 of this Statement provide further details.

[5] http://www.ofcom.org.uk/consultations/past/dle_friaco/responses/?a=87101

Section 2

The Consultation and responses

Relevant principles of the Adjustment Ratio

2.1 The Adjustment Ratio methodology reflects the importance of deriving FRIACO charges that:

i. capture cost causation; and
ii. are reasonably stable and sustainable.

2.2 Cost causation is important so that appropriate price signals are provided to operators considering purchasing FRIACO to encourage efficient use of resources. For example, an operator's choice between metered interconnection and FRIACO should reflect the relative costs of the two forms of interconnection and not be distorted by the charge for one being artificially high or low. Ofcom recognises that stability and sustainability are important because business planning is facilitated by reasonable predictability.

The methodology used in past Directions

2.3 The methodology which has been used to derive the Adjustment Ratio in all previous Directions relating to FRIACO, is to take the ratio of the utilisation or the Erlangs per Circuit (EPC) of FRIACO ports and LECO circuits. This provides a reasonable measure of the number of LECO circuits required per FRIACO port. This is because ports carry more traffic than local exchange circuits in the busy hour (which is the relevant period for network dimensioning), and therefore each FRIACO port will require more than one local exchange circuit to support it, if the Grade of Service (GoS) (which measures the probability that a call will be unable to be established during the busy hour due to insufficient capacity being available) on the local exchange circuits is not to be reduced. A more detailed discussion of the rationale for this methodology is set out in the First Direction of May 2000 and the Discussion paper published in November 2000[6].

2.4 More specifically, the denominator of the Adjustment Ratio is the EPC of LECOs in the network busy hour. The numerator has been (up until now) the maximum (or, best available proxy) EPC of FRIACO ports in the FRIACO busy hour. Therefore

$$\text{AR (DLE) (LECO)} = \frac{\text{EPC of FRIACO ports in the FRIACO Busy Hour (BH)}}{\text{EPC of LECO circuits in the network BH}}$$

2.5 In principle, the EPC of FRIACO ports should be assessed in the network BH and not in the FRIACO BH if the calculation is to accurately capture the costs of FRIACO in terms of the requirement on LECO circuits. However until now, the Adjustment Ratio has been calculated using the EPC of FRIACO ports in the FRIACO BH, because of the concern of the 'shifting peak' as described below.

[6] http://www.ofcom.org.uk/static/archive/oftel/publications/pricing/fria1100.htm

2.6 Due to the flat rate (unmetered) nature of unmetered internet access, it was possible that FRIACO would be used for a large proportion of internet traffic, and that it would itself contribute to a substantial growth in general network traffic. If this turned out to be the case, FRIACO traffic could determine the peak usage of the network, thereby making the FRIACO busy hour, which has always been in the evening, as the network busy hour which appeared to be the afternoon busy hour. If the FRIACO charge had been set on the basis of an Adjustment Ratio incorporating the network buys hour, the shift of the FRIACO BH as the network BH could lead to a significant increase in the FRIACO charge.

2.7 There was a real possibility of such a shifting peak occurring because, it appeared that while the busy hour of the network occurred in the afternoon, many LECOs experience their individual peaks at other times, such as the evening. When FRIACO was first introduced, it was anticipated that the growth in FRIACO traffic might increase the overall volume of traffic on LECOs in the evening relative to other times of day. This might have resulted in an increased likelihood of the busy hour shifting from the afternoon to the evening period. This outcome could have been disruptive and undesirable and would have been against the Director's objective of maintaining stability and sustainability of the FRIACO charge. The Director therefore considered it preferable in his last Determination of July 2002 to use the EPC of FRIACO ports in the evening busy hour in the calculation of the Adjustment Ratio. The Director continued with the methodology in setting the value of the Adjustment Ratio for DLE FRIACO in the in the Narrowband Market Review in November 2003.

2.8 More specifically, the denominator of the Adjustment Ratio is the EPC of LECOs in the network busy hour. The numerator has been the maximum (or best available proxy) EPC of FRIACO ports in the busy hour for FRIACO ports, which is the evening busy hour.

AR (LECO) = FRIACO EPC in FRIACO BH ÷ LECO EPC in network BH.

The proposals in the April 2004 Consultation

2.9 Prior to publishing the April 2004 Consultation, Ofcom requested and obtained information from BT on the average monthly EPCs of FRIACO ports and LECO circuits in the morning, afternoon and evening periods. This information was provided from April 2001 to October 2003; during the consultation period, BT provided the same monthly information until March 2004. Ofcom used these figures to analyse the trend in the EPCs and how this might affect the value of the Adjustment Ratio. Based on this analysis, Ofcom noted that, although FRIACO demand had grown steadily since 2000 (when FRIACO was introduced), the shifting peak as described above had not occurred. The monthly LECO EPC, averaged over all LECOs, continued to be higher in the afternoon period relative to other periods of the day.

2.10 Ofcom therefore proposed that the methodology for calculating the Adjustment Ratio should be changed to using the EPC of FRIACO ports in the network busy hour rather than the FRIACO busy hour. Specifically, Ofcom proposed that the formula for the calculation of the Adjustment Ratio for DLE FRIACO should be as follows:

$$\frac{\text{EPC of FRIACO ports in the network busy hour}}{\text{EPC of LECO circuits in the network busy hour}}$$

2.11 Since the average LECO EPCs in the afternoon period were higher relative to other times of the day, Ofcom proposed that the afternoon period was the network busy hour and therefore the Adjustment Ratio should be calculated with respect to the ratio of the EPCs in the afternoon period. This would more appropriately reflect cost causation and efficient pricing.

2.12 Based on the monthly time series provided by BT, Ofcom estimated that the forward-looking average EPCs to use in the numerator and denominator of the formula could be calculated in various ways, thereby resulting in a range of possible values that the Adjustment Ratio could take. Noting that the current value of the Adjustment Ratio of 1.78 lay in between the range of possible values of 1.62 to 1.87 calculated in these various different ways, Ofcom proposed that the value of the Adjustment Ratio be retained at 1.78.

Responses to the Consultation

2.13 This section discusses the main responses to the April 2004 Consultation on the methodology and the value of the Adjustment Ratio. Ofcom's analysis of the responses is discussed in Section 3.

The principle of the Adjustment Ratio

2.14 AOL stated that cost causation is only served by analysing coincident busy hours for total network usage and FRIACO usage. Based on an assumption that the duration of an average PSTN call is 22 minutes and a FRIACO call is 40 minutes, AOL considered that this means that 35% of PSTN and FRIACO customers are using the service simultaneously. Multiplying the average call duration with the assumed customer figures of 25 million PSTN users and 2.5million FRIACO users, AOL believed that at the busy hour peak, FRIACO traffic represents less than 10% of the use of the PSTN.

2.15 Whilst AOL noted that the above example is only illustrative, it raised the question of whether Ofcom should allow BT to uplift the LECO charge by nearly 80% (with an AR value of 1.78) for every FRIACO port. AOL believed that the FRIACO product charge is making a disproportionate contribution to BT's DLE costs.

Investments in network capacity

2.16 AOL encouraged Ofcom to ascertain whether any additional investment in respect of FRIACO have been made by BT, where this investment is deployed and what proportion of DLE capacity this actually represents.

2.17 AOL also noted that since LECO EPCs have been decreasing over time, this would generate available resource and capacity that can be used by FRIACO products. It believed that it is counter-intuitive to maintain a pricing structure

that is geared toward meeting increased investment in network capacity, when sufficient capacity is available to meet both existing and future demand.

2.18 The lower level utilisation of BT's LECOs (and the network generally) also suggested to AOL that keeping the AR at the current levels, while offering stability, may not be an equitable solution.

2.19 AOL considered that the more efficient use of FRIACO ports would reduce demand for ports and the amount of DLE capacity/resource. AOL felt that the crude nature of the AR implies that the port charges increase with efficiency and does not properly reflect the decreasing levels of LECO/DLE resource consumed.

FRIACO and other product developments

2.20 AOL was of the view that incorrect cost and price signals on FRIACO services might stifle broadband deployment and takeup. AOL stated that its concern is with respect to competition in the retail market and a 'basket' of internet access products.

ST FRIACO

2.21 Thus responded to Ofcom's April 2004 Consultation saying that ST FRIACO promotes competition by providing an additional constraint on pricing of resale products derived from DLE FRIACO. Thus stated that the justification for having the Adjustment Ratio of ST FRIACO at a higher level than the Adjustment Ratio for DLE FRIACO appears to be based on a hypothesis and is unsupported by evidence. Thus said that either Ofcom should reduce the Adjustment Ratio for ST FRIACO to 1.78, or provide some justification for the higher value.

FRIACO charges

2.22 Energis responded to the April 2004 Consultation saying that it considered that BT has significantly over recovered in relation to FRIACO charges and some form of compensation should be made to FRIACO purchasers.

The stability and certainty of the value of the Adjustment Ratio

2.23 BT discussed Ofcom's statements on the desirability of stability and certainty in the value of the Adjustment Ratio. Its specific concerns are:

a. provided the Adjustment Ratio is not volatile, price shocks and instability can be avoided. Volatility is avoided by the fact that FRIACO charges are changed once a year and a proportionate change in the Adjustment Ratio does not equal instability.
b. sustainability will be placed in jeopardy of the Adjustment Ratio is not brought into line with the current data. At an unchanged level of 1.78, the Adjustment Ratio is becoming out of kilter with the actual data. In future, if the Adjustment Ratio were to be set under the Network Charge Control, BT would be very concerned if the value chosen locked in a lack of cost causality for a four year period.

c. as network planers continue to increase the efficiency with which they use their FRIACO circuits, they might rationally expect an increase in the Adjustment Ratio as the EPC of FRIACO ports increases. An increased Adjustment Ratio when volumes are falling should not be construed as instability.
d. instability is introduced from changing the way the numerator and denominator are measured when Determinations are made.

Methodology to calculate the Adjustment Ratio

2.24 Energis stated that it welcomed Ofcom's proposal to move away from using the FRIACO busy hour to measure the FRIACO EPC as there is no evidence that increased FRIACO traffic outside the network peak has shifted the network busy hour. However, it noted that it is unlikely that the FRIACO peak time is the same as the LECO peak time and suggested that an alternative mechanism may be to measure the LECO EPC at a network wide busy hour and measure the FRIACO EPC at the same time on the same basis. ntl also supported Ofcom's intent to change the methodology. AOL has also welcomed the change to the methodology proposed by Ofcom, but stated that if the principle of cost causation is to be effectively applied, the Adjustment Ratio must be measured at the respective (and coincidental) busy hours. AOL urged Ofcom to reconsider the methodology used by BT in estimating average EPCs across both network and FRIACO ports, as this has a significant effect on the value of the AR.

2.25 In its response to Ofcom on the consultation, BT stated that:

(a) it is the individual busy hour of each DLE and not the network busy hour that is key to dimensioning at the DLE;
(b) the use of averages can mask what happens at a disaggregated level; and,
(c) the relevant busy hour, which is the individual LECO busy hour, occurs in the evening period and not in the afternoon period.

2.26 BT further stated that Ofcom's proposed methodology will reflect cost causation and provide efficient pricing signals only if the network busy hour coincides with the individual LECO busy hour and Ofcom has not presented evidence to demonstrate that this is the case, nor tested the assumption that the afternoon is still the relevant busy hour. As a result BT believed that there is not a case for changing the methodology to use the afternoon period in both the numerator and denominator of the formula for the Adjustment Ratio. BT believed that it would more accurate to use the evening period in both numerator and denominator.

The proposed value of the Adjustment Ratio

2.27 Energis questioned Ofcom's use of forecasts to determine the likely range of the value of the Adjustment Ratio. Energis considered that unmetered narrowband internet traffic has passed its peak and is now declining. Energis explained that, this will not only mean that there is a decline in the number of ports per route, but that there would be less efficiency on smaller route sizes. Energis considered that the impact of lower efficiency would mean that the forecast of FRIACO EPCs should be made on the basis of a quadratic

function rather than linear. Energis believed that a mature and declining retail unmetered market leads to a declining FRIACO EPC at the wholesale level.

2.28 ntl did not disagree with the figure of 1.78 as the forward looking AR, but had concerns that it in its view, it does not fully reflect the fact that BT was over-recovering on FRIACO.

2.29 AOL stated that the level of the Adjustment Ratio would vary considerably according to the average network busy hour and FRIACO busy hour chosen. If the network busy hour was between 2-3 pm, the FRIACO EPC at that point of time would be lower than the corresponding FRIACO EPC for a network busy hour between 5-6pm. This is because FRIACO demand rises through the day and reaches its peak in the evening. Given the changing market demand and conditions, for example, from narrowband to broadband, AOL considered that maintaining the FRIACO Adjustment Ratio at the current level creates unnecessarily high and artificial wholesale charges (and therefore retail prices).

2.30 BT questioned the range of values for the LECO EPC. BT's views on the 0.36 figure used as the LECO EPC in one of the methods used to calculate the Adjustment Ratio in the April 2004 Consultation, were:

(a) the figure of 0.36 is from a Direction that is four years old, itself based on data from a 1994 cost modelling exercise. In BT's view, the datapoint 0.36 is clearly out of date;
(b) the monthly afternoon LECO EPC has never risen over 0.36 over the period of the dataset and has only hit 0.359 in February 2002; and,
(c) BT did not agree with Ofcom on the consistency to be maintained with metered wholesale charges. Even if the arguments on consistency were valid, BT believed that consistency is given a very heavy weighting compared to cost causality.

2.31 BT also stated that it does not believe that the proposed change to use the EPC of FRIACO ports in the afternoon period is valid. In BT's view, using the evening period is the more correct method of calculating the Adjustment Ratio. BT does not believe that the change in methodology is supported by evidence and therefore that a figure of 1.78 for the Adjustment Ratio is not proportionate. BT estimates that a figure of 2.2 for the Adjustment Ratio is based on a more proportionate, transparent and accountable approach to calculating the Adjustment Ratio.

2.32 Ofcom's analysis of the responses is undertaken in Section 3.

Section 3

Analysis of responses

3.1 This section discusses Ofcom's consideration of the views expressed in responses to the April 2004 Consultation as set out in Section 2. It first discusses Ofcom's response to the general issues on the Adjustment Ratio, and then considers, in greater detail the response to the views expressed on the methodology to calculate the Adjustment Ratio and the value of the Adjustment Ratio itself.

Ofcom's response to the general issues regarding the Adjustment Ratio

The principle of the Adjustment Ratio

3.2 Regarding AOL's point that the value of the Adjustment Ratio adds an 80% uplift to the cost of a LECO circuit, Ofcom notes that it has discussed in its April 2004 Consultation that BT has stated that it is not possible to separate FRIACO and non-FRIACO traffic at the local level. BT has been asked for this data, but has only been able to provide some estimation of data at the DLE level and not at the local circuit level. This estimate shows that on average, for the month of February 2004, the data traffic (which includes metered traffic) is about [✂] of the total LECO traffic.

3.3 Ofcom is of the view that based on the above information, no appropriate conclusions can be drawn on the percentage of processing capacity that FRIACO traffic uses at the DLE and the cost of using this capacity. The processing capacity is related to the number of LECO links at each DLE, and the amount of FRIACO traffic that originates on those LECO links and is passed through the DLE. Due to the lack of the latter information (as BT is unable to separate FRIACO traffic from non-FRIACO traffic on the LECO links), Ofcom has had to use a reasonable approximation of the cost that FRIACO users must pay for the use of a LECO circuit. Since FRIACO ports carry aggregated traffic from LECO circuits, the charge for a port must take into account the cost of using those circuits. The ratio of the EPCs is a reasonable method to determine how many circuits are needed to fill in each FRIACO port based on the current level of demand. Therefore, if more than one circuit is required per port, the FRIACO product must be required to bear the cost.

3.4 AOL stated that the crude nature of the Adjustment Ratio does not allow for the reconciliation of the efficient use of FRIACO ports leading to a reduction in the costs of the DLE resource used. Ofcom believes that the methodology and the data used for the calculation of the Adjustment Ratio is a reasonable proxy for calculations at the local level. This methodology, which was discussed in the November 2000 Discussion Paper[7], has generally been accepted by industry participants.

[7] *Methodology for calculating FRIACO Adjustment Ratio*

Investments in network capacity

3.5 In response to AOL's comments, although LECO EPCs have been decreasing over time indicating that more capacity may be available, it is by no means clear that this implies that there is enough capacity to meet FRIACO demand. FRIACO traffic levels have grown since 2002 when the Adjustment Ratio was last set, and investment in the network would have been necessary to meet that demand. FRIACO demand levels may stabilise and gradually decrease if FRIACO users move to broadband. However, it is important to note that the dimensioning of the network is done at a local level; although total FRIACO demand may register a decline over time, there may still be local circuits which will need investments to be made because of the pattern of FRIACO demand in the local area. This may be particularly so in areas where broadband is not yet available.

FRIACO and other product developments

3.6 AOL stated its concern that incorrect price signals on FRIACO services might stifle broadband development and takeup. Ofcom notes that in the Narrowband Market Review, it had defined the retail narrowband internet access and retail broadband internet access as belonging to separate markets. Under such a situation, Ofcom does not believe that high FRIACO prices can stifle broadband takeup.

ST FRIACO

3.7 In principle, the appropriate value of the AR (LECO)[8] might be different between DLE and Single Tandem FRIACO (ST FRIACO). This is because the EPC of FRIACO ports might be different at DLEs and tandem switches. For example, it might be possible to achieve greater utilisation of FRIACO ports at tandem switches, because of the benefit of greater concentration of traffic and larger route sizes. If so, a higher value of AR(LECO) should apply in the calculation of the charge for ST FRIACO compared to DLE FRIACO.

3.8 Ofcom had set a value of 2 of the AR for ST FRIACO in 2000 based on a forecast of the volumes of traffic at the tandem layer. Since then there has been very little demand for ST FRIACO. In such a situation, setting a new value is difficult as there is little historical data on which a new value can be based. Ofcom believes that there is as yet no clear justification for changing the value.

FRIACO charges

3.9 Ofcom's response to Energis's point on over-recovery of FRIACO charges is explained in paragraph 3.95.

[8] Another adjustment ratio AR(LT) is also used in the calculating the ST FRIACO charge. AR(LT) measures the number of local tandem (LT) circuits that are needed for each FRIACO port at the tandem exchange. This Statement does not consider the AR(LT).

Stability and certainty in the value of the Adjustment Ratio

3.10 Regarding BT's points on the stability and certainty of the value of the Adjustment Ratio, Ofcom's concern about unstable prices was based on a significant change in the pattern of traffic than that forecasted. Any such possible changes not accounted for in the value of the Adjustment Ratio could lead to an instability in the charge.

3.11 BT's point about the level of the Adjustment Ratio not corresponding to actual data has been taken into consideration by using the latest available data from BT in this Statement (see paragraphs 3.33-3.34 below). Ofcom has yet to consult on the proposals for the Network Charge Control. Any issues relating to the Adjustment Ratio for that period will be discussed in that Consultation.

3.12 Regarding the efficiency of FRIACO ports and a higher value of the Adjustment Ratio, Ofcom is of the view that if FRIACO EPCs were to increase due to higher efficiencies, these have always been taken into consideration.

3.13 The issue of the numerator and denominator is very important in setting the value of the Adjustment Ratio. It is precisely for this reason that Ofcom has chosen to examine these figures from time to time. Any review of these figures is less likely, in Ofcom's view, to lead to instability than the calculation of an incorrect AR based on partial or incomplete data.

Methodology and the proposed value of the Adjustment Ratio

3.14 Ofcom has noted that the most significant issue that has been raised in the responses to the April 2004 Consultation, both by BT and other FRIACO purchasers, has been the timing of the busy hour and the corresponding EPCs of LECO circuits and FRIACO ports.

3.15 Responding to this issue, Ofcom has queried BT on the busy hour calculation, met with BT, and studied the data provided by BT which was used for the proposals presented in the April 2004 Consultation. This subsection discusses :

- The data used for the calculation of the Adjustment Ratio
- The calculation of the Adjustment Ratio

The relevant data for the calculation of the Adjustment Ratio

The data used in the April 2004 Consultation

3.16 In preparation for the April 2004 Consultation, Ofcom had requested BT to provide information on the average EPC of LECO circuits and FRIACO ports in the morning, afternoon and evening busy hour periods on a monthly basis. BT provided this data for the period April 2001 to October 2003 and subsequently, extended it to March 2004. The data provided were average monthly EPCs in the different periods, which was an average of all LECO circuits on the network during that period. Ofcom compared the EPCs across the three periods and proposed that since the EPC in the afternoon was

higher than the EPC at other times of the day, the afternoon period was the busiest time on the network, and hence the Adjustment Ratio should be based on the average EPC in the afternoon period. This proposal was based on the data provided by BT which is illustrated in Table 1 below.

Table 1: Average monthly EPCs of LECO circuits

EPC of LECOs									
	Jun-02	Jul-02	Aug-02	Sep-02	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03
Morning BH	0.309	0.319	0.319	0.313	0.316	0.323	0.311	0.295	0.324
Afternoon BH	0.325	0.330	0.314	0.325	0.343	0.351	0.345	0.310	0.359
Evening BH	0.317	0.317	0.297	0.313	0.327	0.330	0.324	0.297	0.339
	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	
Morning BH	0.319	0.310	0.309	0.308	0.310	0.312	0.308	0.308	
Afternoon BH	0.345	0.323	0.332	0.322	0.320	0.306	0.324	0.334	
Evening BH	0.330	0.312	0.321	0.312	0.309	0.290	0.309	0.316	

3.17 BT has stated that it does not dimension its network on the basis of traffic at the overall network level, but at the disaggregated level of the individual LECO route. Ofcom has been aware of this, but BT has been unable to provide sufficiently disaggregated data for FRIACO at the local exchange level. For this reason, Ofcom has been unable to implement the so-called complex methodology (discussed in Annex 3 of the April 2004 Consultation document) and instead has always had to use overall network traffic as a reasonable proxy.

3.18 BT made a further point that using overall traffic to measure EPCs and estimate the Adjustment Ratio could not be representative of the local traffic patterns, because the overall traffic in any period was measured by aggregating traffic over all local routes, including those which were outside their busy hours. Such an aggregation could provide misleading results. BT has provided the following explanation of traffic measurement, which Ofcom has discussed here because it believes that is useful to share this information with the industry.

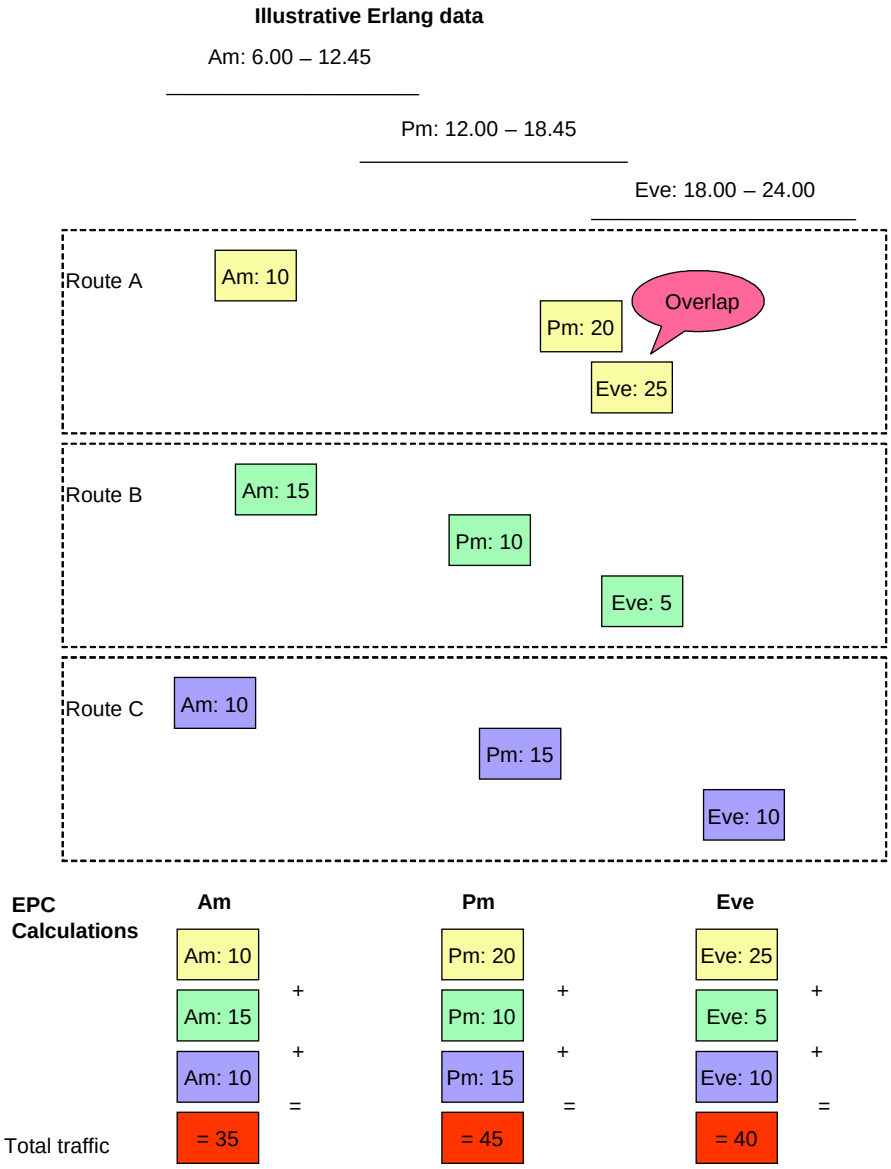
3.19 BT has submitted to Ofcom that in order to make decisions regarding network dimensioning, it measures traffic over an 18 hour day from 06:00 to 00:00 on each LECO circuit. Within this 18 hour day, BT measures traffic for the morning, afternoon and evening periods. The morning period runs from 06:00 to 12:45, the afternoon period runs from 12:00 to 18:45, and the evening period runs from 18:00 to 00:00. There is therefore, an overlap of 45 minutes between both the morning and afternoon periods and between the afternoon and evening periods.

3.20 BT states that the reason for the overlap is that it ensures that traffic at what tends to be the busiest part of the day (from 5 pm to 7 pm) shows up as the busy hour. According to BT, the change in the BT's retail tariffs at 6 pm coupled with people coming home from school and work contributes to the rise in traffic between 5 pm and 7 pm. BT has argued that, were the cut off of the afternoon period to be 6pm, true busy hours on many LECO circuits would be split between two periods (the afternoon and evening) and would not be correctly identified. The risk is that this would not give the network

design engineers a clear enough picture of when the busiest hour occurs on many LECO circuits, particularly if the highest traffic (busy hour) on a LECO circuit were to straddle two time periods. In such a case, the *true* busy hour would not be recorded as the afternoon busy hour or the evening busy hour. Instead the afternoon busy hour would be recorded earlier in the afternoon period.

3.21 As an illustration of why Ofcom's method of identifying three busy hours per day, as used in the April 2004 Consultation, caused misrepresentation of overall network traffic when the data was aggregated, BT has provided the following example.

Figure 1: BT's illustration of the data aggregation used by Ofcom



3.22 In the above example, there is a 45 minute overlap on Route A between the afternoon and evening busy hours (ie from 18:00 to 18:45). To aid in identifying true busy hours to enable accurate network dimensioning, BT counts the traffic in this period twice: once in the afternoon busy hour and once in the evening busy hour. For instance if there was even distribution of traffic in the afternoon busy hour between 17:45 and 18:45 on Route A, this means 15 erlangs of traffic occurs between 18:00 and 18:45. This figure of 15 erlangs is counted in both the afternoon and evening busy periods and hence contributes twice to the measure of total erlangs shown in the row called "Total Traffic", which provides the sum of busy hour traffic across all the circuits in the relevant period.

3.23 Were the cut off for the afternoon period to be at 18:00 (i.e. no overlap), only 5 erlangs of traffic would have been recorded for the final part of the

afternoon period from 17:45 to 18:00. This would have meant that the busy hour traffic in the afternoon period was 30 instead of 45.

3.24 In setting out its calculations on the overall average EPCs and the AR, Ofcom used EPC figures provided by BT that corresponded with the row "Total traffic" in Figure 1, for the relevant months. Based on a comparison of the EPCs for the three periods, which illustrated that the EPCs in the afternoon period were higher than those of the morning or evening, Ofcom had expressed its view that the busy period (busy hour) of the network was in the afternoon. In doing so, Ofcom was not made aware by BT of the possibility that the process used for traffic measurement (i.e. the overlap effect) might mean that aggregating over such traffic was not representative of the busy hour of the network.

3.25 In its response to the April 2004 Consultation, BT expressed concern that in its view, the busy hour of the network does not tend to fall in the afternoon period, but that the above method of calculating overall network traffic peaks means that the afternoon period appears to be the busy hour due to:

(a) the overlap effect described above; and,

(b) the secondary busy hour of each day almost always occurs in the adjacent period to that in which the primary busy hour of that day occurs. Hence if the overall busy hour for a given route occurs in the morning, the next highest busy hour occurs in the afternoon; and if the overall busy hour for a route occurs in the evening, the next highest busy hour is in the afternoon. When the traffic in the three daily peaks is aggregated across all routes, the high traffic in the afternoon of those routes that have an evening peak is added to the traffic of those routes that have an afternoon peak, thereby giving a high estimation of the overall traffic level in the afternoon.

3.26 BT states that the combination of the overlap effect and the secondary effect has led to the afternoon busy hour appearing to have a higher traffic and a higher EPC (in the data used by Ofcom in the April 2004 Consultation) when this might not actually be the case.

3.27 Ofcom is of the view that the secondary peak effect is a feature of the traffic profile and does not agree with BT that the secondary effect can lead to incorrect conclusions being made regarding the busy period of the network. If indeed the afternoon period has higher overall traffic because the evening might be a peak, the fact that this traffic is included provides a correct picture of the traffic profile during the day. A more significant factor in this respect is the fact that the data used hitherto had aggregated traffic peaks that did not occur simultaneously, but which occurred within the same period of the day. This level of aggregation was believed by Ofcom to capture the relevant data that BT used to dimension its network, i.e. the peak traffic at the local exchanges.

3.28 However, in the light of the further explanation that BT has now provided, Ofcom recognises that there is potential for the previous method used by Ofcom to derive the network busy hour to be distorted by aggregating traffic across different hours of the day within the morning, afternoon and evening period. Additionally, there is the issue of the overlap effect.

3.29 Consequently, Ofcom has considered whether the continued use of the monthly EPCs provided by BT prior to the April 2004 Consultation would reflect cost causality, if there was a possibility that the measurement of the underlying data could result in the afternoon period misleadingly showing the highest traffic rather than the evening or the morning periods.

3.30 Ofcom therefore requested BT to provide information on the daily traffic profile of the network as a whole, without any measurement adjustments made for overlaps during the different periods of the day. These profiles would also avoid assuming that all individual LECO circuit busy hours and secondary peaks occur simultaneously.

The information requested from BT

3.31 BT was asked to furnish historical data on daily LECO and FRIACO traffic measured every 15 minutes, from 6:00 to 00:00, in order to ascertain the peak 15 minutes of the network and to make a calculation of the network busy hour. Such data avoids both the overlap effect and the aggregating of traffic across different hours of the day. BT was also asked to provide the number of LECO circuits and FRIACO ports that were in operation in each of the 15 minute periods on each day.

3.32 In furnishing the data, BT made the following points

(a) BT does not generally store detailed traffic information historically. BT reported that extracting such data was an extremely labour-intensive exercise and therefore BT could only provide information for certain days; and,

(b) although BT dimensions its circuits based on traffic information from individual circuits at local exchanges, providing disaggregated circuit level daily traffic was not feasible. Therefore BT would provide daily traffic information on a network wide basis.

3.33 Ofcom acknowledges that extracting information that may not previously have been stored is a difficult and time consuming exercise and has accepted BT's point about the provision of network level data. It would clearly have been ideal for Ofcom to have obtained as many days' worth of historic network level traffic data as possible to improve the robustness of Ofcom's analysis. However, the recording and analysis of more robust data would have implied that a Statement on the value of the Adjustment Ratio would be delayed beyond November 2004. Ofcom considers that such a delay is not in the best interests of BT or other FRIACO purchasers, because of the uncertainty over the price of FRIACO, which would not facilitate business planning. However, Ofcom intends to analyse a more complete data set when it makes its proposals during the consultation on the Network Charge Controls early next year. See paragraph 3.93.

3.34 Based on feedback from BT regarding the possible days on which they could feasibly provide information, Ofcom requested BT to provide the information for the following days:

- 2nd, 9th, and 23rd February 2004
- 29th March 2004

- 10th, 17th and 23rd May 2004
- 2nd, 3rd, 4th, 9th, 10th, 11th August 2004

3.35 Illustrated below is an explanation of the information that BT has provided to Ofcom.

Data measurement

3.36 BT has stated that traffic is collected from the DLE at 5 minute intervals. These data are aggregated to 15 minute periods and stored for the periods from 06:00 to 23:45 for each weekday. The data is held on the 'live system' for 15 days only. The data is therefore provided for every 15 minutes starting from 06:00 until the 15 minute period starting 23:45.

3.37 The period with the highest 15 minute traffic is the peak traffic on the network for the particular day.

3.38 The traffic data from every four consecutive 15 minute periods is averaged so as to give the traffic in erlangs for the whole hour. That is, the traffic in the four 15 minute periods between 06:00-07:00 is averaged; the traffic in the four 15 minute periods between 06:15-07:15 is averaged; then the traffic between 6:30-7:30 is averaged and so on. The *highest* of such averages is considered for network dimensioning; the four consecutive 15 minute periods that correspond to the highest sustained traffic level over an hour is then the **busy hour** of the network for that day.

Data used for network dimensioning

3.39 If any inferences are to be made from the recent data from BT, it is important to note that there are two differences in the data used by BT to dimension its network and the information made available recently to Ofcom.

a) The data provided by BT to Ofcom is on a network-wide basis. However, BT dimensions its network on similar traffic profiles at the local circuit level.

b) In order to make an investment at the local level, BT calculates the busy hour of a route by taking an average of the weekly traffic (Monday-Friday) over consecutive 15 minute intervals of the day. The highest resulting figures observed over a period of time are used for network dimensioning. The data provided by BT to Ofcom however, is only a daily average and not a weekly average.

3.40 Ofcom recognises that the dimensioning of circuits takes place after an analysis of the traffic profile at the local level. However, since BT cannot provide this data, Ofcom will use the network level data as a reasonable aggregated proxy (see also paragraph 3.17).

3.41 Ofcom has no compelling evidence to suggest that a weekly average of the 15 minute traffic on a network-wide basis is likely to be significantly different from a daily average on a network-wide basis.

Sample data provided by BT

3.42 Provided below are figures illustrating the data provided by BT for some sample days. The figures show the 15 minute period in which the traffic is at the peak. The busy hour of the network is the highest average of four consecutive 15 minute periods. A complete set of figures for all the days for which BT was able to provide data is included in Annex 1.

Figure 2: Network level traffic data for 2nd February 2004

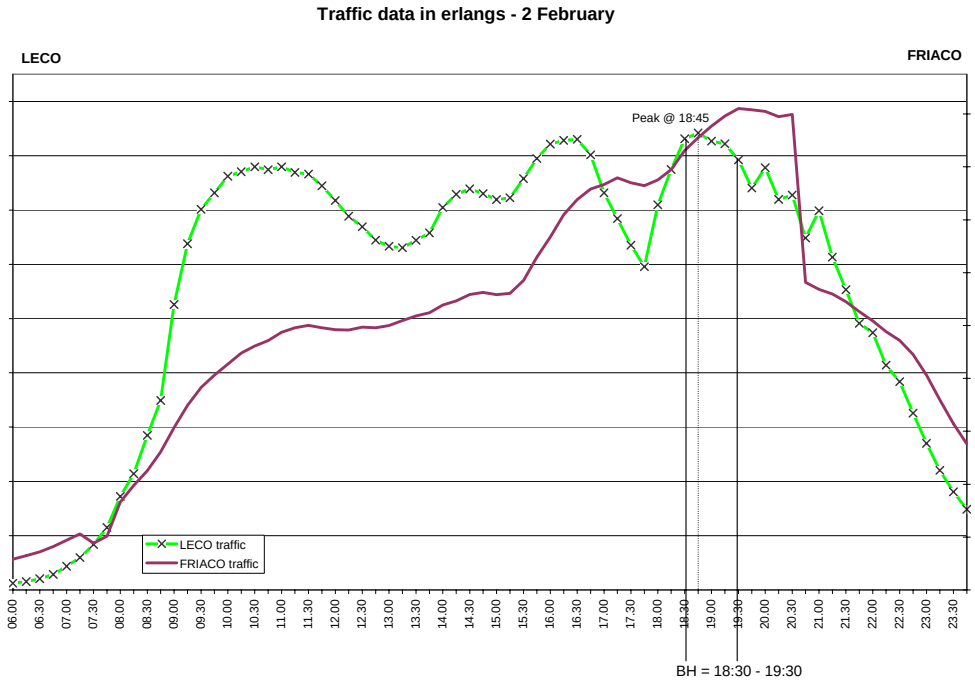


Figure 3: Network level traffic data for 29th March 2004

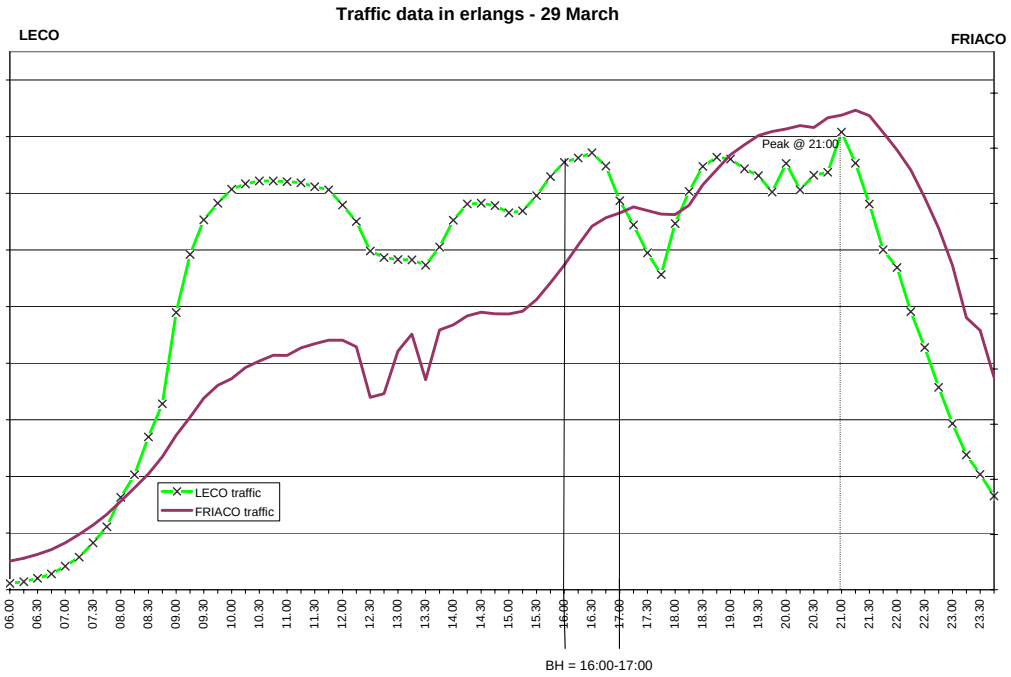
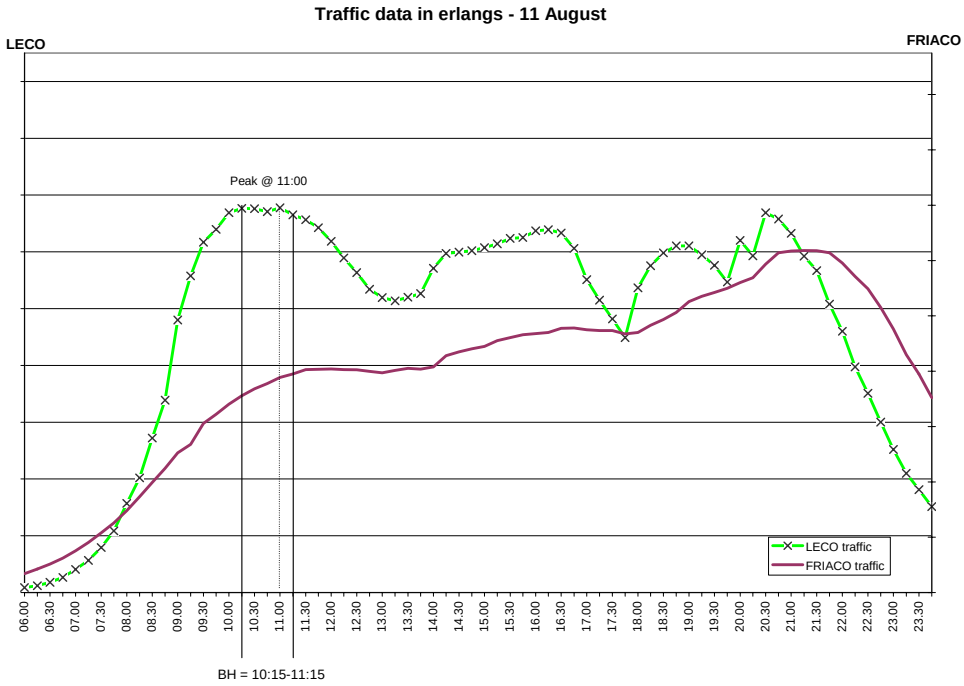


Figure 4: Network level traffic data for 11th August 2004



3.43 It is important to note that the busy hour of the network need not necessarily include the 15 minute period in which traffic is at the peak (maximum). This is

because the busy hour calculation requires consecutive periods with high traffic, and if the peak (maximum) 15 minute traffic period is preceded and/or succeeded by traffic that is relatively not high, then the peak 15 minute period may not be part of a busy hour calculation. For instance, the 15 minute period with the highest traffic on 2nd February is 18:45 and the busy hour is from 18:30-19:30. However, on 29th March, although the 15 minute period with the highest traffic is 21:00, the busy hour is actually between 16:00 and 17:00. This is because the average traffic between 16:00-17:00 is higher than the average traffic between 20:15-19:15. On August 11, the 15 minute period with the maximum traffic is at 11:00 in the morning and the busy hour is between 10:15 and 11:15.

3.44 Provided below is a table of the peak 15 minutes and the busy hours for all the days for which BT has provided data.

Table 2: Busy hour calculations in 2004

	Network peak (15 min period beginning)	BH calculation	15 minute Network peak falls within BH - Yes (Y), No (N)
02-Feb	18.45	18:30-19:30	Y
09-Feb	19.00	18:30-19:30	Y
23-Feb	18.45	18:30-19:30	Y
29-Mar	21.00	16:00-17:00	N
10-May	21.00	16:00-17:00	N
17-May	21.00	10:00-11:00	N
24-May	21:00	20:45-21:45	Y
02-Aug	10.30	10:15-11:15	Y
03-Aug	10.30	10:15-11:15	Y
04-Aug	10.15	10:15-11:15	Y
09-Aug	11.00	10:45-11:45	Y
10-Aug	11.00	10:15-11:15	Y
11-Aug	11.00	10:15-11:15	Y

3.45 Ofcom's view is that the above information on the 15 minute peak traffic and the busy hour is significant for two reasons:

(i) the 15 minute period when the traffic is at its peak is not relevant for network dimensioning; it is the hour that has sustained the highest overall level of traffic that is used to dimension the network (although this is done at the local level rather than the network level, but BT is unable to provide local circuit level data, so a similar principle is applied at the network level); and,

(ii) since the busy hour is used to dimension the network, it is the same busy hour that is relevant for measuring the FRIACO traffic for the purposes of the Adjustment Ratio.

The implications of the above traffic data on the Adjustment Ratio

3.46 Ofcom believes that the recent data is more representative of how BT dimensions its network compared to the data that Ofcom used in the April 2004 Consultation. The data used in the April 2004 Consultation was based on an average monthly EPC of LECO circuits in the afternoon busy hour. Since the average monthly EPC was derived from all the circuits that were in operation in the afternoon period, irrespective of the hour within the afternoon period when each circuit had a BH, this information does not provide as good an indication of when the network needs to be reinforced to meet FRIACO traffic demand, as the more recent data.

3.47 Ofcom believes that the methodology proposed in the April 2004 Consultation is the appropriate methodology that captures cost causality. Ofcom also believes that the use of the more recent data provided by BT will result in a more accurate calculation of the Adjustment Ratio by the methodology proposed in the April 2004 Consultation. Therefore, although the information made available from BT is not extensive, Ofcom is of the view that it is helpful in the implementation of the methodology, because it can more appropriately reflect cost causality than the data used in the April 2004 Consultation.

Methodology for the calculation of the Adjustment Ratio

3.48 The methodology proposed in the April 2004 Consultation and used in this Statement for the calculation of the Adjustment Ratio is:

$$\frac{\text{EPC of FRIACO ports in the network busy hour}}{\text{EPC of LECO circuits in the network busy hour}}$$

3.49 Ofcom had stated that it was the network busy hour that was important for cost causality as, given the use of aggregated network level data, it was the period during which BT would need to make investments in the network to meet FRIACO demand. The recent data provided by BT confirms this point since it is the highest average traffic on which BT bases its investment decisions (albeit at a disaggregated local level).

3.50 Given the unavailability of sufficient disaggregated data to implement a methodology reflecting local level network dimensioning, Ofcom concludes that the ratio of the EPCs in the network busy hour provides a reasonable cost causal methodology to derive the Adjustment Ratio. With the diminished likelihood of FRIACO causing a shifting network busy hour, the FRIACO EPCs to be used should be calculated for the same busy hour on which the LECO EPCs are based.

3.51 The April 2004 Consultation proposed that the afternoon period was the network busy hour and hence the EPCs to be used should be the average EPC in the afternoon period. However as is evident from Table 1 above, the busy hour by no means occurs consistently in the afternoon period. Indeed, over the days for which BT has provided the data, the busy hour occurs in the morning, afternoon and evening. Given this scenario, the following section discusses the calculation of the Adjustment Ratio.

Calculation of the value of the Adjustment Ratio

3.52 The Adjustment Ratio is a factor that determines the average number of LECO circuits per FRIACO port. In order to calculate this, BT was asked to provide, in addition to 15 minute network level traffic data, the number of circuits and ports in operation in those 15 minutes. This information has enabled Ofcom to calculate the EPCs for the busy hour.

3.53 Thus, if the busy hour was between 18:30-19:30, the aggregated traffic between 18:30-19:30 is divided by the average number of LECO circuits to obtain the LECO EPC for the busy hour. For the same busy hour, FRIACO EPC is calculated as the aggregate FRIACO traffic in that hour divided by the average number of ports in operation.

3.54 The busy hour LECO EPCs and the FRIACO EPCs for the different days for which BT was able to provide information to Ofcom are provided in Table 3.

Table 3: LECO EPCs and FRIACO EPCs

	LECO data			FRIACO data
	Network peak (15 min period beginning)	BH calculation	EPC for the BH	EPC for the BH
02-Feb	18.45	18:30-19:30	0.343	0.742
09-Feb	19.00	18:30-19:30	0.339	0.721
23-Feb	18.45	18:30-19:30	0.331	0.705
29-Mar	21.00	16:00-17:00	0.315	0.584
10-May	21.00	16:00-17:00	0.308	0.529
17-May	21.00	10:00-11:00	0.296	0.369
24-May	21:00	20:45-21:45	0.307	0.707
02-Aug	10.30	10:15-11:15	0.300	0.375
03-Aug	10.30	10:15-11:15	0.288	0.380
04-Aug	10.15	10:15-11:15	0.283	0.365
09-Aug	11.00	10:45-11:45	0.310	0.415
10-Aug	11.00	10:15-11:15	0.305	0.400
11-Aug	11.00	10:15-11:15	0.281	0.358

3.55 In keeping with Oftel's, and now Ofcom's aim to take account of the desirability of certainty and stability in the FRIACO charge, Oftel in the past, usually set a value of the Adjustment Ratio based on a mature FRIACO EPC, taking into consideration historical data and trends.

3.56 In the April 2004 Consultation document, Ofcom used a lengthy data series in order to calculate the relevant EPCs and the Adjustment Ratio. However, in the case of the data more recently submitted by BT to Ofcom as part of this consultation exercise, the information is limited because of the limitations on the volume of data that BT was able to provide (see paragraphs 3.33-3.34). Inferences on the EPCs and Adjustment Ratio have to be made taking into consideration these limitations.

3.57 Provided below are some estimates of the Adjustment Ratio using the above EPCs in the respective busy hours. An explanation of these methods is provided further below.

Table 4: Calculations of the Adjustment Ratio

Method	LECO EPC	FRIACO EPC	AR (figures in brackets are shown with "mark-ups"[9])	Brief Comments – further explanation in the following text
1. Simple average of all days	0.308	0.512	1.66 [1.69]	Each day is accorded equal weight
2. Average of the monthly averages	0.313	0.556	1.78 [1.81]	A monthly average is calculated and an equal weight is accorded to each monthly average
3. Weighted averages of the monthly averages	0.314	0.570	1.81 [1.85]	Weights depend on the number of such months in a year for which traffic patterns are assumed to be similar to those where data is available. Hence Feb average – 4 months, March average - 1 month, May average – 4.5 months, August average – 2.5 months
4. Weighted average of the period (am,pm,eve) averages			1.88 [1.91]	An average of the EPCs from days that have a busy hour in the same period is calculated; this average is used to calculated period-wise ARs. These ARs are then weighted to obtain a single AR. The weights are the percentage of LECO traffic in each time of day (weights may not add upto 1) – See Tables 8 and 9.

Explanation of the calculations

3.58 The figures in brackets in Table 4 refer to an adjustment made to the FRIACO EPCs to take into account any FRIACO ports that are recorded here, but are not actually in service (see footnote 10). Prior to the April 2004 Consultation, BT had provided monthly data over a long time series on the EPCs of FRIACO ports and LECO circuits. However, BT stated that it had not validated the number of FRIACO ports used for calculating the EPCs by checking if the number actually contained only those ports in service. As part of the April 2004 Consultation, Ofcom had also obtained 'validated' data from BT for some months[10]. Ofcom had calculated that the average difference between the 'unvalidated' EPC data and 'validated' data for these months was 1.7% and hence applied this percentage to all the monthly FRIACO EPCs discussed in the April 2004 Consultation.

3.59 For this Statement however, EPCs based on individual days rather than monthly averages are being considered and, it is therefore debatable whether a figure of 1.7% which was a monthly average, is appropriate to be used

[9] It is BT's contention that data provided on the number of FRIACO ports in service may contain ports that are in the process of being provisioned or ceased. Therefore including such ports (which are not actually in service) in the EPC calculation would tend to underestimate the true EPC. In the April 2004 Consultation, Ofcom applied a 1.7% increase to the FRIACO EPC to adjust for such data.

[10] These months were June and October 2002, March, June and October 2003.

here. For ease of consistent comparison with the figures discussed in the April 2004 Consultation, Ofcom has shown in brackets in Table 4, the Adjustment Ratio figures with the 1.7% uplift. The discussion below only refers to the values without the uplift. However, even if the uplift were to be considered appropriate to use, as discussed in paragraphs 3.91-3.94 below, it would not change the conclusion that Ofcom is making in this Statement.

Method 1

3.60 The first method used to calculate the Adjustment Ratio is a simple average of all the days in Table 3. However this method carries the risk of treating each day as if it were potentially a day on which investment decisions with respect to network dimensioning are made. In particular, the weight given to every day in August is the same as that given to every day in February even though August is generally regarded as a holiday month when overall traffic is relatively lower.

3.61 BT has argued that August data should not be included in any calculations of the Adjustment Ratio as August is a seasonal month with lower traffic. In particular, BT states that August data is unrepresentative of the period on which its network dimensioning is based (i.e., the winter/spring period), and that BT would not dimension its LECOs using the August traffic supplied as it is 13% lower on average than for the days in February/March. BT considers that the traffic patterns in August in particular, along with the last two weeks of July are atypical of the year.

3.62 Ofcom however noted from BT's data that, although the average traffic during the day in August is lower than February/March, the traffic in the morning busy hour in August was not significantly different from the busy hour traffic in some of the other months. In some cases, the volume of traffic in some August morning busy hours was higher than the traffic in the busy hours occurring in the morning, afternoon or evening periods at other times of the year. Ofcom also noted that BT stated that the percentage of concentrators with a busy hour in the morning period was approximately 30% (See also Annex 2).

3.63 Based on the above observations, Ofcom requested BT to explain further the basis on which network dimensioning takes place and whether any circuits have been dimensioned based on August data since the introduction of FRIACO. In particular, BT was asked if it dimensioned LECO circuits based on an observation of the sustained busy hour traffic of each circuit, irrespective of when this busy hour occurs during the day.

3.64 BT responded stating that the network is dimensioned based on busy periods, whenever these busy periods[11] occur. BT also stated that it is possible that there have been instances where observations of route traffic in August have led to enhancements on local routes. Although BT could not provide evidence of the cases when this was done, BT estimated that few routes would have

[11] BT has used the term busy period. However it also explained to Ofcom that the highest four consecutive 15 minute periods averaged across five weekdays comprises the busy hour and is the information used for network dimensioning. Hence the use of the terms busy hour and busy period imply the same information in this context.

been dimensioned based on traffic in August. However, BT also said that it had the following concerns:

(a) by focusing on August data, Ofcom might take this to be representative of the traffic level on which network dimensioning is based and this was unlikely to be the case; and,

(b) more crucially, it is the observed peaks in traffic that matter for route dimensioning and not secondary peaks. Although traffic in the morning busy hours in August may not be much different to the busy hour traffic observed in February/March, it is irrelevant if it falls below the peak observed during the seasonal highs of February/March.

3.65 On the basis of the response from BT, Ofcom has concluded the following on the use of August data:

(i) since it is the sustained busy hour traffic that is relevant for network dimensioning irrespective of when the busy hour occurs, busy hour data should be considered for the purposes of calculating the Adjustment Ratio without prejudice to the month/s in which this occurs;

(ii) within the data set provided by BT to Ofcom, all the days in August (and 17 May) appear to have their busy hours in the morning period. On the basis of the argument in (i) above, and in the interest of representing circuits which have morning busy hours, it is valid to include August data in the analysis. Indeed, BT has indicated that some routes may have been dimensioned based on August traffic data;

(iii) in response to BT's point set out in 3.64 (b) above, although only the observed peak should be considered on each route, the data set that Ofcom is assessing in this Statement is based on a network-wide aggregation of traffic. Therefore it is unclear if the August traffic peaks are secondary to, and below the level of the February/March traffic peaks at the individual circuit level, as the traffic peaks in each case may occur from different sets of circuits. Since BT has not been able to provide traffic data at the local level, on the basis of the argument set out in 3.64 (b), excluding August data is not justified;

(iv) however, Ofcom acknowledges that August is a month with lower average traffic and exhibits seasonality. Hence any inference from busy hour data in August must be made with suitable adjustments to account for its relative importance. Although there is proportionately more data available for August, Ofcom recognises that August data should not be given an unduly large weighting in the calculation of the Adjustment Ratio.

3.66 BT has also stated that, like August, May does not represent a seasonal peak and therefore should not be considered. In providing data for May, BT also stated to Ofcom that the data for 10 May was under-recorded as BT was unable to extract all the information pertaining to 10 May.

3.67 For reasons similar to those discussed in 3.65 above, Ofcom does not believe that there is compelling evidence that the traffic data for May should be excluded from the analysis. However, Ofcom has taken note of BT's point that May data has been under-recorded and has undertaken a sensitivity test on the calculations of the Adjustment Ratio through all the methods discussed in Table 4, by considering results with and without the data for 10 May. Ofcom notes that this sensitivity test does not make a significant change to the result as the range of Adjustment Ratios only changes from 1.66-1.88 to 1.66-1.90.

Method 2

3.68 The second method involves the calculation of an average EPC for each month and then accords equal weights to the months of August, May, March and February in order to calculate an Adjustment Ratio.

3.69 This is a reasonable approach. But there is an argument that this method does not fully take into account the effect of seasonality across the whole year.

Method 3

3.70 The third method therefore calculates a weighted average of the monthly averages used above. In order to determine appropriate weights, Ofcom considered the pattern of traffic across the year and attempted to identify months with similar traffic profiles. To do this, Ofcom compared the monthly average EPC information provided by BT before the April 2004 Consultation (the LECO EPCs are set out in Table 1). Although this Statement has discussed that this information does not provide a fully reliable indication of when the busy hour of the network is, it is nevertheless useful for the purposes of assessing the relative traffic profile of each period. Ofcom has only used this information to inform itself of how the average EPC (and hence the traffic) may vary between the months of the year. This information is illustrated in Figures 5 and 6.

Figure 5: Monthly average of LECO EPCs

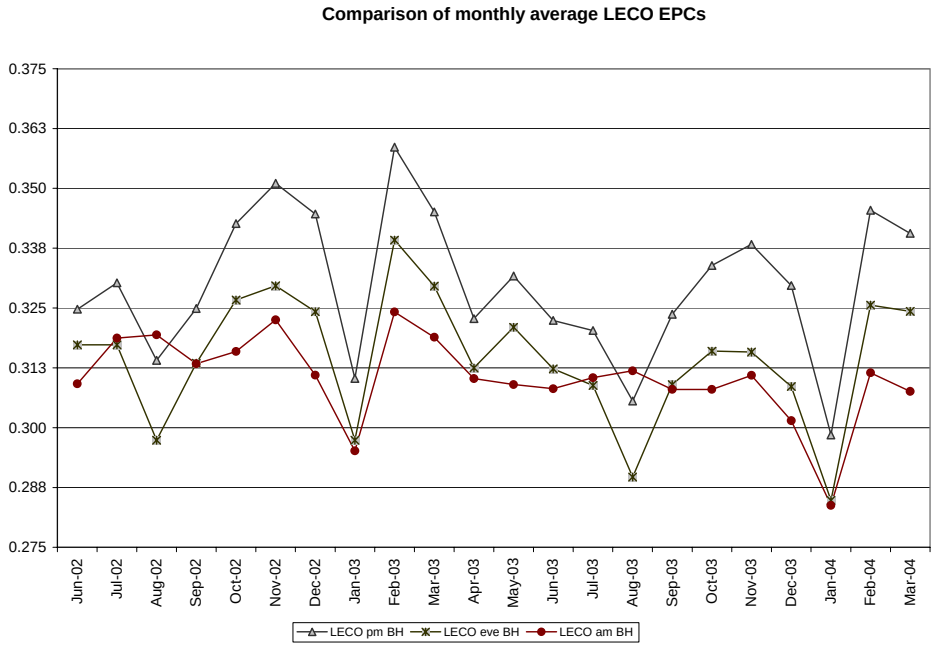
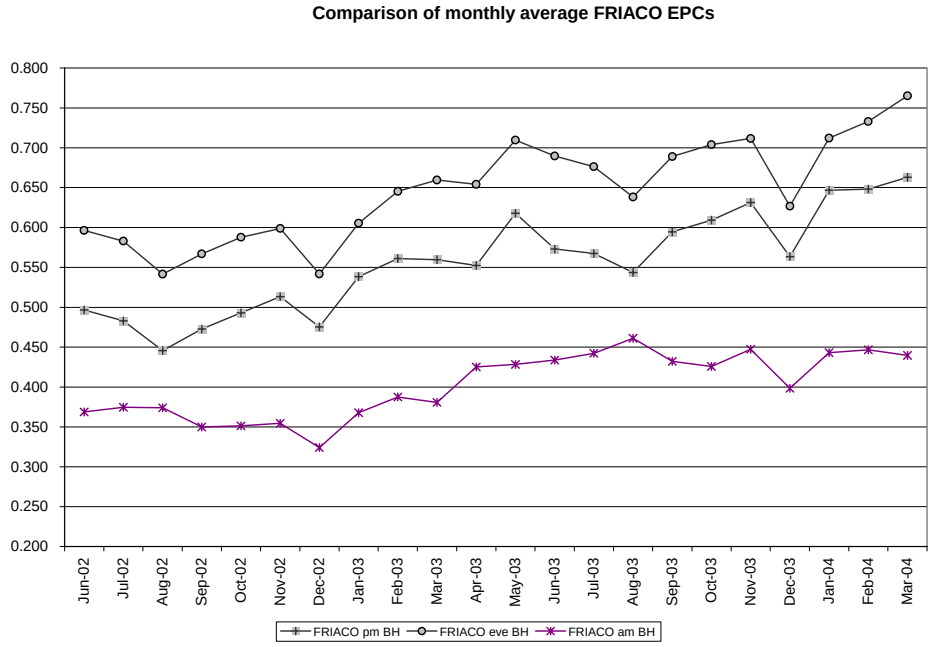


Figure 6: Monthly average of FRIACO EPCs



3.71 As can be seen from the above figures, the LECO EPCs (and hence traffic) are generally highest in October, November, December and February. Among these months, the only EPC data in the busy hour that BT has provided to Ofcom in the recent batch of data is for February. Hence, it has been assumed that the average EPC in the busy hours in the months of October, November and December would be similar to the average EPC in the busy hour in February. Similarly, FRIACO EPCs (and hence traffic) are similar between October, November, January and February. Therefore, February average LECO EPCs and FRIACO EPCs have been given a weighting of 4/12. These winter months are generally likely to have an evening busy hour, and this weighting also appears reasonable from the point of view of achieving a balance of morning, afternoon and evening busy hours.

3.72 BT has provided LECO and FRIACO traffic information only for one day in March. Here, March data is used on its own with a weighting of 1/12. There are assumed to be 4.5 months that have similar traffic patterns to May – April, May, June, half of July and September. BT has stated that the last two weeks of July and all of August are periods where the summer seasonality takes effect. Hence only half the month of July has been considered along with April, May, June and September. Hence the busy hour EPC averages for May are given a weighting of 4.5/12.

3.73 As discussed above, BT has stated that traffic data in August and the last two weeks of July is atypical of the year. Hence August data would be expected to carry a weighting of 1.5/12. However, as can be observed from Figures 5 and 6, there is also a winter seasonality. LECO EPCs (and hence traffic) appear to dip in January while FRIACO EPCs (and hence traffic) appear to dip in December, reflecting the winter holiday period. Hence the LECO traffic in January and the FRIACO traffic in December could be considered to be similar to the seasonal months of August and the last two weeks of July.

3.74 It could be argued that while both August and January may be seasonal months, the pattern of traffic is very different between summer and winter which might mean that January might have an evening busy hour compared to August which has a morning busy hour. The approach used in Method 3 would be limited if the EPCs in the morning busy hour and evening busy hour differed significantly. However, Figure 5 illustrates that the average LECO EPCs for January between the morning and evening busy hours are not significantly different. Therefore January could be considered to exhibit similar traffic patterns on LECO circuits as the last 2 weeks of July and August. Similarly December could be considered to exhibit similar seasonality to July/August for FRIACO traffic[12]. The weight given to August data in Method 3 is therefore 2.5/12. Table 5 illustrates the observed data for each month, and the average EPCs used for the different months.

Table 5: EPCs used in Method 3

	Monthly averages of observed data		Assumed for AR calc				
	LECO EPC	FRIACO EPC	LECO EPC	Data assumption	FRIACO EPC	Data assumption	AR
Jan	n/a	n/a	0.294	*Aug*	0.723	*Feb*	2.46
Feb	0.338	0.723	0.338	*Feb*	0.723	*Feb*	2.14
Mar	0.315	0.584	0.315	*Mar*	0.584	*Mar*	1.85
Apr	n/a	n/a	0.304	*May*	0.535	*May*	1.76
May	0.304	0.535	0.304	*May*	0.535	*May*	1.76
Jun	n/a	n/a	0.304	*May*	0.535	*May*	1.76
Jul	n/a	n/a	0.299	*May-Aug avg.*	0.459	*May-Aug avg.*	1.53
Aug	0.294	0.382	0.294	*Aug*	0.382	*Aug*	1.30
Sep	n/a	n/a	0.304	*May*	0.535	*May*	1.76
Oct	n/a	n/a	0.338	*Feb*	0.723	*Feb*	2.14
Nov	n/a	n/a	0.338	*Feb*	0.723	*Feb*	2.14
Dec	n/a	n/a	0.338	*Feb*	0.382	*Aug*	1.13
						Overall average	**1.81**

3.75 In Table 5 above, the columns depicting assumed LECO EPC and assumed FRIACO EPC refer to the EPCs assumed for each month based on the monthly EPC data used in Method 2. The months where no observed EPC information is available have been assigned the observed EPCs of those months whose traffic patterns are likely to be most similar. Here, FRIACO EPCs for the month of December are assumed to be the same as that of August. However, Ofcom notes from Figure 6 that in the month of December, the FRIACO EPC in the evening busy hour period is higher than the EPC in the morning busy hour period. Using an August FRIACO EPC for December, when August might have a morning busy hour, might then understate the true FRIACO EPCs to be used in a weighted average adjustment ratio[13]. Hence, Ofcom has applied sensitivities to the EPC values by assigning March and

[12]Indeed, in the April 2004 Consultation, Ofcom applied a similar principle when it used a dummy variable for July, August and January for FRIACO EPCs to adjust for the effects of seasonality when forecasting the forward look EPCs.

[13] This is because FRIACO EPCs are consistently higher in the evening period relative to other times of the day and are the lowest in the morning period.

May FRIACO EPCs to that of December. The resulting figures show that the Adjustment Ratio changes from 1.81 to 1.86 and 1.85 respectively.

3.76 Ofcom has used a weighting method to calculate the average LECO EPC in the network busy hour and an average FRIACO EPC in the network busy hour. However, as with any assumed weights, the results depend on the weights used. In the absence of data on the EPCs in the network busy hour for all the months of the year, any attribution of weights is likely to contain some forecast error with the risk that an Adjustment Ratio cannot be determined appropriately.

Method 4

3.77 This method uses a calculation similar to that undertaken for the so-called more complex methodology calculations. The rationale for the complex methodology was discussed in the April 2004 Consultation and is repeated below.

More complex methodology

3.78 In the November 2000 Discussion Paper, a more complex methodology to derive the Adjustment Ratio was analysed and discussed. Additional traffic on LECOs will only give rise to a requirement for additional LECO circuits if it arises in the individual busy hour of those LECOs. The more complex methodology would use disaggregated information on the EPCs of LECOs and FRIACO ports and traffic patterns in the attempt to build up the number of LECO circuits required on average per FRIACO port.

3.79 The advantage of the more complex methodology is that it should provide a closer reflection of cost causation. A key disadvantage is that some of the information required to implement the more complex methodology is not available. This information is the volume of FRIACO Erlangs in the morning (afternoon, evening) that originate on LECOs which have an individual busy hour in the morning (afternoon, evening). It is not available, because BT is unable to distinguish traffic on LECOs between FRIACO and non-FRIACO. In the absence of this information, assumptions would need to be made to implement the more complex methodology.

3.80 In previous responses to the November 2000 Discussion Paper, both BT and other FRIACO purchases had expressed a preference for using a methodology that reflected the average EPC of all the circuits in the busy hour (the simpler approach) rather than only the subset of circuits that actually had a busy hour coinciding with the network busy hour. Hence the Adjustment Ratio has never been set based on the complex methodology. Nevertheless Ofcom has usually explored the implications of using the more complex methodology to provide a cross-check on the reasonableness of the Adjustment Ratio calculated through the simpler approach. An illustration of this calculation was provided in Annex 3 of the April 2004 Consultation[14].

3.81 The more complex methodology considers the coincidence between FRIACO traffic on LECOs at times of day when those particular LECOs are experiencing their individual busy hours, ie the morning, afternoon and

[14] http://www.ofcom.org.uk/consultations/past/dle_friaco/friaco/friaco.pdf?a=87101

evening. When LECOs are outside their individual busy hours no additional capacity is needed to serve FRIACO traffic.

3.82 Method 4 attempts to calculate the Adjustment Ratio in a manner similar to the calculations through the complex methodology. The current data provided by BT and used in this Final Statement has some limitations for a calculation using the more complex methodology. Ideally, if the data were available at the local level, the busy hour EPCs would only include the EPC of each circuit in its own busy hour. However, since BT can only provide network level data in each 15 minute period, the busy hour calculation here involves the traffic from all circuits in that hour, not just the subset of those circuits experiencing their individual busy hour at that specific time of the day.

3.83 In the April 2004 Consultation, the complex methodology illustration was used on discrete monthly data in which BT had provided not only the percentage of circuits that had a busy hour in the morning, afternoon and evening but also the respective EPCs of only those circuits that had a busy hour in the morning, afternoon or evening.

3.84 Method 4 attempts to perfom the calculations similar to the complex methodology by using the most recently available data on different busy hours from BT. The data provided by BT have been first used to calculate average EPCs for the overall network busy hours occurring in the morning, afternoon and evening periods. That is, the EPCs occurring in the morning period have been averaged, those in the afternoon period have been averaged and those in the evening have been averaged. However, unlike the complex methodology illustration, the morning, afternoon and evening busy hour EPCs here are not calculated from only the subset of circuits that are actually busy in the morning, afternoon or evening. The EPCs used here are the average of all circuits whose aggregate traffic shows a morning, afternoon or evening busy hour. This is therefore only an attempt to use a reasonable proxy to the subset of circuits that may actually be busy in the morning, afternoon or evening.

3.85 Ofcom has considered whether such a proxy might be reasonable, by comparing the busy hour EPCs of only those subset of circuits that are actually busy in the morning, afternoon or evening with the overall network EPCs. This is illustrated in Tables 6 and 7 below.

Table 6: BH EPCs of circuits in individual BHs

	Morning BH EPCs of circuits having a morning BH	Afternoon BH EPCs of circuits having an afternoon BH	Evening BH EPCs of circuits having evening BH
Jun-02	0.293	0.275	0.439
Oct-02	0.317	0.304	0.463
Mar-03	0.311	0.303	0.472
Jun-03	0.299	0.269	0.447
Oct-03	0.301	0.289	0.454

Table 7: BH EPCs of all circuits (used in Method 4)

Morning BH EPC	0.295
Afternoon BH EPC	0.312
Evening BH EPC	0.330

3.86 A comparison of the tables above shows that, the morning and evening busy hour EPCs used in Method 4 and listed in Table 6, are on average lower than the morning and evening busy hour EPCs provided for all the months in Table 5. This means that Method 4 would be understating the average EPC compared to the true EPC relevant to the complex methodology. Any understatement of LECO EPCs would mean that the Adjustment Ratio is overstated. Nevertheless, Ofcom has undertaken Method 4 to assess the possible range within which the Adjustment Ratios might lie.

3.87 To proceed with this method, the average EPCs in Table 6 are weighted by the percentage of LECO traffic that occurs in each busy hour respectively. This is explained further below.

3.88 BT has submitted that the general percentage share of LECO concentrators having busy hours in the morning, afternoon and evening periods is 30%, 16% and 54% respectively[15]. Ideally, Method 4 should use the percentage share of the number of circuits that have a busy hour in the morning, afternoon and evening periods. However, BT is unable to provide this data. Hence the percentage share of concentrators is used as a proxy for the percentage share of circuits. This allows the estimation of the proportion of LECO traffic that originates on all the circuits in the network morning busy hour. For instance, the ratio of the morning busy hours EPC to the average EPC of all busy hours, multiplied by the percentage of circuits that have a morning busy hour would provide the percentage of total busy hour traffic that originates on the LECOs that have a morning busy hour. This estimation is not the relevant data required to implement the complex methodology which requires FRIACO traffic patterns at the disaggregated level; however since BT is unable to provide disaggregated data, these estimates serve as a reasonable proxy.

3.89 Similarly, one could calculate the percentage of total busy hour traffic that originates on LECO circuits that have an afternoon busy hour and an evening busy hour. These percentages then act as weights to the individual Adjustment Ratios. The percentages may not necessarily equal 100, because circuits may have different EPCs depending on the time of the day in which they are used. For instance, the average EPC on a circuit would be lower in the afternoon than in the evening when each circuit may be run 'hotter' – this would mean that traffic from a circuit in the evening busy hour was proportionately higher than the traffic from the circuit in the morning busy hour. The last column named [E] in Table 8 illustrates the weights.

[15] BT provided a three week average for the months of Mar 02, June 02, Oct 02, Mar 03, June 03, Oct 03 and Mar 04. Details of the percentage calculations are provided in the Annex.

3.90 These weights when applied to the individual period Adjustment Ratios can produce a weighted Adjustment Ratio. The calculations are illustrated in Tables 8 and 9.

Table 8: Average EPCs in different times of the day

	LECO [A]	**FRIACO** [D]	**% of LECO circuits** [C]	**% of traffic originating in** [E] = ([A]/[B])*[C]
Average EPC in the morning (am)	0.295	0.380	30%	**28%**
Average EPC in the afternoon (pm)	0.312	0.557	16%	**16%**
Average EPC in the evening (eve)	0.330	0.719	54%	**57%**
Average EPC in all BH (average in Method 3)	0.314 **[B]**			

Table 9: Calculation of the AR

	AR = ([D]*[E])/[A]
Morning BH (am)	0.363
Afternoon BH (pm)	0.284
Evening BH (eve)	1.236
Total (am+pm+eve)	**1.88(1.91)**

The range of possible values of the AR

3.91 The current value of the Adjustment Ratio is 1.78. Following responses from BT and the industry, Ofcom obtained further information from BT regarding the traffic in the busy hour and the EPCs in the busy hour. Ofcom is of the view that the value of the AR calculated from the most recent set of data is within the range of 1.66-1.91 as calculated from all the methods discussed above. While 1.66 is likely to understate the true Adjustment Ratio because of the undue weight given to August data, 1.88 (or 1.91) is likely to overstate it because the average LECO EPC used as [B] in Table 8 above would be a lower estimate than a LECO EPC calculated by only considering the subset of circuits that actually had a busy hour in the relevant period. The current value of the Adjustment ratio falls within this range.

3.92 BT has been able to provide only limited data for this review. Some of the limitations of the data would not be alleviated with more time, eg. BT's inability to provide disaggregated traffic data between FRIACO and non-FRIACO traffic at the LECO level. But with more time, it would be possible to obtain a more complete view of traffic patterns during the year. There are eight months for which detailed network traffic data has not been supplied by BT: January, April, June, July, September, October, November and December. The inclusion of this data would permit a more refined calculation of the Adjustment Ratio.

3.93 Early next year, i.e. in January/February 2005, Ofcom is embarking on a consultation on the Network Charge Controls (NCC) to take effect from October 2005. A part of this consultation will deal with the charge for FRIACO, which includes the value of the Adjustment Ratio. Ofcom is of the view that in consulting on a value for the Adjustment Ratio as part of the

NCC, it should be able to obtain further valuable traffic data from BT to enable a more refined calculation of the Adjustment Ratio, if BT records and retains this data and makes it available to Ofcom.

3.94 For the present however, based on an analysis of the latest information from BT on the network busy hours on different days, Ofcom considers that there is insufficient evidence to conclude that the current value of 1.78 for the Adjustment Ratio for DLE FRIACO is incorrect and needs to be changed. As indicated above, Ofcom intends to revisit the value of the Adjustment Ratio during the NCC consultation at which time a more complete data set should be available.

3.95 Ofcom proposed in the April 2004 Consultation that although it was not proposing to change the value of the Adjustment Ratio, any potential changes would only take effect going forward and would have no retrospective element. This is consistent with the aim of seeking to achieve stability and support business planning. In this Statement, Ofcom concludes that the value of the Adjustment Ratio will not have a retrospective element.

Section 4

Conclusion

DLE FRIACO

4.1 In the April 2004 Consultation, Ofcom made two proposals

(b) that the methodology for the calculation of the Adjustment Ratio be changed to reflect the calculation of the AR with reference to both FRIACO and LECO EPCs in the network BH, given the receding likelihood that FRIACO traffic would result in shifting peaks. Ofcom had proposed that the afternoon period was the network busy hour; and,

(b) the value of the AR be retained at 1.78

4.2 The current value of the Adjustment Ratio is 1.78 and was set in July 2002 and set in the SMP Condition in November 2003. In the April 2004 Consultation, with updated data available, Ofcom proposed that the value of 1.78 be retained because it appeared to fall within the range of possible values that was calculated with the use of the updated data. Following the responses to the April 2004 Consultation where both BT and FRIACO purchasers had expressed their views on the busy hour, Ofcom obtained network level traffic information on a 15 minute basis from BT for certain select days.

4.3 Based on this information, Ofcom concludes that the methodology proposed in the Consultation i.e. (a) above, is the appropriate methodology to be used for the calculation of the Adjustment Ratio. However, following the latest data, Ofcom acknowledges that the network BH may vary between months, and indeed days within a month.

4.4 This may raise the issue of whether different Adjustment Ratios should be calculated for different network busy hours. Since Ofcom's aim is to provide stability in the charge because such stability facilitates business planning amongst the users of FRIACO, Ofcom believes that a single Adjustment Ratio should apply. Therefore, in order to calculate a single Adjustment Ratio, reasonable assumptions need to be made with respect to the EPCs from different network busy hours.

4.5 It is with this aim that Ofcom has used the latest data to calculate the AR in network busy hour. Ofcom is of the view that based on different assumptions the value of the Adjustment Ratio can fall into a range of 1.66-1.88 (or, 1.69-1.91). Within this range, there appears no strong and compelling reason to choose any one value, since the assumptions underlying each one of them has some limitations. However, there are reasons for believing that 1.66 might be too low while 1.88 or 1.91 might be too high.

4.6 The analysis of the latest data from BT, which is a sparse data set because it was not possible to collect further historical information, shows that the value of 1.78 lies within the above possible range of values of the Adjustment Ratio.

It is therefore a reasonable reflection of cost causality. In addition, retaining the same value of the Adjustment Ratio has the property of stability. Given the lack of sufficient evidence that the current value is inappropriate, and the uncertainty over what an appropriate value of the Adjustment Ratio might be, Ofcom concludes that the current value of 1.78 should be retained for the value of the Adjustment Ratio for the present.

4.7 In doing so, Ofcom has, among other things, taken account of the requirements set out in Sections 3 (General duties of Ofcom) and 4 (Duties for the purpose of fulfilling Community obligations) of the Communications Act 2003.

4.8 Section 3 of the Act sets out the duties of Ofcom. Ofcom considers that its decision on the methodology and the value of the Adjustment Ratio for DLE FRIACO, falls within the scope of Section 3 of the Act. In particular, Ofcom considers that the duties of furthering the interests of consumers in relevant markets by promoting competition, and the desirability of using cost causation to determine a value that encourages the efficient use of resources and encourages investment and innovation in downstream markets are appropriate to its decision.

4.9 Section 4 of the Act requires Ofcom to act in accordance with the six European Community requirements for regulation. Ofcom considers that its decision of using cost causation to conclude on the methodology and the value of the Adjustment Ratio for DLE FRIACO will promote efficiency and sustainable competition in the provision of FRIACO based products.

ST FRIACO

4.10 Ofcom had set a value of 2 of the AR for ST FRIACO in 2000 based on a forecast of the volumes of traffic at the tandem layer. Since then there has been very little demand for ST FRIACO, that might suggest that the value of the Adjustment Ratio should be changed. In such a situation, there is no clear justification for changing the value to 1.78.

4.11 Ofcom has indicated in this Statement that it intends to revisit the value of the Adjustment Ratio for DLE FRIACO during the consultation on the Network Charge Controls. Ofcom is of the view that this is the appropriate time to consider if the value of the Adjustment Ratio for ST FRIACO should be evaluated again.

4.12 Ofcom concludes that because of the lack of sufficient data for analysis at the tandem level, there is no compelling reason to change the current value of the AR for ST FRIACO; however this issue may be reconsidered during the NCC consultation.

Next Review

4.13 Ofcom intends to request BT to furnish information similar to that used in this Statement, on a regular basis i.e., every fortnightly Monday, to enable the Adjustment Ratio to be calculated over a longer time series of busy hour EPCs.

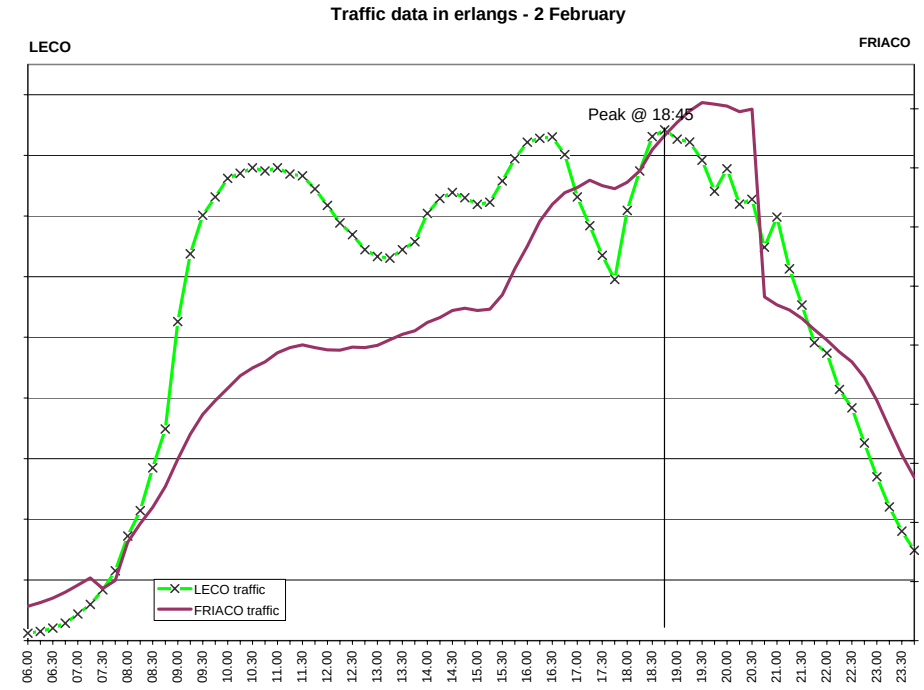
4.14 This is particularly important, because Ofcom is intending to consult on the Network Charge Controls (and any modifications to the FRIACO SMP Condition that might as a consequence, be necessary) in early 2004, in which the value of the Adjustment Ratio over a longer time series can be consulted upon.

4.15 As part of the Network Charge Controls (NCC) process, Ofcom will be meeting informally with BT and the industry to discuss the methodology and the data used to calculate the Adjustment Ratio and the suitability of using similar data to determine the value of the Adjustment Ratio in the FRIACO SMP Condition in the next charge control period. Ofcom expects to consider the issues arising out of the informal meeting/s in the preparation of its Consultation document on the NCC.

Annex 1

Data provided by BT

This Annex illustrates the data provided by BT for the days discussed in this Final Statement.



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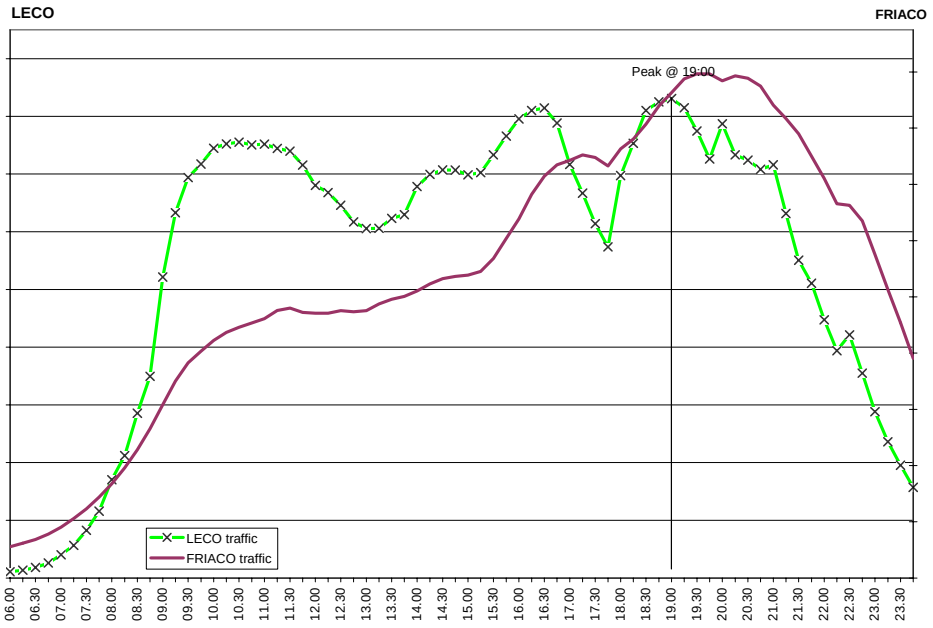
Traffic data in erlangs - 9 February



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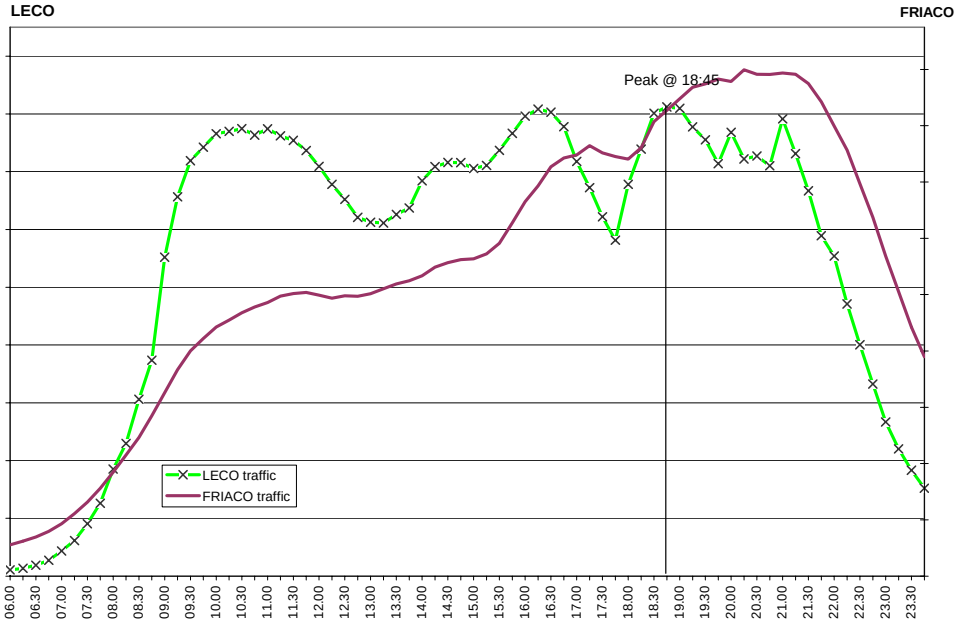
Traffic data (erlangs) - 23 February



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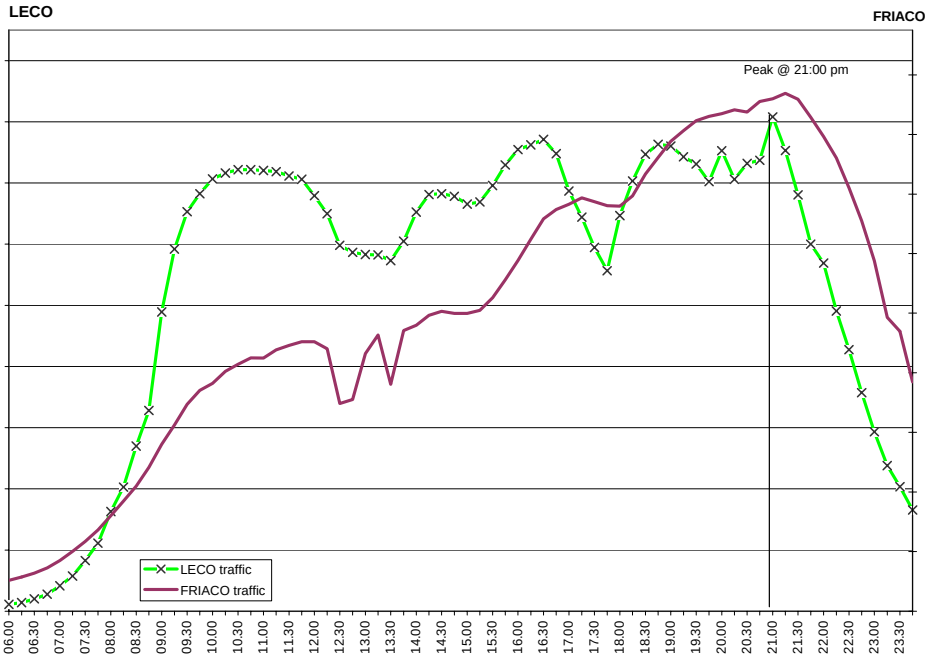
Traffic data (erlangs) - 29 March



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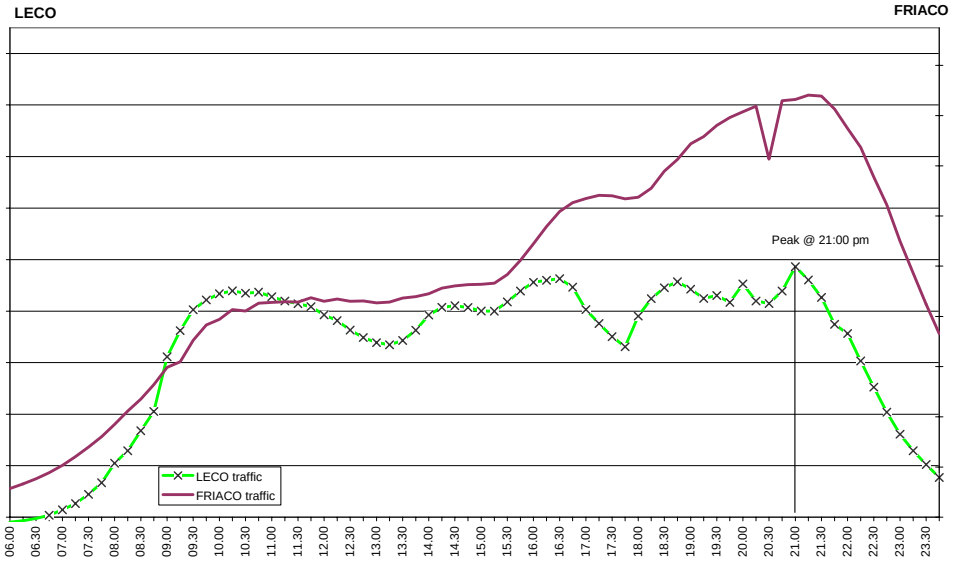
Traffic data (erlangs) - 10 May



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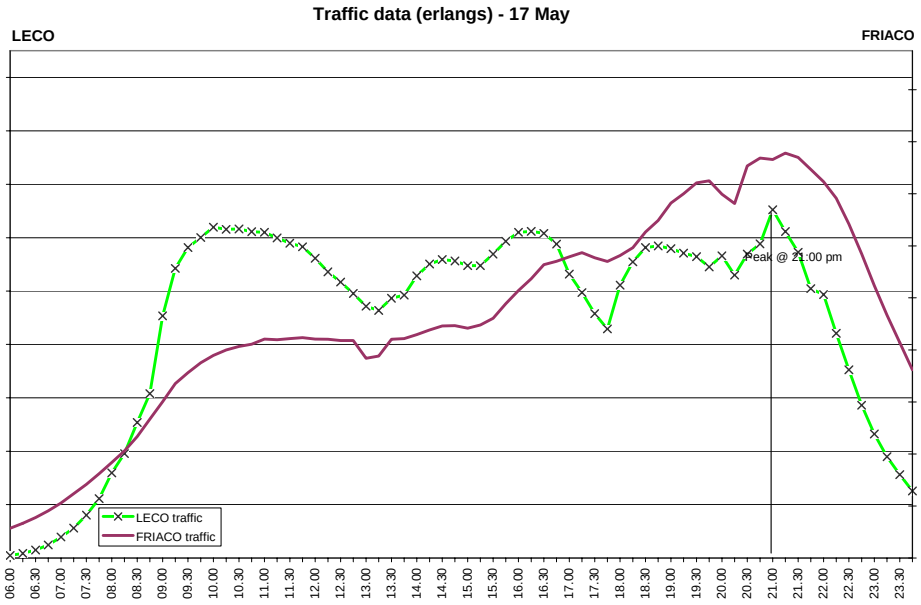
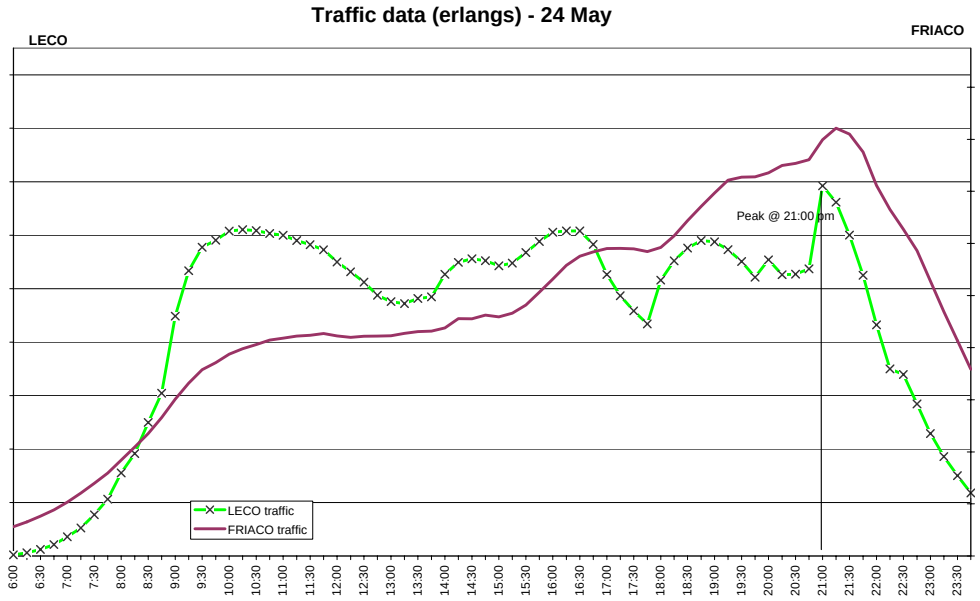
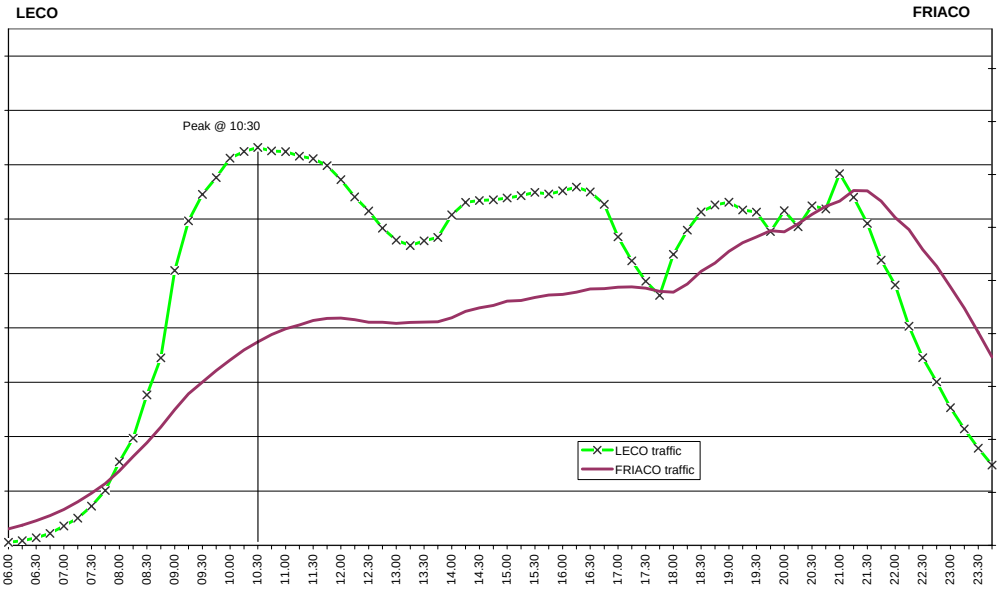


BH = 10:00-11:00



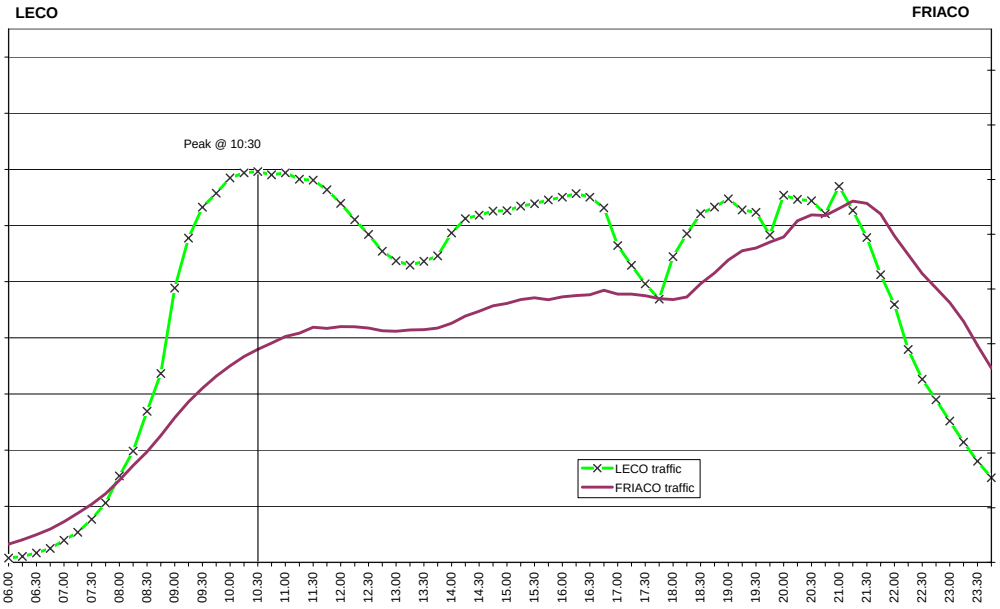
BH = 20:45-21:45

Traffic data (erlangs) - 2 August



BH = 10:15-11:15

Traffic data (erlangs) - 3 August

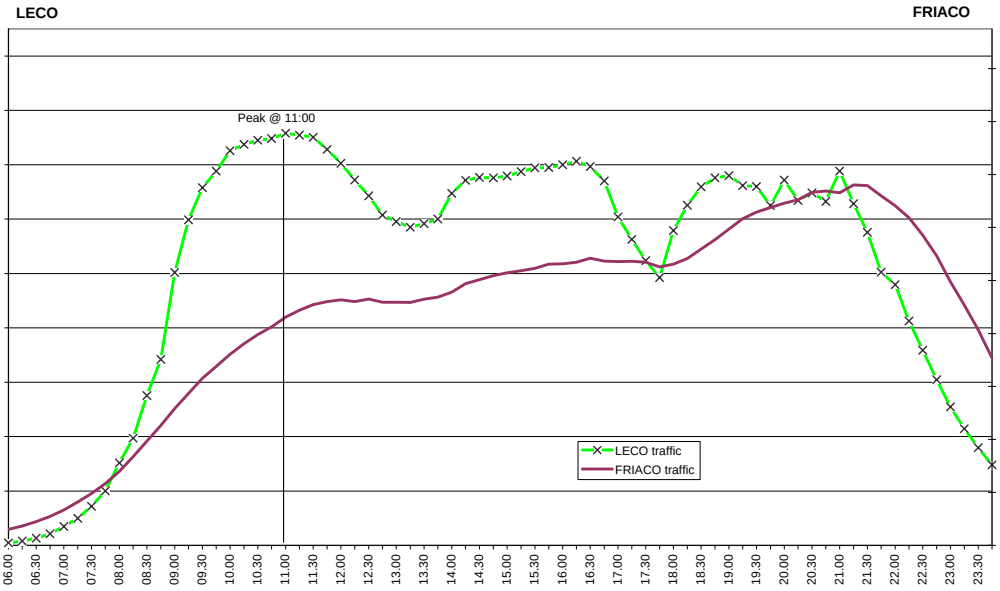


BH = 10:15-11:15

Traffic data (erlangs) - 4 August

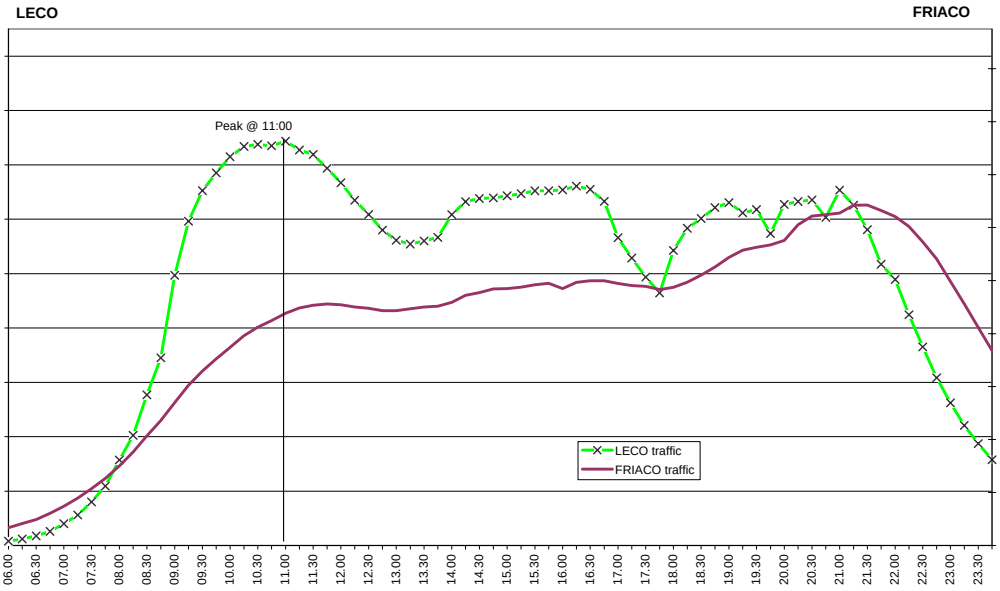
BH = 10:15-11:15

Traffic data (erlangs) - 9 August



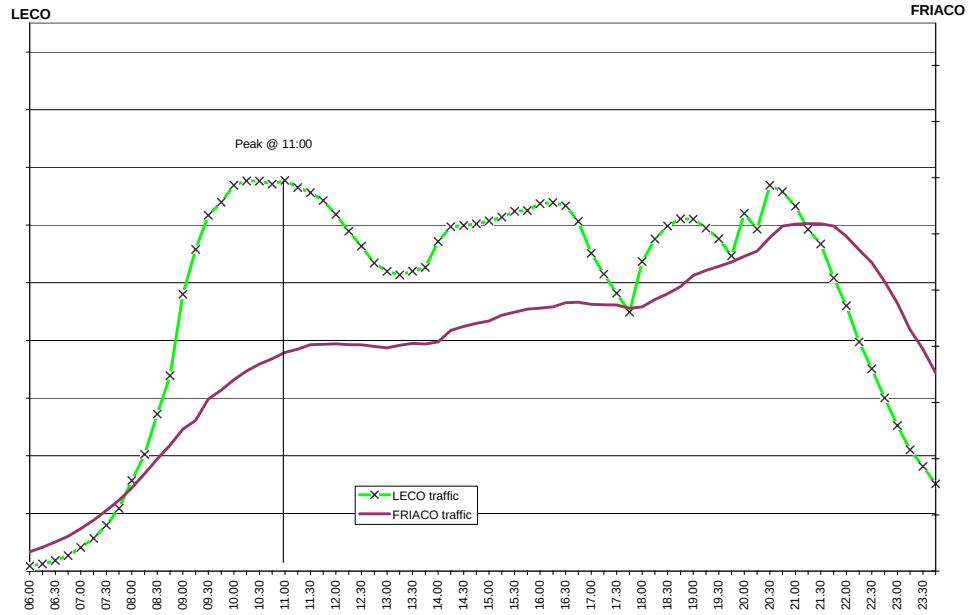
BH = 10:45-11:45

Traffic data (erlangs) - 10 August



BH = 10:15-11:15

Traffic data in erlangs - 11 August



BH = 10:15-11:15

Annex 2

Information on LECO concentrators

Information on the percentage of LECO concentrators that have a morning, afternoon and evening BH

Date		Am	Pm	Eve	Total				
Mar-02		**24%**	**19%**	**57%**	100%		3 weeks 10th to 24th March		
Jun-02		**33%**	**12%**	**55%**	100%		3 weeks 9th to 23rd June		
Oct-02		**28%**	**17%**	**55%**	100%		3 weeks 13th to 27th October		
Mar-03		**30%**	**16%**	**55%**	100%		3 weeks 9th to 23rd March		
Jun-03		**36%**	**10%**	**53%**	100%		3 weeks 8th to 22nd June		
Oct-03		**30%**	**16%**	**54%**	100%		3 weeks 12th to 26th October		
Mar-04		**27%**	**19%**	**54%**	100%		3 weeks 7 to 21 March		
Average		**30%**	**16%**	**55%**					

Source: BT