Abridged Version

Submission to the National Telecommunications Regulatory Commission (NTRC) of Grenada

regarding

The Interconnection Agreement between Cable & Wireless Grenada Limited and Global Network Providers (Grenada) Limited

Respectfully submitted by Cable & Wireless Grenada Limited

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I. Introduction

1. In this submission, Cable & Wireless (Grenada) Limited ("C&W") and Global Network Providers (Grenada) Ltd. ("GNP") seek approval from the National Telecommunications Regulatory Commission (the "NTRC" or the "Commission") for the Interconnection Agreement between C&W and GNP filed with the Commission on 20 November 2002 (the "Agreement").

2. Interconnection with GNP, together with the benefits it brings, requires the approval of several rates: (i) approval of the cost based rates for interconnection services discussed herein, and (ii) approval of the Access Deficit Contribution also discussed herein. This document does not address the proposed retail rate to be charged to C&W customers when they call GNP customers.

3. In filing this submission, C&W seeks to fulfill its obligation under the *Telecommunications Act, 2000* (the "Act") to prove that the rates it is charging are cost-oriented. This document is divided into a main body and several appendices. The main body provides a description of the Agreement and the overall policy basis for the rates within it while the facts, figures, and methodology used to derive those rates are contained in the appendices. C&W was not able to complete all of the information in Appendix 7 (Joining Service) for today's submission. Rather than hold back the filing of the Agreement, it was decided to file the Agreement with this submission, and to provide Appendix 7 as soon as it has been prepared. C&W anticipates that it will file Appendix 7 by November 25th, 2002.

II. Confidentiality

4. This document is submitted in commercial confidence to the Commission under section 13 of the Act. It contains detailed confidential costing information which if placed in the public domain would adversely affect C&W and cause direct and indirect financial harm because it is records of trade secrets or proprietary, commercial, financial or technical information which is customarily guarded from competitors. C&W is also filing an abridged version of the submission for the public record in which all confidential figures are replaced with "###". This is the only difference between the abridged and confidential version – all other text remains the same. Under section 71, C&W notes that it is offence for any public official to divulge confidential information. C&W notes that this section applies to both the Commission and ECTEL, although sharing of the information between the Commission and ECTEL should not be considered a breach of sections 13 and 71.

III. Process

A. Comments on the Application

5. C&W expects that the Commission will seek the recommendations of the Eastern Caribbean Telecommunications Authority **("**ECTEL") on this submission and the Agreement (the Application). In the interests of a fair and transparent process, C&W

respectfully requests an opportunity to comment on any recommendation in respect of the Application that ECTEL provides. C&W also expects that the Commission or ECTEL may have questions on the matters described in this submission. Cable & Wireless welcomes the opportunity to respond to any such questions.

B. Standard of Review of an Interconnection Agreement

6. The issue of the standard of review for approving an interconnection agreement was addressed by ECTEL in its report on the Marpin-C&W Interconnection Agreement in Dominica:

In reviewing these documents, ECTEL gave considerable deference to the fact that this is a commercial agreement resulting from a negotiation between the parties. In particular, we expect that the costs of particular engineering elements are well known to both sides.

At the same time, ECTEL recognizes that, as the first interconnection agreement in the region, it will set a precedent and reference point for future negotiations. Therefore, it has received the closest scrutiny to ensure that it maintains the principles of fairness and maintenance of any-to-any public communications. With this in mind, we have focused our comments on issues that reflect imbalances in bargaining power, abuse of dominance or violation of the public interest. Other considerations are that C&W has the obligation to provide interconnection at cost-oriented rates, and the principle that interconnecting operators should not be required to pay for facilities or services that they do not use.

7. This approach is consistent with the Act and the Regulations. Pursuant to this approach, the Agreement should only be rejected if a sufficiently rigorous analysis allows the NTRC to conclude that there has been, for example, abuse of dominance in a particular market.

8. Where there is no factual basis before the NTRC to reach such a conclusion it follows from ECTEL's comments and the legislation that the Agreement should stand as negotiated. In other words, the standard of review for an interconnection agreement made between parties must be much higher than other regulatory decisions. Deference must be given to the Agreement commercially agreed to by the parties. In agreeing to the Agreement, both parties have given fair consideration to the rates, terms and conditions contained within it. Consequently, the Commission should be very reluctant to intervene in this arrangement particularly when it will yield maintenance of any-to-any public communications.

9. C&W notes that while a higher standard of review was suggested by ECTEL in its review of its first interconnection agreement, that this agreement must be reviewed in the context in which another NTRC has already provided approval to a similar agreement, that between C&W and Marpin Telecommunications & Broadcasting Company Limited in Dominica (approval granted on July 26th, 2002) (the "Marpin Decision").

IV. Structure of the Agreement

10. The Agreement consists of a Legal Framework document with six schedules. The general purpose of each can be described briefly as follows:

    a) *Legal Framework* – This document is the base document to which the Schedules are attached. It contains the general commercial terms and conditions for offering services under the Agreement. It covers off such issues as the length of the Agreement, obligations in respect of forecasting, ordering and provisioning, when services can be suspended or terminated, etc. Most of the obligations of either party under the Agreement are specified here in general terms. Those obligations are then further defined in the Schedules.

    b) *Definitions – Schedule 1* – This Schedule contains definitions for many of the terms used throughout the Agreement.

    c) *Service Descriptions – Schedule 2* – In this Schedule, each Service offered under the Agreement is described in detail. The Service Descriptions contain a description of each Service, the obligations of each party in respect of the Service, and a description of the Charges that are applied. Note however, that the actual numerical Charges are contained in the Tariff Schedule.

    d) *Service Schedule – Schedule 3* - This Schedule sets out which Party will act as the Service Supplier, and which will be the Service Taker in respect of each Service. In some cases, a Party may act as both Service Supplier and Service Taker. For example, both GNP and C&W will have fixed line customers. If C&W wishes to terminate a call to a GNP fixed line customer, GNP will act as Service Supplier for this Service (PSTN Terminating Access Service). C&W will be the Service Taker in this case. However, GNP will also wish to terminate calls to C&W fixed line customers, so C&W must also provide this service as the Service Supplier. In that case, GNP will be the Service Taker.

    e) *Parameter Schedule – Schedule 4* – This Schedule provides the timeframes within which faults in respect of any given Service must be restored, and lists some additional information such as trunk groups and signaling format.

    f) *Joint Working Manual – Schedule 5* – This Schedule, the largest, describes the technical parameters of the interconnection, as well as the various ongoing processes that are necessary to providing seamless passage of traffic over the joining service. It also sets out billing procedures, and describes the process for testing new capacity which is to be installed.

    g) *Tariff Schedule – Schedule 6* – This Schedule sets out rates for each Service provided under the Agreement.

11. Five types of Services are currently offered pursuant to the Agreement. The first type of Service is the Joining Service, which is the physical link (very generally, the fibre optic cable plus optical line terminating equipment) between the networks of the two companies. A description of the methodology for deriving the Joining Service rates is set out in Appendix 5.

12. The next group is Termination Services. These are the Services which permit each Party to pass calls to the other for termination on the other's customers. The Service Supplier of a PSTN or PLMN termination service is the Party which terminates a call to its subscriber in exchange for a rate designed to cover the costs of carrying the call from the Point of Connection to the subscriber.

13. Special Access Services allow the Service Taker's customers to access the emergency services and directory inquiries services of the Service Supplier. Transit Service provides for the carriage of calls from the Service Taker's customers over the Service Supplier's network to a third party.

14. Finally, the International Call Origination Service permits GNP to gather calls from Cable & Wireless customers (who use their C&W fixed line phone to make the call and who do not take domestic service from GNP) for termination overseas on GNP's international network. In effect, this Service will permit customers in Grenada to select the international carrier of their choice without having to change service providers. As this Service will cause significant erosion of the traditional subsidy from the international network to the access network, the Parties have agreed that it is appropriate to apply a specific Access Deficit Charge to each minute of calling under this service. This issue is described in further detail later in this submission.

V. Rates in the Agreement

15. As noted above, rates for each of the Services in the Agreement are specified in the Tariff Schedule. The rates are fully consistent with the statutory requirement that interconnection be provided at cost-oriented rates, and have been developed by reference to the C&W fully allocated cost (FAC) model. The relevant methodology as well as supporting cost information is provided in Parts D and E of this section.

16. As is shown in the Tariff Schedule, C&W has subdivided the rates for each Service into four components: Call Set-Up, Call Duration, Interconnection Specific Charge and Access Deficit Contribution (ADC).

17. While each of these components is further described below, an initial comment on the ADC is appropriate here. C&W proposes an Access Deficit Contribution for reasons that are further explained below. However, in recognition of the fact that the Access Deficit will be reduced to the extent that C&W is permitted to increase rates for access services, a mechanism for eliminating, extending or altering ADCs to reflect those increases has been included in the Agreement.

18. In the following subsections, C&W explains why its Fully Allocated Cost ("FAC") Model is an acceptable model for determining interconnection costs, explains the appropriateness of FAC as a relevant cost standard, addresses the application of the model to various rate elements, including the interconnection specific costs and describes the magnitude of the access deficit and the resulting access deficit contributions. The issue of the need for an ADC and the policy debate surrounding the access deficit and its funding is discussed in a later section. Nonetheless, C&W notes that the calculation of the ADC is also based on the FAC Model.

A. C&W's Fully Allocated Cost Model

19. C&W submits that the charges in the Agreement are cost-oriented on the basis of the FAC network cost model developed by C&W. In that regard they meet the requirement to be cost-orientated as provided for in the Act and the Regulations. A complete explanation of the model is provided in Appendix 1.

20. The figures in the model are based on Cable & Wireless' financial accounts and thus are reconciled to the audited accounts of the company. A significant amount of work was done to develop the cost model in preparation for competition, the requirements of the new regulatory regime, and the need to establish the charges furnished in the Tariff Schedule. An overview of this work, including an independent assessment of the model, both carried out by the accounting firm PriceWaterhouseCooper's ("PWC") is attached in Appendix 2. Thus the starting point of the model is the actual costs spent by the company to purchase the assets (with normal accounting adjustments for depreciation for capital assets etc.), and the actual operating costs spent by the company to run the network and offer telecommunications service in Grenada.

21. The FAC model generates network costs that are used for estimating different interconnection charges as well as service profitability that enables an assessment of the existence and size of cross-subsidies. In summary, the methodology for determining these two outputs is as follows:

Network costs

The steps that are observed in calculating network costs (and the basis for estimating interconnection charges) can be summarized as follows:

- Consider only relevant costs for the network service. Relevant costs are limited to the conveyance network (all parts of the network excluding the access network or local loop). The model first brings together the operating costs, depreciation, and return on capital associated with all network elements).
- Define network elements with as much granularity as possible in order to reduce common costs to a minimum (international transmission, switching (subdivided into three elements: call related processor, traffic related processor and remote switching unit) and domestic transmission).

- Code and record data in the finest possible level of detail.
- Where insufficient cost data is available from the accounts, disaggregate cost categories using sampling techniques, engineering studies or field interviews.
- Allocate costs on the basis of the primary cost driver.
- Allocate the network common and business common costs and equi-proportionately marks up those costs that are specifically attributable to the network elements.
- Estimate capital related costs using the cost of capital.

With all relevant costs by network element totalled, volume data (network usage) is then used to calculate the unit costs within each network element. These are then aggregated using the usage factors applicable to individual services—giving unit costs for each service. In particular, usage factors are used to:

- Calculate the actual usage of each network element (based on retail service volumes).
- Calculate unit costs for each network element.
- Apply the network (interconnection) service usage factors of network elements to the network element unit costs in order to estimate the per minute network usage charge.

Service Costs

In the generation of service profitability information, the model attributes the following costs to each retail service:

- Staff costs and other operating expenditure
- Other centrally held non-capital costs such as outpayments, bad debts and interest.
- Non-network depreciation (depreciation is not included in the operating cost category in the cost model)
- Network usage costs including network expenses, network depreciation and the return on fixed and non-fixed assets (capital employed).

22. PWC have made the following points in their sign-off letter (Appendix 2) with respect to the overall methodology:

In reviewing the modelling methodology we have focused on cost causality (whether individual revenues, costs, assets and liabilities have been allocated according to the causal factors which result in revenue being received, costs being expended and assets and liabilities being incurred), granularity (whether costs are broken down to an appropriate level of detail) and transparency (whether cost allocations are clearly articulated according to appropriate drivers), and consistency with international best practice.

In our view, the methodology used is appropriate for the determination of tariffs for interconnection services in Grenada and is consistent with the Telecommunications Act.

B. The Relevant Cost Standard

23. Under section 46 of the Act the Commission is required to approve any interconnection agreement between carriers. Under section 47, the charges for establishing interconnection shall be "cost-orientated".

24. The Act does not define the term 'cost-oriented'. However, a definition of cost orientation is found in subsection 12(2) of the draft Interconnection Regulations ("Regulation 12(2)"):

    'cost-oriented' means those charges shall be no higher than the fully allocated cost of providing that service and no lower than the total service long-run incremental cost of providing that service.

25. The Regulations therefore provide two bases on which the Commission may determine that prices are not cost-oriented:

    (i) the prices are higher than the fully allocated cost of providing that service; or
    (ii) the prices are lower than the total service long-run incremental cost of providing that service.

    If the costs do not violate either of these two categories, then the Regulations require the Commission to approve the rates.

26. C&W has set its interconnection rates on the basis of fully allocated costs. C&W submits that FAC is an appropriate basis for determining interconnection rates, and that it is entirely consistent with the Regulations. While reference is often made to long run incremental costs in the assessment of interconnection charges, C&W submits that a requirement to use LRIC instead of FAC would not be founded in law. Furthermore, a properly constructed LRIC model, allowing for the recovery of appropriate common costs, will produce outputs that approximate to those of a FAC model.

27. C&W notes that the use of the FAC model and the rates derived from that model have been approved by the NTRC in Dominica in the Marpin Decision.

28. Finally, it is important to note that PWC have stated that:

    In our opinion, the methodology and models employed to calculate service profitability and interconnection tariffs presented in the Interconnection Agreement Tariff Schedule are reasonable and appropriate for that purpose. The methodology is consistent with international best practice taking into account the size and stage of development of C&W Grenada

C. Call Set-Up and Call Duration

29. As noted above, rates for each Service are disaggregated into four components. The Call Set-Up component represents the costs of establishing the communications path necessary for a call. For example, this component includes costs associated with the switch processing necessary to set up the call. The Call Duration component recovers the time sensitive costs for each type of call and includes, for example, costs associated with the cable and transmission systems used by the call, as well as associated overheads.

D. Interconnection Specific Charges

30. The ISC is made up of two components.

- The first component is the numerator, which is the sum total of C&W's charges which can be specifically attributed to establishing and operating an interconnection regime. The basis of these costs is further discussed below.

- The second component is the denominator, which is the volume of traffic that is relevant for recovery of these costs. C&W has included all minutes of traffic in the market in the denominator. The effect of this approach is that C&W pays the largest proportion of the interconnect specific charges.

31. C&W chose to include all minutes in the market on the basis that the benefits of competition cannot be limited to simply those customers who sign up with new entrants, but are experienced by all users in the market, including those who remain C&W customers. Since the benefits extend to all users, the cost of interconnection should also be spread to all users.

32. As such, the ISC charge is not limited to calls for interconnection, but notionally should be applied to all calls in the market. Since the rate for domestic calls on C&W's network is already established, this change will have no practical impact on the retail prices for domestic calls at present. Nonetheless, C&W notes that in future, if and when the Commission determines that retail rates should be above costs for all services, then C&W will apply to the Commission to raise its domestic rates to take these additional costs into account.

33. Interconnection specific charges **do not include** any retail costs, any corporate overheads, any retail marketing costs, any retail billing costs, any corporate dividends, and any contributions to pensions. For further clarity C&W includes the following description of what costs are included.

34. The following cost component types are included in the ISC, and the relative magnitude of the allocation of these costs to C&W Grenada is as follows:

- A portion of the annual budget of the Carrier Services Division for Cable & Wireless West Indies Ltd. (CWWI) (which only deals with interconnection and wholesale matters) reflecting the resources of the Division that would be spent on interconnection and related activities in Grenada is included in the ISC. For example,

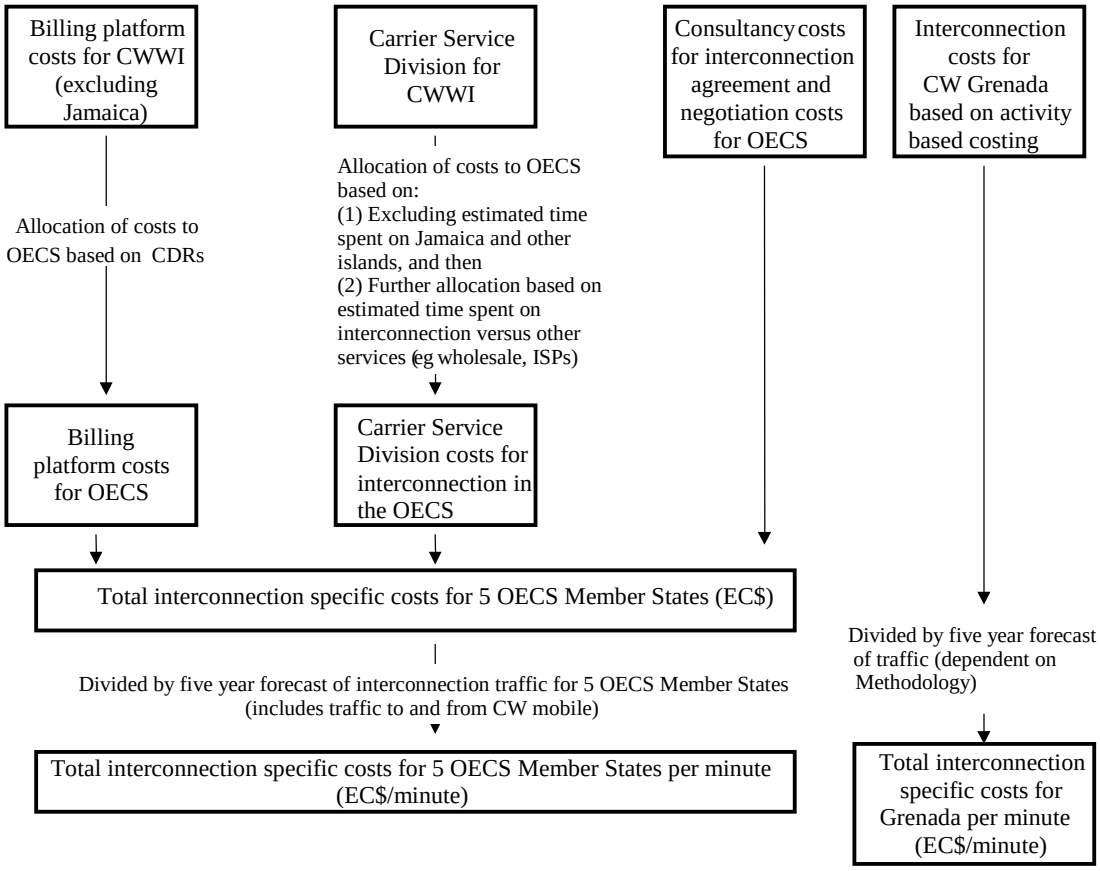
the costs of commercial negotiation with GNP are accounted in the interconnection specific costs for C&W. Of the annual budget for Carrier Services for CWWI, the costs allocated to Grenada account for ### of the total.

- A portion of the total costs of interconnection billing systems purchased for the purposes of interconnection for the entire CWWI region (with the exception of C&W Jamaica which has a separate and dedicated interconnection billing system) has also been included. Of these total billing costs, some of these costs are relevant to Grenada and these are allocated in a non-discriminatory manner based on the estimated requirement for interconnection billing Call Data Records (CDRs) for interconnection with competitors (including C&W Mobile in order to treat it on an equal basis with all other interconnecting carriers). In others words, the billing platform can handle a maximum capacity of interconnection CDRs from across CWWI, and Grenada's contribution to the investment costs (reflected in the interconnection specific charge) is based on CDRs from Grenada as a proportion of total projected usage of the billing system. Of the interconnection billing costs for CWWI, the costs allocated to Grenada account for ### of the total.

- A portion of the costs that C&W Grenada incurred in the development of the interconnection agreement and liberalisation negotiations is also included. This effectively is the consultancy costs for developing an interconnection agreement for all of the five OECS markets participating in the Telecoms Reform Project as well as the cost of the OECS negotiations. Grenada's interconnection specific costs include an allocation of ### of these costs based on projected traffic.

35. Figure 1 provides an illustration of the methodology described above.

Figure 1 – Overview of Methodology for Calculation of Interconnection Specific Costs



36. It is important to note that if any Regulator (in the Caribbean where Cable and Wireless operates) makes changes to these assumptions thereby lowering the percentage of cost allocation to its jurisdiction, C&W would have to approach all the other Regulators to increase these costs allocated to their jurisdictions. Since this is clearly not a workable solution, the only mechanism for C&W to fairly recover its costs is to properly allocate these costs consistently between all its operating units, in the manner that has already been done, and in a manner implicitly approved by the NTRC in Dominica when it did not challenge the allocations in the Marpin Decision

E. Access Deficit Contributions

37. Access Deficit (AD) refers to the difference between the amount of money C&W earns from providing its access services (its access revenues) and the amount of money it spends to provide those services (its access expenses) including a reasonable return on its investment for the capital employed. Access revenues, in the case of Grenada, refer to the charges for installation, reconnection, and monthly rental (which includes domestic calling for those customers who are on an unlimited local calling plan). In the case of Grenada, access costs refers to the cost of providing access and domestic calls, both of which are bundled as one product for most C&W customers.

38. It is important to distinguish the term Access Deficit from the term Access Deficit Contribution (ADC). The latter is a means by which C&W intends to recover a portion of its Access Deficit from competitors, with the remainder of the AD continued to be funded by C&W's retail services. Although clearly linked, before C&W can justify the amount of an ADC, it must first demonstrate that an AD exists, and that it is appropriate for the Commission to ensure that C&W recovers a portion of the AD from competitors.

Level of Access Deficit

39. Attached in Appendix 3 is a break down of the service profitability of the three main categories of services provided by C&W Grenada. As can be seen in that Appendix, these categories are International, Access and Other (including mobile and Internet). Appendix 3 clearly demonstrates that the cost of providing access services in one year (###)[1] vastly exceeds the revenues received from providing access services (###), leaving an AD of ###.

40. Appendix 3 is offered to the Commission to demonstrate the size and extent of the AD. Appendix 3 is produced, once again, by the C&W's FAC Model, and as mentioned above, is reconciled against the company's audited financial statements. Because of this, the numbers used in the FAC Model are based on the last available financial year that was audited at the time of the negotiations with GNP, specifically the 2000-2001 financial year that ended March 31, 2001.

41. The expenses in each of the categories listed in Appendix 3 are determined by the cost allocation rules adopted for the purposes of the FAC Model, and described in detail in Appendix 1. Some of the items are easily allocated on the basis that the entire expense relates to one service (e.g. aerial line plant maintenance is allocated 100% to access lines because its sole use is to provide access service). Other cost items require allocations between various service components that benefit from them. As detailed in Appendix 1, these cost allocations are made using the best available data to objectively allocate the costs (i.e. the cost drivers). A similar method of allocation is used to allocate all the assets of the network, in order to allow C&W to determine how much depreciation and Return on Capital Employed (ROCE) should be attributed to each service.

42. A further breakdown of the direct and indirect costs allocated to the access network is provided in Appendix 4.

43. In short, by looking at the cost of providing all access services in Grenada, and comparing that cost to the revenues received directly from those services, it is clear that C&W loses money on providing access services. As such, there can be no doubt that C&W suffers an AD.

[1] All figures are provided in Eastern Caribbean Dollars.

Calculating the ADC

44. The calculation of the ADC is a relatively straight forward process. Once the AD has been obtained from the FAC Model, that total is simply divided by a minute figure to achieve a per minute rate which is applied to all relevant minutes to fully recover the AD.

45. As noted above, C&W has chosen all revenue attracting minutes in the market as the minute figure used in the Agreement. based on actual minutes in the 2000-2001 fiscal year. The present calculations result in an average ADC of ### for all Services with the exception of International Call Origination Service (ICOS). This figure is converted into peak, off peak and weekend rates using the retail traffic gradients to reflect time of day usage. The actual calculation of these numbers is provided in Appendix 5.

46. It is also important to note that calculating the ADC in the manner described above results in an ADC which is notionally applied across all of C&W's minutes as well as competitors. Assuming that all competitors capture 10% of the market (in terms of total minutes) over a five year period, the actual ADC payments to C&W would only consist of 10% of the total access deficit, i.e. only ### of the annual access deficit of ###. In other words, the remaining 90% is still funded by C&W.

VI. The Weighted Average Cost of Capital

47. In order to make any of the calculations under the FAC model (or any model), it is necessary to establish a regulated rate of return for the business. This return is applied to the investment made in the business, which in the FAC model is the capital employed. The model establishes a rate of return of 15% on the portion of network employed (that is allocated by the model) to provide the services in the Agreement.

48. In the FAC model, C&W has used a rate of return of ###% for any return on capital employed (ROCE) calculation. Attached as Appendix 6 is an analysis prepared for C&W which determines that a proper ROCE (or weighted average cost of capital, or WACC) for C&W in the OECS should be ###%. However, during the liberalization negotiations C&W agreed with the OECS Governments to use a WACC of ###% for all ROCE calculations, and as such, C&W has not adjusted the ROCE in the FAC model to reflect the ###% figure outlined in Appendix 6.

VII. Access Deficit Recovery

49. Section V established that C&W suffers an Access Deficit. The next question that arises is why competitors should be required to fund C&W's access deficit. In this section, C&W will explain why it makes good regulatory policy to ensure that there is a funding mechanism for recovering the access deficit from all market players (including C&W).

A. Asymmetric Access Deficit Recovery – Why only C&W should be able to Recover its AD

50. C&W has always, and consistently, taken the position that the best means to solve the access deficit issue is to raise its retail access prices to remove the AD. However, C&W is prevented from doing that by the Government, and presumably will continue to be so constrained once the tariff regulations are propagated.

51. C&W has acquiesced to being declared dominant in respect of certain access services, and will thus be subject to retail rate regulation by the Commission for its access charges (i.e. the monthly line rental and domestic calling charges on its own network). All other competitors, including GNP, would be non-dominant in this market and thus they will be free from retail rate regulation. In other words, while competitors in Grenada have the retail pricing flexibility to raise monthly line rental to cover their costs, C&W cannot. If a competitor chooses not to recover its access network costs, then that is a commercial decision of the competitor rather than a regulatory constraint. It is important to note in this context, that if C&W could raise its rates, it would. Thus, the Government has historically prevented, and now the Commission as well prevents, C&W from covering its costs on providing access services.

52. Furthermore, in addition to the ability of new entrants to raise their retail rates for access services, new entrants are permitted to select which markets, and customers within those markets, they wish to serve. A competitor does not have an obligation to provide access service to customers in remote areas, as C&W does. Thus, the second key difference between new entrants and C&W is that the former have the ability to avoid running an access deficit, while C&W does not.

53. C&W understands the Government's and the Commission's rational for restricting C&W from raising its retail access rates. These services are deemed to be essential to Grenadians and having low access rates is deemed by the Government, as well as most governments in the world, to be a social good. Although C&W has some concerns about the restrictions on retail access rates that presently exist in Grenada (as well as the other four OECS ECTEL states), such concerns are beyond the scope of this proceeding. For the purposes of this document, it is acknowledged that the social policy of having low access rates

means that the Government and the Commission will require C&W to maintain its AD for some time into the future.

54. The AD must be made up in some manner if C&W is to be permitted to earn a reasonable return on its investment. It is for this reason that C&W seeks full and complete compensation for its AD. No other carrier in Grenada has a right to make a similar claim. It is for this reason that any charge established to recover the AD, such as an ADC, should not be reciprocal, but rather must be asymmetric.

55. At the end of the day, the key factor for C&W is that it must have its access deficit paid for through interconnection services provided to competitors and its own retail services. To date, overall profitability has been achieved by C&W having high international rates (both incoming and outgoing) that allowed it to fund the AD and make a return. However, with the introduction of competition, that traditional source of subsidy is vulnerable (in fact, it is clear that because of the high margins associated with international services, this is the first area where competitors will gravitate to claim market share). Obviously this will reduce the cross subsidies available to fund the AD.

56. As C&W loses market share in international incoming and outgoing calling, its ability to continue to fund the access deficit, and by extension, the access network, diminishes. The only equitable manner to solve this issue, other than full rate rebalancing, is to create a scheme, such as the ADC, to ensure that all participants in the market pay their proportionate fair share of the cost of supporting this Access Deficit. C&W submits that it is for this reason with the introduction of competition in international calling, the Commission must find a new mechanism to fund C&W's AD. For reasons discussed below, C&W submits in section VII that the ADC is the best mechanism available short of rate rebalancing to fund that deficit.

B. Historically C&W was Restricted from Recovering its Access Deficit

57. In Grenada, the existence of an access deficit is the result of understandable government policy prior to liberalization. Under C&W's previous licence, C&W was only permitted to raise local rates with the permission of Government. As mentioned above, it is anticipated that the retail rates of C&W for access services will continue to be constrained on a going forward basis once the tariff regulations are adopted. As the Commission and ECTEL are aware, C&W has previously held discussions with the five OECS governments about the need to rebalance its tariffs to reduce or eradicate the access deficit. In these circumstances, it cannot be argued that C&W is responsible for its access deficit. Because C&W has been historically restricted from recovering the AD through access rates and will be further constrained from doing so for some time, it is only fair that C&W be permitted to recover the AD through some other mechanism.

C. Why Competitors Should be Required to Contribute to the Access Deficit

58. The goal in regulating a market in transition to competition should be to achieve the same resource allocation as a truly competitive market. Ultimately, competition should drive rates toward their costs. Current rates for access services are artificially low and do not recover their costs. By contrast, rates for international services are artificially high, and exceed their costs.

59. This sends distorted signals to market entrants. Markets in which price is regulated below cost attract little investment and little competition while markets forced to price above cost to provide the cross subsidy to cover the AD will attract an inefficiently large amount of investment. This is likely to result in over supply in this particular market, which could be damaging to the long-term development prospects for the entire telecommunications market.

60. One way to avoid this skewed incentives problem is to put in place a pricing structure for wholesale services such that the relative costs incurred by an operator replicate those found in a competitive market. They may not be exactly the same levels of cost as in a competitive market, but the relative differences between costs across different services are the same. Access Deficit Contributions can achieve such a result. Implicitly, when subsidising Access losses from international revenues, the incumbent's international channel/department is paying a charge to the department with responsibility for access lines. This charge is calculated such that the total revenues from the charge just allow the Access business to break even.

61. Theoretically, this charge is paid by all services, but at a rate that varies with ability to pay. Therefore, higher margin services pay relatively more. In this way, margins will tend to be equalised across different services, moving closer to breakeven on all products, which would be the outcome in a competitive market. If there is just a monopoly provider, this process of (implicit) payments happens naturally, since all relevant money flows are internal. In a market with several operators, these payments need to be made explicit in order to achieve the same result. Access Deficit Contributions should ideally be paid by all operators, and levied on all services which use the Access network. Furthermore, the rate at which different services contribute should vary according to the historical margins earned by the incumbent on these services.

VIII. Access Deficit Contributions

62. Having established a case that all market players should contribute to the funding of the access deficit, this section focuses on why an ADC is the most practical method of funding.

A. Rate Rebalancing

63. There is more than one way to solve the AD issue. C&W maintains that the best method is to rate rebalance by allowing C&W to raise its access rates to a level that allows it to recover its costs. Nonetheless, given the realities, the regulatory framework must provide the means to recover this deficit in the face of competition (which will erode the traditional means of subsidizing the access deficit). It is for this reason, that C&W has proposed the adoption of an ADC.

B. Benefit of ADC as an AD Recovery Mechanism

64. C&W submits that ADCs represent the best available method of recovering its access deficit until rates are rebalanced. The strength of the ADC is that it is levied on interconnecting carriers based on the amount of traffic they deliver to C&W. The more traffic they deliver to C&W, the more of the burden they will share in funding the AD. In this manner the ADC is an equitable means by which to share the burden that is easily administered. The Commission need not make assumptions about how successful an individual new entrant or all new entrants will be in the market place. instead, the ADC formula automatically shifts the burden of funding the AD as market share (calculated through total minutes) shifts from 100% C&W to a lower figure.

65. It was with this reality in mind that Regulation 12 explicitly states that an ADC charge may be applicable for interconnection.

C. Foreign Precedents for ADCs

66. It is worth noting that there are a number of jurisdictions around the world with sophisticated regulatory regimes that use, or have used ADCs, including Australia, France, the United Kingdom, the United States and Canada. It is also true that a number of these jurisdictions have begun (or completed) the phasing out of ADCs but only if they have substituted an alternative funding mechanism or have permitted substantial rebalancing.

67. However, all of these jurisdictions have recognized that an AD exists, and that it needs to be funded in some manner. To simply examine those jurisdictions that have phased out ADCs and determine therefore that ADCs should not be adopted in Grenada, would ignore the fact that these jurisdictions have generally phased out ADCs and replaced them with some other form of AD recovery:

- Canada phased out ADCs after 10 years and replaced them with a percentage of revenue tax applied on all telecom providers (that tax is set to match the same AD rate).
- In 1997, the FCC required the structure of the ADC to change from a per minute charge to a per line (subscriber) charge over 3 years. As a result, the US regime for ADC is now funded through a subscriber line charge (SLC), which is another

form of rate rebalancing. A number of state Public Utilities Commissions still maintain ADCs.

- Even OFTEL allowed an ADC for the first three years after competition was created in the UK.
- ADCs were also adopted in Hong Kong for a number of years. They were abolished in 1996 in favour of a universal service charge.
- The ACCC in Australia indicated that it is more efficient to recover the access deficit through tariff rebalancing but allowed an ADC on interconnection charges as long as Telstra is constrained from full tariff rebalancing.

68. From C&W's perspective, if another AD recovery method (such as rate rebalancing) is to be adopted, it must be adopted in conjunction with the beginning of interconnection, because to fail to do so will cause financial harm to C&W where it will no longer be able to fully subsidize its AD from the international revenue stream it has historically obtained.

D. Differential ADCs

69. As can be seen from the Tariff Schedule, C&W has proposed an ADC for the ICOS Service which is higher than that proposed for the other services. Under the Agreement, domestic services pay an average ADC of 4.2 cents per minute. However, each minute of traffic carried pursuant to the ICOS service attracts a per minute ADC of twenty-five cents per minute ($0.25).

70. ICOS will be used by competitors to compete against C&W in the international calling market. With ICOS, competitors will not need to build out expensive access lines, and will be able to use C&W's existing access network to compete against it. If no ADC were levied on ICOS, not only would new competitors be given an inefficiently large incentive to become an international operator, but also C&W would face a considerable competitive disadvantage. Since the incumbent must carry the burden of the Access Deficit, without contributions from other operators, they face the prospect of losing significant revenues from the very source which provides the cross-subsidy to pay for the Access Deficit: international call revenues. Without an ADC, new operators are given a very clear competitive advantage, because they do not have the burden of an access network. This is simply another way of saying that the signals sent to market operators without an appropriate ADC will lead to inefficient investment decisions, which will not benefit the telecommunications market in the long run.

71. There are similar problems if the AD charging structure does not reflect the fact that different services should contribute more than others. In this scenario, the incumbent will face a competitive disadvantage unless the new operators have roughly the same breakdown of services by volume of traffic. For example, consider a flat rate ADC levied on all traffic. If 70% of the incumbent's minutes are domestic, whereas only 10% of a new operator's minutes are domestic, then this operator will not be taking a fair share of the burden of the access deficit. The

only way to resolve the issue is to weight the ADC such that international traffic pays relatively more.

72. There is one further complication: monitoring and measuring traffic destinations is very complicated. Therefore, it is extremely difficult to devise a practical Access Deficit Charging mechanism that allows different charges to be levied on different types of call. The solution is to impose the restriction that all Indirect Access originating calls will be international. Given the extremely low or negative margins associated with domestic calls in the OECS, this is neither unrealistic, nor restrictive in any practical way, in terms of providing competing services. For these reasons, C&W has devised a two-part AD charging structure. One rate will apply to all minutes of ICOS traffic. Another will apply to all other minutes. This represents an economically efficient charging structure, which is also practical to implement.

73. The actual rates must be calculated jointly. They are designed so that the total revenue from the charges (including charges paid by C&W) equals the total AD. One or other of the charges must be fixed exogenously, but this does not mean it is an entirely subjective choice.

74. GNP and C&W have agreed to a split of $0.042 for domestic and international call termination, and $0.25 for ICOS. The differential is designed to ensure that a business case exists for ICOS (i.e. that the ADC is not set at such a high amount that it would undermine the business prospects for the service) and the domestic ADC (including international termination) matches that of the ADC approved in Dominica ($0.042 per minute). It must be remembered that both ADC rates are set on the basis that C&W imputes to itself the requirement to pay the vast majority of these fees. It is interesting to note that in the case of Grenada, these ADC rates are equivalent to the average ADC rate which would apply for domestic and ICOS services across all five ECTEL countries.

75. Because some competitors may not be interested in an ICOS service, and others would, those that are not interested in the service would obviously propose a higher ICOS ADC in return for a lower domestic ADC. C&W submits that the rates proposed in this Agreement set an appropriate balance. In addition, we cannot negotiate individual ADC rates for each competitor in the same territory without subjecting ourselves to an arbitrage opportunity, that would also distort the market. In order to resolve this problem, at this point, C&W proposes to use the $0.25 ICOS ADC fee for all territories with an ADC charge, and develop a corresponding domestic ADC rate. Such an approach appears to be the fairest mechanism for determining the differential split of the ADC rates between ICOS and domestic termination (including international termination on our domestic network).

IX. Conclusions

76. For the reasons outlined above, C&W submits that ECTEL should recommend approval of, and the Commission should give approval for, the Agreement including the adoption of an asymmetric contribution charge for access deficit recovery.

Appendix 1: Model Methodology

1. BACKGROUND

The model is based on an Excel workbook originally produced as part of an internal C&W exercise undertaken in order to analyse the profitability of its Caribbean businesses' services. The focus of the model is to analyse services (e.g. international and national PSTN retail services) and costs associated with network usage.

The outputs of the OECS model are:

- a Profit and Loss account (P&L), reported by retail service in a form similar in concept to the Financial Results by Service produced by BT for its regulator OFTEL in the UK;
- a Balance Sheet by Retail Service; and
- a set of network charges for use of the PSTN, applicable both to C&W retail services and third parties interconnecting to the PSTN for termination and transit services.

This documentation reviews the methodology and structure of the model.

2. METHODOLOGY

This section provides an outline of the methods used in calculating profitability by service and network service charges.

a) 2.1 RETAIL SERVICES AND REVENUES

The initial stage of preparation and analysis for modeling is to identify the major sources of revenue for the business and create a Profit & Loss account split between these main "lines of business". Table 1 depicts a typical breakdown of revenue sources for an OECS business:

1. Table 1. Retail Services

• International PSTN • Fixed National PSTN (local/national calls) • Access (line rental & installation) • Cellular • Payphone • Leased Circuits and Data • Other revenue sources: (VAS, Paging, Voicemail, Cards, Multimedia, Equipment, CATV, Telex)

Additionally, in accordance with conventions in accounting separation, financial reporting is conducted for separate Access and Network business. This ensures that C&W cannot unfairly subsidise or unfairly cross-subsidise or otherwise discriminate against other licensed operators (OLOs). The Access business is typically loss-making, and is therefore subsidised by a transfer charge from the network business. The Network business similarly earns revenue through a transfer charge from the retail business, since it effectively supplies network to C&W retail businesses (and OLOs in the future).

The management accounts of the business provide the basis of the P&L By Service. Consequently, revenue figures for the services used in the model are obtained from either the management accounts directly or the financial accounts, ensuring that the outputs of the two reports can be reconciled.

b) 2.2 COSTS

In the generation of a P&L report the model attributes the:

- operational expenditure (opex);
- other non-capital related costs; and
- depreciation (for the purpose of this documentation depreciation is not included in the opex category), associated with the retail services, and, in addition, network usage costs are charged to each retail service.

The network charges are calculated on the basis of opex, other non-capital related costs, and the depreciation associated with PSTN elements, plus an appropriate return on capital employed.

Network charges paid by own retail services include a component for return on capital employed, meaning that that financial results are not consistent with return on capital calculations based on actual accounts. Network charges payable both internally and by third parties include a cost of capital component.

This section reviews the overall approach to cost allocation, and explains how opex, depreciation, and return on capital are treated by the model.

i) 2.2.1 Overall approach to cost attribution

There are two conventional approaches to service costing. These are Fully Allocated or Fully Distributed Costing (FAC or FDC), and marginal costing methods.

Under fully allocated or fully distributed costing (FAC or FDC), costs that are not directly attributable to service - typically, the majority of costs of any telecommunications business fall into this category - are apportioned by appropriate drivers identified for each type of cost. Thus, costs that were fixed regardless of the level

of output, or common to a number of services, would be apportioned to each service as though there were a direct causal link between the level of costs and volume of individual services.

The second approach is one of a number of forms of marginal costing in which only the costs associated with an increment of a service are considered as the correct cost basis. The increment is the set of products or services over which costs are being measured. At one extreme (i.e. many small increments), the cost of providing an extra unit of service would equate to marginal cost (MC), while at the other extreme (i.e. one large increment), the cost of providing the total output of an operator equates to FAC.

Fixed common[2] and joint[3] costs may be either "written off" or recovered through mark-ups determined on the basis of market factors, e.g., price elasticities, or other agreed rules, e.g., equi-proportions. Because it is essential for this modeling exercise to generate numbers that are fully consistent with management accounts, the model accounts for all costs, the model fully allocates all costs that are or directly attributable or common to retail services.

However, it uses an incremental cost plus mark-up approach for network service charge derivation. In particular, the incremental costing approach defines increments in terms of usage of the following network elements:

- access over local lines. The increment is taken to be the provision of all access lines in the local network. The associated costs include:

  - cables and wires used by the access (or "distribution") network, prior to any aggregation that may occur with concentrators or remote switches. In other words, we are only concerned with cables and wires that are line-sensitive costs (rather than traffic sensitive costs);
  - distribution points and cabinets in the feeder network; and
  - line cards located at remote or host switches.

- PSTN traffic carried over the switching network. The increment is taken to be the provision of switching facilities to enable call transport. Associated costs include switch processors. Switching facilities have been subdivided into three elements; the portion of the switch processor responsible for call setup, the portion of the processor responsible for traffic throughput and the remote switching units.

- PSTN traffic carried over the domestic inter-switch transmission network. The increment is taken to be the provision of domestic transmission facilities to enable call transport. Associated costs include cables, transmission systems and trunk ports on switches.

[2] Fixed costs associated with the production of two or more services, which cannot be avoided unless production of all services to which they are common is stopped. Fixed common costs are fixed with respect to volume

[3] Costs associated with the production of two or more separable outputs in fixed proportions irrespective of volume. Total joint costs are variable with respect to volume

- PSTN traffic over the international network. The increment is taken to be the provision of international transmission facilities on the international side of the gateway switch, enabling the transport of international calls.

Not all network costs can be classified as being "incremental", as defined above. Those that cannot are common fixed or joint costs between network elements or common to network elements and retail services. An example of such a network common cost would be air conditioning in a switch building used to cool both the racks of access line cards, as well as the central processor(s) used to switch traffic. The principal common fixed and joint costs include:

- overground and underground route structures used by both the access network and by inter-office transmission (e.g., poles, duct and conduit systems). These costs are apportioned to the access network, inter-switch transmission of PSTN traffic, leased lines and other services, on the basis of proportions of usage by cables.

- common equipment and facilities located in switches. These costs are apportioned among the access network (line cards), switching transport network (processors) and inter-switch transmission network (trunk ports) in the same proportion to the actual incremental costs.

The model treats overall business common or overhead by equi-proportionately marking up the costs attributed to retail and network elements.

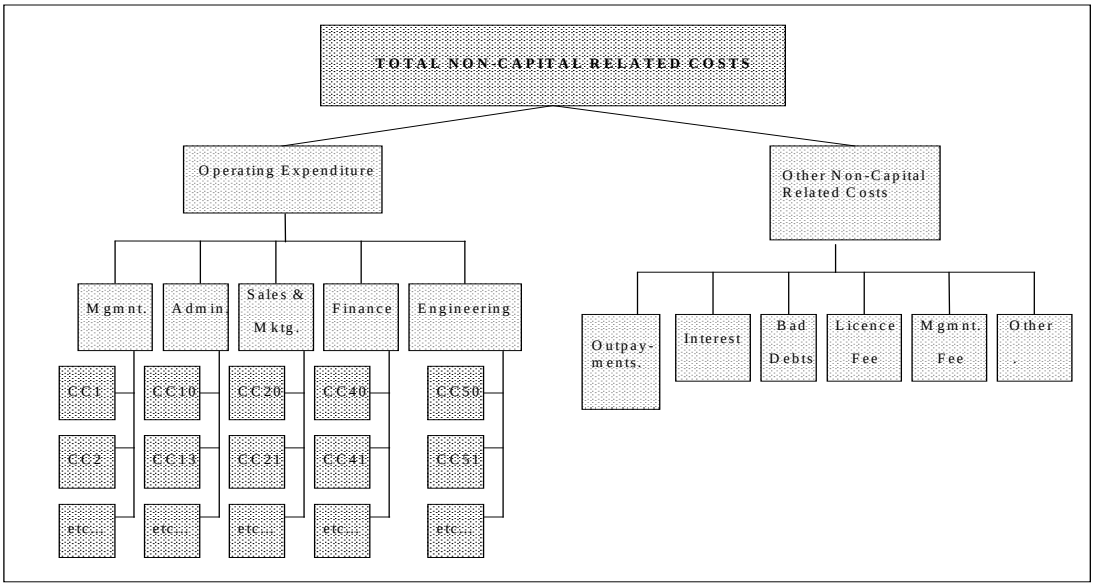
ii) 2.2.2 Operating Expenditure and other non-capital related costs

The relevant operating expenditure is drawn from:

- each individual cost centre broken down into staff costs and other opex; and
- other centrally-held non-capital costs such as outpayments, bad debts and interest.

The structure for the cost centres vary from business to business and will evolve over time but the diagram below is a representation of a typical cost structure seen within the OECS businesses.

Figure 1



As suggested above, opex and non-capital related costs are allocated to retail services, network elements or overhead (business common), in particular:

- Retail services listed in Table 1
- International Transmission
- Switching
- Domestic (inter-exchange) Transmission
- Distribution
- Network Common
- Business Common

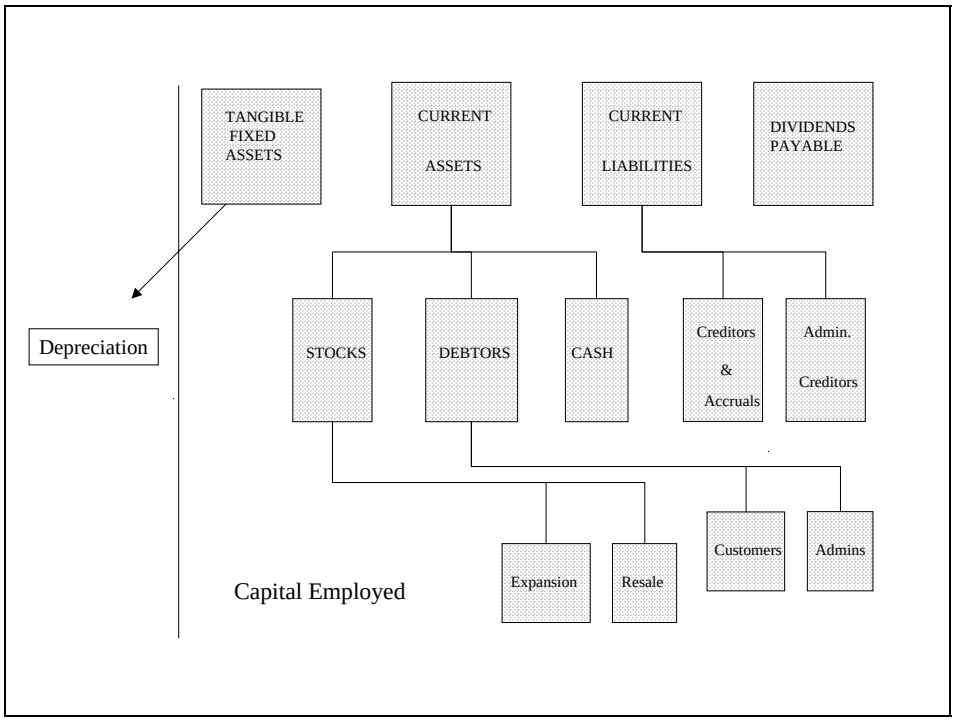
The allocation was carried out on the basis of drivers associated with activities. Over eighty activities and over 35 drivers were considered. The approach represents a simplified Activity Based Costing (ABC) Exercise.

iii) 2.2.3 Capital Related Costs

Capital related costs include depreciation and the return on fixed and non-fixed assets (capital employed)—See figure 2 below. Fixed asset data drawn off the register includes the cost at purchase, asset life, month and year put in service for each asset, and then the model itself generates annual depreciation and net book values. As with the opex and non-capital related costs, capital related costs are allocated to

- Retail services listed in Table 1;
- International Transmission;
- Switching;
- Domestic (inter-exchange) Transmission;
- Distribution;
- Network Common and;
- Business Common

Figure 2



The fixed asset classifications in a business unit relevant to network elements are broad, requiring item by item analysis and the allocation of finance and engineering staff. For costing purposes, subcategories of assets were identified, and their associated allocations estimated. In particular, where appropriate the asset database shows the sharing of:

- facilities between distribution, domestic transmission and switching

- poles (distribution and domestic transmission);
- aerial wire (distribution and domestic transmission);
- aerial cable (distribution and domestic transmission);
- underground cable (distribution and domestic transmission);
- underground conduit (distribution and domestic transmission);
- power (distribution, switching, transmission and in some cases for administration); and
- switch occupancy (distribution, switching, domestic transmission , other services)

- domestic transmission facilities between:

- PSTN;
- cellular; and
- other Services (principally leased lines)

The allocation of other capital related costs (non fixed asset capital employed, or non-FACE) were made on the basis of the following:

- Stocks- Retail and Network minute volumes;
- Debtors, Customers - Retail services only on the basis of billed revenues;
- Debtors, Admins - International Retail only;
- Cash - Capital Expenditure and Operating Expenditure;
- Current liabilities – Direct attributable net book value; and
- Dividends payable - Direct attributable net book value

Long Term loans are excluded from the calculation of capital employed, as the return required by these loans has already been serviced by the interest paid thereon.

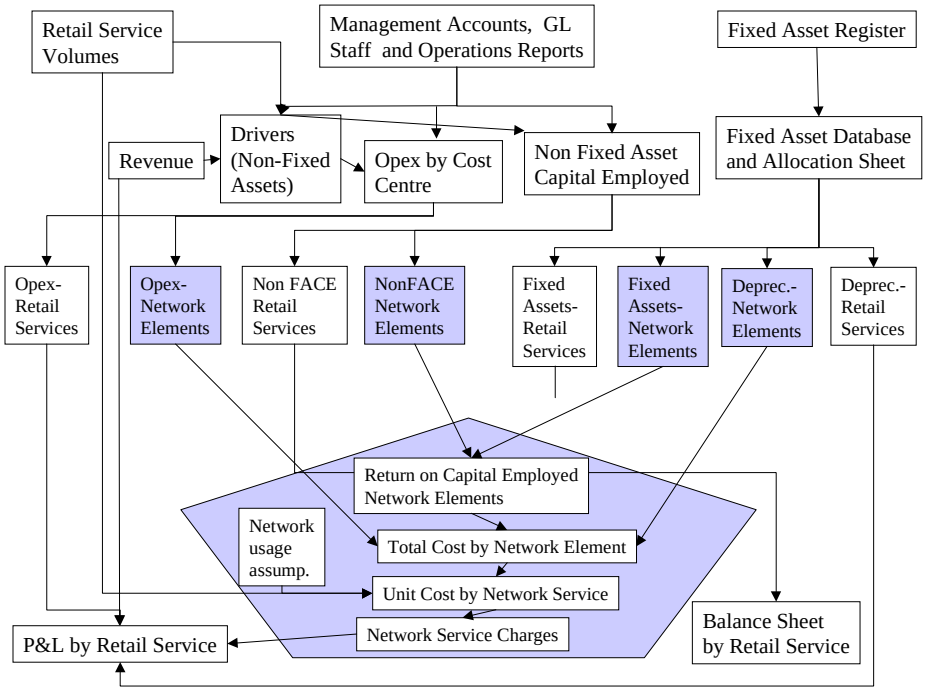
For the calculation of network charges for third parties, the return on Capital Employed (on both fixed and non-fixed assets) associated with network elements is calculated using an average of year opening and closing balances. The cost of capital has provisionally set at ###. In a competitive industry, a firm would be expected to earn a rate of return equal, on average, to its cost of capital.

3. MODEL STRUCTURE

3.1 GENERAL

The structure of the costing model referred to above is illustrated in figure 3 below. The worksheets associated with each of these functions are presented in the Appendix.

(a) Figure 3



c) 3.2 NETWORK SERVICE MODULE

The Network Services Module is an Excel workbook comprising a number of worksheets linked as shown in the trapezoid in the figure above.

The module first brings together the costs of opex, depreciation, and return on capital associated with all network elements (international transmission, switching (subdivided into call-setup processor, traffic-related processor and remote switching unit), domestic transmission, network common and business common). It takes the network common and business common costs and equi-proportionately marks up those costs that are specifically attributable to the network elements.

With all relevant costs by network element totaled, volume data (network usage) is then used to calculate the unit costs within each network element. These are then aggregated using the usage factors applicable to individual services—giving unit costs for each service. In particular, usage factor are applied to:

- calculate the actual usage of each network element (based on retail service volumes);
- from this, calculate unit costs for each network element from the formula:

  network element cost / network element usage

- apply the service usage factors of network elements to the network element unit costs in order to estimate the per minute network usage charge.

It is also possible for network charges payable by each of the retail business to be separated into three elements. These are: depreciation, ROCE, and network expenses. This is done by the inclusion of a separate worksheet calculating unit costs of network elements in isolation of the other cost categories

Network usage charges are generated for the following traffic flows and charged to the appropriate retail service.

Traffic Type	**Retail Service**
Incoming Int. Call to PSTN	International PSTN
Outgoing Int. Call from PSTN	International PSTN
Fixed national call	Domestic
Fixed local call	Domestic
Incoming Int. Call to Mobile	Other
Outgoing Int. Call from Mobile	Other
PSTN-Mobile	Domestic
Mobile to PSTN	Other
Outgoing Int. Payphone	Other
National Payphone	Other
Packet Switching Dial-up	Other
Internet Dial-up	Other
ISDN national voice	Other
Audiotext	Other
Voicemail	Other
Paging	Other
Cards	Other

An analogous set of interconnection tariffs is generated for third parties.

Appendix 2: Opinion from PriceWaterhouseCoopers on Costing Model

Appended separately

Appendix 3: Service Profitability Results

The results of the cost models with respect to existing retail services are shown in Table 1 overleaf. The various line items of the service profitability schedule are as follows:

1. Revenue. The revenue figures for the service obtained from either management accounts directly or the financial accounts.
2. Transfer charges and settlements. This includes gross outpayments to overseas administrations/carriers, cost of sales and Government Royalty.
3. Direct costs are staff and operating costs for the service (directly and indirectly allocated to the service)
4. Other direct costs include depreciation of non-network assets, bad debts, interest expenses/gain and management fees
5. Allocated overheads is the allocation of overheads to retail services.
6. Network costs is disaggregated into network expenses, network depreciation, and return on capital employed on network assets.
7. Profit/(Loss) by Service transparently identifies the magnitude of the access deficit and extent of the cross-subsidisation required from other services.

It can be seen that the access deficit that has been used for calculating the ADCs is ###.

Table 1 – Service Profitability Results
Cable & Wireless Grenada – for the year ending 31 March 2001

	International Calling	Domestic Calling	Access	Other	SUB TOTAL	Network & Access	GRAND TOTAL
	EC$k	EC$k	EC$k	EC$k	EC$k	EC$k	EC$k
GROSS TURNOVER	###	###	###	###	###		###
Transfer Charges					###	###	###
Less: Outpayments	###	###	###	###	###		###
Less: Cost of Sales	###	###	###	###	###		###
Less: Government Royalty	###	###	###	###	###		###
REVENUE NET OF SETTLEMENTS AND TRANSFER CHARGE	###	###	###	###	###	###	###
Direct Costs (Staff and Opex)	###	###	###	###	###	###	###
Other Direct Costs	###	###	###	###	###	###	###
Total Direct Cost	###	###	###	###	###	###	###
PROFIT BEFORE OVERHEAD AND NETWORK COSTS	###	###	###	###	###	###	###
Allocated Overheads	###	###	###	###	###	###	###
Total Non-Network Cost Including Overheads	###	###	###	###	###	###	###
PROFIT BEFORE NETWORK COSTS	###	###	###	###	###	###	###
Network expenses	###	###	###	###	###	###	###
Network depreciation	###	###	###	###	###	###	###
Network ROCE	###	###	###	###	###	###	###
Total Costs	###	###	###	###	###	###	###
PROFIT / (LOSS) BY SERVICE	###	###	###	###	###	###	###

Access Deficit ###

Appendix 4: Breakdown of the Access Deficit

The costs of the access deficit consist of direct costs as well as allocation of indirect costs. Costs include different types of expenses, depreciation, cost of capital, retail costs and allocation of overheads. An analysis of the amount of costs that have been allocated to the access network and domestic calling, as well as expressing these costs as a percentage of the costs being allocated follows:

Access Network assets

Network Depreciation and Network Return on Capital Employed

		Depreciation EC$k	NBV EC$k
Direct allocation (see below)		###	###
Allocation of Admin building assets using floorspace		###	###
Allocation of IS related assets using PC usage		###	###
Allocation of Vehicle assets using Vehicle usage		###	###
Allocation of Fault system assets using Fault distribution		###	###
		###	###
Pro-rated to Management accounts		###	###
		###	###
less leased circuit allocation		###	###
		###	###
Network Common cost allocation (see below)		###	###
		###	###
Adjustment to include other assets/liabilities			###
Adjusted assets			###
Return on Capital Employed	###%		###

Directly Allocated Assets	**Depreciation**		**Net Book Value**	
	EC$k	% allocation from original cost	EC$k	% allocation from original cost
Freehold Technical Land & Buildings	###	###%	###	###%
Power	###	###%	###	###%
Exchange Equipment (Line Cards etc)	###	###%	###	###%
Exchange Equipment (Installation)	###	###%	###	###%
Tools & Test Equipment	###	###%	###	###%
Line Plant - Cables	###	###%	###	###%
Line Plant - Installation	###	###%	###	###%
Line Plant - Civils Work & Conduit	###	###%	###	###%
Line Plant - Jointing Points	###	###%	###	###%
Line Plant - Main Distribution Frame	###	###%	###	###%
Line Plant - Pole Lines and Distribution Points	###	###%	###	###%
Building Infrastructure	###	###%	###	###%
Other Assets	###	###%	###	###%
	0		0	

Allocation of Network Common Assets	**Depreciation**		**Net Book Value**	
	EC$k	% allocation from original cost	EC$k	% allocation from original cost
Mobile Radio Equipment	###	###%	###	###%
Tools and Test equipment	###	###%	###	###%
Network Management	###	###%	###	###%
Other Allocations	###	###%	###	###%
	###		###	
Pro-rated to Management accounts	###	###%	###	###%
	###		###	

Access Network expenses

	EC$k
Network Expenses	
Directly allocated costs (see below)	###
Reallocation of Access to Leased Circuits	###
	###
Allocation of Network Common costs (see below)	###
Allocation of Business Common costs (see below)	###
	###

	EC$k	% allocation from original cost
Directly Allocated Network Expenses		
Maintain Distribution	###	###%
Early Retirement	###	###%
Utilities	###	###%
Provide Basic Telephony Services	###	###%
Plan, operate and maintain fleet	###	###%
Management Fees	###	###%
Manage corporate affairs	###	###%
Support Business Support Systems	###	###%
Manage buildings	###	###%
Training Budget	###	###%
Pension	###	###%
Non Vehicle Insurance	###	###%
Manage HR	###	###%
Social Security	###	###%
Schedule Repairs	###	###%
Procure materials	###	###%
Support Operational Systems	###	###%
Maintain generators	###	###%
Manage stores	###	###%
Loss on Disposal Of Assets	###	###%
Maintain civil works	###	###%
Monitor network	###	###%
Security Services	###	###%
Plan network	###	###%
Regional Support Charge	###	###%
Provide payroll	###	###%
Cleaning	###	###%
Collect network information	###	###%
Leave Pay	###	###%
Provision for Obsolete Stock	###	###%
	###	

Allocation of Network Common costs	EC$k	% allocation from original cost
Management Fees	###	###%
Other allocations (<EC$10k individually)	###	###%
	###	

Allocation of Business Common costs	EC$k	% allocation from original cost
Provide strategy and policy	###	###%
Provide public relations	###	###%
Management Fees	###	###%
Provide financial and management accounting	###	###%
Administer government relations	###	###%
Manage audit	###	###%
Accomodation	###	###%
Manage working capital	###	###%
	###	

Access Retail costs and revenues

Direct Retail Costs	EC$k	% allocation from original cost
Regional Support Charge	###	###%
Early Retirement	###	###%
Support billing systems	###	###%
Collect revenue	###	###%
Support Business Support Systems	###	###%
Respond to customer queries	###	###%
Provide credit control/ manage bad debt	###	###%
Prepare quotes/ sell services	###	###%
Generate bill	###	###%
Schedule installations	###	###%
Manage sales and revenue	###	###%
Advertise	###	###%
Training budget	###	###%
Utilities	###	###%
Manage corporate affairs	###	###%
Customer related activities	###	###%
Pension	###	###%
Plan, operate and maintain fleet	###	###%
Provide customer relations	###	###%
Manage HR	###	###%
Manage buildings	###	###%
Social Security	###	###%
Other allocations (<EC$10k individually)	###	###%
	###	

Other Direct Retail Costs	EC$k	% allocation from original cost
Retail Depreciation	###	
Net Interest Income	###	###%
Bad Debts	###	###%
Management fees	###	###%
	###	

Retail Overhead	EC$k	% allocation from original cost
Provide strategy and policy	###	###%
Provide public relations	###	###%
Management Fees	###	###%
Provide financial and management accounting	###	###%
Administer government relations	###	###%
Manage audit	###	###%
Other allocations (<EC$10k individually)	###	###%
	###	

Revenues	EC$k
Telephone Equipment Rentals	###
Telephone Installation/Reconnection Fees	###
	###

Network Assets associated with Domestic Calling

Network Depreciation and Network Return on Capital Employed

		Call Sensitive Switching		Traffic Sensitive Switching		Remote Switching		National Transmission		Interconnect Specific			
		Depreciation EC$k	NBV EC$k	Depreciation EC$k	NBV EC$k	Depreciation EC$k	NBV EC$k	Depreciation EC$k	NBV EC$k	Depreciation EC$k	NBV EC$k		
Direct allocation (see below)		###	###	###	###	###	###	###	###	###	###		
Allocation of Admin building assets using floorspace		###	###	###	###	###	###	###	###	###	###		
Allocation of IS related assets using PC usage		###	###	###	###	###	###	###	###	###	###		
Allocation of Vehicle assets using Vehicle usage		###	###	###	###	###	###	###	###	###	###		
Allocation of Fault system assets using Fault distribution		###	###	###	###	###	###	###	###	###	###		
		###	###	###	###	###	###	###	###	###	###		
Pro-rated to Management accounts		###	###	###	###	###	###	###	###	###	###		
		###	###	###	###	###	###	###	###	###	###		
less leased circuit allocation													
		###	###	###	###	###	###	###	###	###	###		
Network Common cost allocation		###	###	###	###	###	###	###	###	###	###		
		###	###	###	###	###	###	###	###	###	###		
Adjustment to include other assets/liabilities			###		###		###		###		###		
Adjusted assets			###		###		###		###		###		
Return on Capital Employed	###%		###		###		###		###		###		
Proportion allocated to Domestic calling		###%	###%	###%	###%	###%	###%	###%	###%	###%	###%		**EC$k**
Depreciation applicable to Domestic calling		###		###		###		###		###		Total	###
ROCE applicable to Domestic Calling			###		###		###		###		###	Total	###

Abridged version

Call Sensitive Switching Directly Allocated Assets	Depreciation		Net Book Value	
	EC$k	% allocation from original cost	EC$k	% allocation from original cost
Freehold Technical Land & Buildings	###	###%	###	###%
Power	###	###%	###	###%
Exchange Equipment	###	###%	###	###%
Building Infrastructure	###	###%	###	###%
	###		###	

Traffic Sensitive Switching Directly Allocated Assets	Depreciation		Net Book Value	
	EC$k	% allocation from original cost	EC$k	% allocation from original cost
Freehold Technical Land & Buildings	###	###%	###	###%
Power	###	###%	###	###%
Exchange Equipment	###	###%	###	###%
Building Infrastructure	###	###%	###	###%
	###		###	

Remote Switching Directly Allocated Assets	Depreciation		Net Book Value	
	EC$k	% allocation from original cost	EC$k	% allocation from original cost
Freehold Technical Land & Buildings	###	###%	###	###%
Power	###	###%	###	###%
Exchange Equipment	###	###%	###	###%
Exchange Equipment (Installation)	###	###%	###	###%
Building Infrastructure	###	###%	###	###%
Other Assets	###	###%	###	###%
	###		###	

National Transmission Directly Allocated Assets	Depreciation		Net Book Value	
	EC$k	% allocation from original cost	EC$k	% allocation from original cost
Freehold Technical Land & Buildings	###	###%	###	###%
Long Leasehold Land & Buildings	###	###%	###	###%
Microwave Transmission	###	###%	###	###%
Power	###	###%	###	###%
Radio Telecoms Equipment	###	###%	###	###%
Transmission Telecoms Equipment	###	###%	###	###%
Transmission Multiplex Equipment	###	###%	###	###%
Line Plant - Cables	###	###%	###	###%
Line Plant - Civils Work & Conduit	###	###%	###	###%
Line Plant - Jointing Points	###	###%	###	###%
Line Plant - Regenerator Cases and Tails	###	###%	###	###%
Building Infrastructure	###	###%	###	###%
Other Assets	###	###%	###	###%
	###		###	

Network Expenses associated with Domestic Calling

Network Expenses

	Call Sensitive Switching	Traffic Sensitive Switching	Remote Switching	National Transmission	Interconnect Specific		
	EC$k	EC$k	EC$k	EC$k	EC$k		
Directly allocated costs (see below)	###	###	###	###	###		
Reallocation to Leased Circuits				###			
	###	###	###	###	###		
Allocation of Network Common costs (see below)	###	###	###	###	###		
Allocation of Business Common costs (see below)	###	###	###	###	###		
Total Cost by network element	###	###	###	###	###		
Proportion Allocatable to Domestic Calling	###%	###%	###%	###%	###%		EC$k
Expenses associated with Domestic Calling	###	###	###	###	###	Total	###

Abridged version

Directly Allocated Network Expenses - Call Sensitive Switching	EC$k	% allocation from original cost
Maintain switching assets	###	###%
Support Operational Systems	###	###%
Management Fees	###	###%
Early Retirement	###	###%
Support Business Support Systems	###	###%
Collect call data	###	###%
Utilities	###	###%
Training Budget	###	###%
Plan, operate and maintain fleet	###	###%
Manage buildings	###	###%
Plan network	###	###%
Non Vehicle Insurance	###	###%
Other allocations (<EC$10k individually)	###	###%
	###	

Directly Allocated Network Expenses - Traffic Sensitive Switching	EC$k	% allocation from original cost
Support Operational Systems	###	###%
Maintain switching assets	###	###%
Collect call data	###	###%
Management Fees	###	###%
Support Business Support Systems	###	###%
Early Retirement	###	###%
Utilities	###	###%
Other allocations (<EC$10k individually)	###	###%
	###	

Directly Allocated Network Expenses - Remote Switching	EC$k	% allocation from original cost
Maintain switching assets	###	###%
Support Operational Systems	###	###%
Utilities	###	###%
Manage buildings	###	###%
Collect call data	###	###%
Early Retirement	###	###%
Management Fees	###	###%
Support Business Support Systems	###	###%
Plan, operate and maintain fleet	###	###%
Training Budget	###	###%
Other allocations (<EC$10k individually)	###	###%
	###	

Directly Allocated Network Expenses - National Transmission	EC$k	% allocation from original cost
Management Fees	###	###%
Support Operational Systems	###	###%
Maintain national transmission	###	###%
Utilities	###	###%
Early Retirement	###	###%
Manage buildings	###	###%
Training Budget	###	###%
Support Business Support Systems	###	###%
Non Vehicle Insurance	###	###%
Plan network	###	###%
Plan, operate and maintain fleet	###	###%
Collect call data	###	###%
Maintain generators	###	###%
Loss on Disposal Of Assets	###	###%
Manage corporate affairs	###	###%
Monitor network	###	###%
Pension	###	###%
Security Services	###	###%
Other allocations (<EC$10k individually)	###	###%
	###	

Directly Allocated Network Expenses - Interconnect Specific	EC$k	% allocation from original cost
Support regulatory costing	###	###%
Management Fees	###	###%
Support Business Support Systems	###	###%
Respond to OLOs	###	###%
Early Retirement	###	###%
Utilities	###	###%
Training Budget	###	###%
Manage corporate affairs	###	###%
Other allocations (<EC$10k individually)	###	###%
	###	

Abridged version

Allocation of Network Common costs	**Call Sensitive Switching**		**Traffic Sensitive Switching**		**Remote Switching**		**National Transmission**		**Interconnect Specific**	
	EC$k	% allocation from original cost	EC$k	% allocation from original cost	EC$k	% allocation from original cost	EC$k	% allocation from original cost	EC$k	% allocation from original cost
Management Fees	###	###%	###	###%	###	###%	###	###%	###	###%
Other allocations (<EC$10k individually)	###	###%	###	###%	###	###%	###	###%	###	###%
	###		###		###		###		###	

Allocation of Business Common costs	**Call Sensitive Switching**		**Traffic Sensitive Switching**		**Remote Switching**		**National Transmission**		**Interconnect Specific**	
	EC$k	% allocation from original cost	EC$k	% allocation from original cost	EC$k	% allocation from original cost	EC$k	% allocation from original cost	EC$k	% allocation from original cost
Provide strategy and policy	###	###%	###	###%	###	###%	###	###%	###	###%
Provide public relations	###	###%	###	###%	###	###%	###	###%	###	###%
Management Fees	###	###%	###	###%	###	###%	###	###%	###	###%
Other allocations (<EC$10k individually)	###	###%	###	###%	###	###%	###	###%	###	###%
	###		###		###		###		###	

Retail Costs associated with Domestic Calling

Direct Retail Costs	EC$k	% allocation from original cost
Regional Support Charge	###	###%
Support billing systems	###	###%
Collect revenue	###	###%
Support Operational Systems	###	###%
Other Non Trading Expense	###	###%
Respond to customer queries	###	###%
Prepare quotes/ sell services	###	###%
Generate bill	###	###%
Support Business Support Systems	###	###%
Schedule installations	###	###%
Training budget	###	###%
Utilities	###	###%
Customer related activities	###	###%
Manage corporate affairs	###	###%
Plan, operate and maintain fleet	###	###%
Pension	###	###%
Provide customer relations	###	###%
Collect call data	###	###%
Manage buildings	###	###%
Manage HR	###	###%
Other allocations (<EC$10k individually)	###	###%
	###	

Other Direct Retail Costs	EC$k	% allocation from original cost
Retail Depreciation	###	
Management fees	###	###%
	###	

Retail Overhead	EC$k	% allocation from original cost
Provide strategy and policy	###	###%
Provide public relations	###	###%
Management Fees	###	###%
Provide financial and management accounting	###	###%
Other allocations (<EC$10k individually)	###	###%
	###	

Appendix 5: Calculation of Access Deficit Contribution Charge

	Access Deficit (a) EC$	Volumes (b) Mins	Average ADC (a)/(b) EC$	De-averaged ADC Daytime EC$	Evening EC$	Weekend EC$
ADC on International Origination minutes	###	###	0.250			
ADC on remaining minutes	###	###	###	0.049	0.043	0.031

Methodology for de-averaging ADC charges (as well as call duration charges)

It is standard practice that interconnection charges follow the same structure as retail prices with the objective of preventing arbitrage opportunities from being created. In order to reflect the structure of retail tariffs, time of day tariff gradients have to be applied to the average interconnection or ADC charge. The steps to do this are as follows:

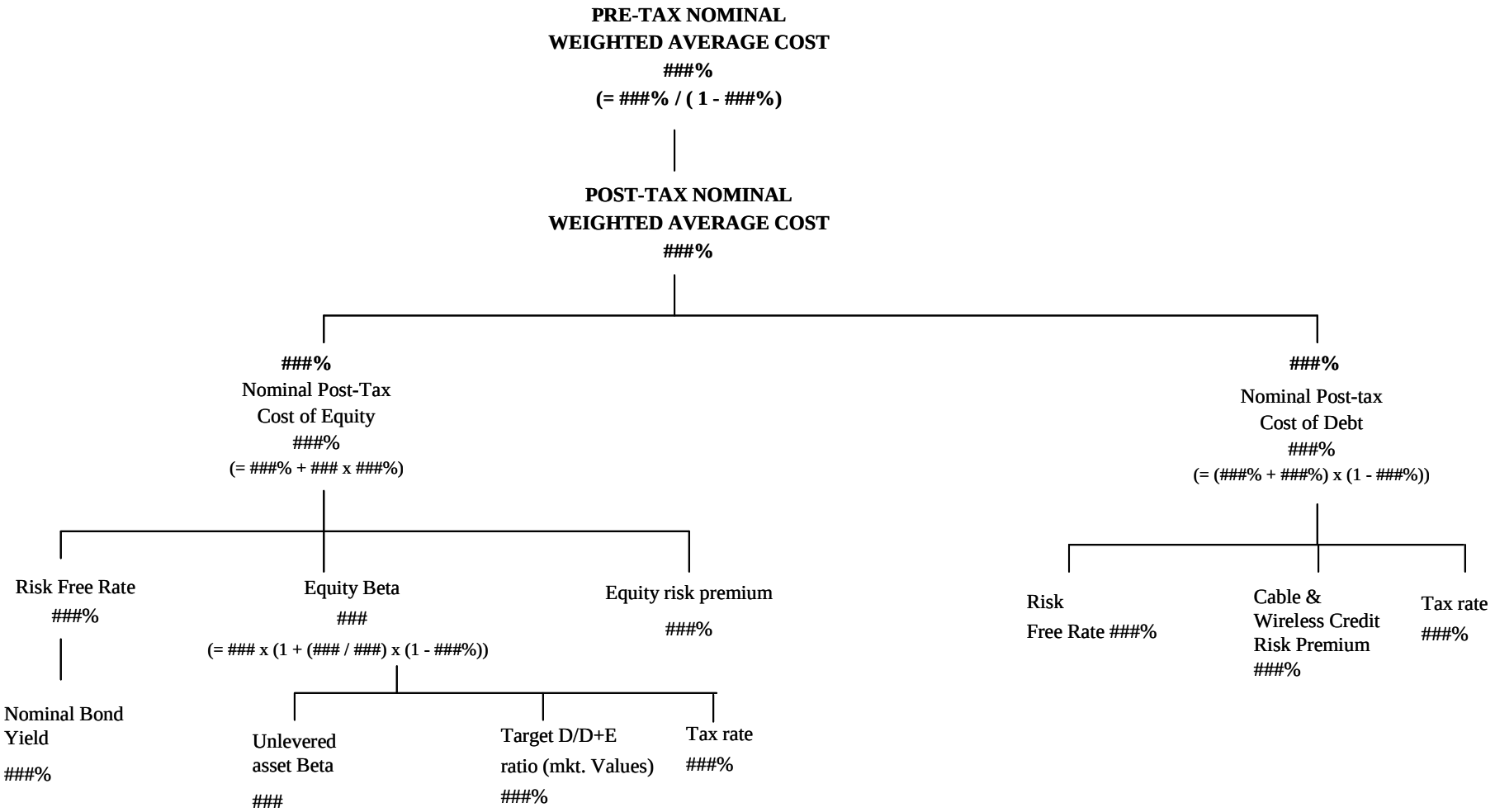
Step 1: Calculate the traffic-weighted average retail tariff. For the purposes of the Revised Agreement, C&W have collected traffic data for Domestic calls in each of three time periods in Grenada. Based on traffic data from 2002 the traffic profile is (a) ###% Daytime, at a retail price of EC$0.08, (b) ###% Evening, at a retail price of EC$0.07 and (c) ###% Weekend, at a retail price of EC$0.05. The weighted average retail price is thus calculated to be ###%

Step 2: Based on the traffic-weighted average retail charge, calculate the ratio of the retail average to the retail price: (a) The ratio of retail price during Daytime to the average retail price is ###, (b) The ratio of retail price during Evenings to the average retail price is ###, and (c) The ratio of retail price during Weekends to the average retail price is ###

Step 3: Apply these ratios to the average interconnection or ADC charge: (a) Using the ratio of ### to the average ADC, the Daytime ADC is EC$0.049, (b) Using the ratio of ### to the average ADC, the Evening ADC is EC$0.043, and (c) Using the ratio of ### to the average ADC, the Weekend ADC is EC$0.031.

Appendix 6

Weighted Average Cost of Capital for the 5 ECTEL Countries



Appendix 7: Methodology for Joining Services

This section provides an overview of the methodology as well as a description of the Joining Services Model.

(1) Overview of Methodology

b) Services Offered

Joining Services represent the physical link between two network operators. These links are used to interconnect the networks for the purposes of terminating each carrier's traffic to the other carrier's network.

Cable & Wireless Grenada provisions Joining Services over dedicated OC3 systems (155 Mbps), which can be sub-provisioned to provide line cards with modules of 12 T1s. For each system, the Joining Services Tariff provides charges for distance dependent facilities, for the carrier system and for the T1 termination. The tariff rate elements include both recurring monthly charges and, where appropriate, non-recurring charges.

The Joining Services Tariff is based on the assumption that C&W will provide all of the external plant facilities but only the carrier system and terminations on its side of the circuit. The Service Taker is assumed to provide the carrier equipment and termination equipment on its side of the circuit.

The external plant cables for the GNP connection will be installed using a diverse overhead route combined with underground routes using ducts. Existing ducts have been used where possible but there was a requirement to install some new duct.

The diagram below shows the routing of the connection from the C&W host exchange in Mount Hartman to GNP's location in XXX:

[Diagram removed – customer confidential information]

[Paragraph deleted – customer confidential information – Joining Service route details]

The Joining Services Tariff provides charges for the following rate elements:

- Distance dependent charge for exclusive duct – Nonrecurring and Recurring
- Distance dependent charge for different bores of shared duct – Nonrecurring and Recurring
- Distance dependent charge for exclusive Overhead cable – Nonrecurring and Recurring
- Proportion of shared poles – Nonrecurring and Recurring
- Carrier System, Network management, rack, frame and spares – Nonrecurring and Recurring
- Termination of T1 trunks – Nonrecurring and Recurring
- Signalling links - Nonrecurring and Recurring
- Provision of joint boxes - Nonrecurring and Recurring

The overall cost of each rate element consists of network capital costs and operating expenses. Network capital costs are driven by the amount of investment required for each rate element unit; the total capital cost will include purchase, carriage, import duty, installation and planning. Operating expenses are derived using a factor based on the ratio of operating expense to investment – this is drawn from the cost model using the opex/GBV ratio for the transmission network.

c) Costing Methodology

Network capital costs are annualised into a fixed amount sufficient to provide for depreciation of the assets over their life plus a cost of capital component. Depreciation is calculated using the straight-line method, with fixed asset lives and cost of capital as assumed in the costing model.

Nonrecurring installation and disconnection operating expenses associated with the OC-3 carrier system and T1 terminations were derived from estimated work hours required and average labour rates.

d) Derivation of Charges

Joining Services tariff charges should reflect, as far as possible, the economics of a competitive environment. If the Joining Services tariff assumed costs would be recovered over many years as is assumed in retail tariffs, there is a very real risk that the plant investment made today would be stranded long before its cost was recovered. This is likely when either the interconnecting carrier no longer purchases joining services or technology has advanced to the point where other approaches or other facilities are more attractive.

To reduce the risk associated with excessively long fixed asset depreciation lives, a non-recurring charge is assessed to cover the difference between the present value of the cash flow from depreciation and cost of capital after the initial contract period and the present value of depreciation and cost of capital cash flows over the normal regulatory life of the assets used.

The present value calculations are based on two assumptions. First, the initial contract period is set at five years to agree with the Interconnection Tariff. Second, the discount rate must be determined taking into account the flow through of the risk premium to the risk taker. It was determined that the risk free cost of capital was the most appropriate discount rate.

The starting point for the recurring charges is the revenue flow that would cover costs assuming no up-front payment. This represents the on-going service cost of Joining Services and includes capital cost and operating expenses. An annuity payment is calculated that equates this revenue flow to the revenue flows assuming an up-front payment of capital costs beyond the contract period. Monthly recurring charges are the annual amount divided by 12.

The final step is to add the nonrecurring charge due to excessive asset life to any nonrecurring installation charges that may be required for the OC-3 carrier system or T1 terminations.

Joining Services Model

e) Model Structure

The Joining Services model consists five sections: Inputs, Generic Workings, Generic Tariff Table, Actual GNP Workings and Actual GNP Tariff Table.

i) Inputs

The input schedule (see schedule) contains the following input data and assumptions:

- Cost of capital (row 1)
- Risk Free Rate (row 2)
- Equipment costs (rows 3-8)
- Any non-capitalised costs associated with equipment installation, configuration and testing (rows 9-15)
- 4-bore, 6-bore, and 24-bore shared duct unit costs for 3 different surface types, including equipment, duty, carriage, installation and planning (rows 16-18, 22-24, and 28-30)
- Joint box costs for 3 different surface types, including equipment, duty, carriage, installation and planning for each of the different duct types (rows 19-21, 25-27, and 31-33)
- Sub-duct costs (rows 34)
- Cable unit costs (rows 35 and 36)
- Splicing cost per splice (row 37)
- Cable laying costs (rows 38-39)

- Average separation of jointing boxes (row 40)
- Average separation of fibre splices (row 41)
- Shared Poles (row 42)

Input Data

1	Cost of Capital	XXX
2	Risk free rate	XXX
	Contract Period (years)	XXX

	Capital Costs	Units	Capital costs: Equipment purchase price	Import duty	Carriage	Installation labour	Planning	Total	Asset Life (Years)	Opex/ investment ratio
	Terminating Equipment									
3	STM-1 carrier system Hardware	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
4	Network Management (software, licensing and access term	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
5	Tributary Interfaces 12 T1 (Nortel OM3300)	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6	Spares	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
7	Rack/frame	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
8	ANSI SS7 signalling unit - per port	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

	Non-capitalised installation	Units	
9	Time to fit OLTE (excl test)	hrs	XXX
10	Time to fit CTU (excl test)	hrs	XXX
11	Time to configure single E1 trunk group	hrs	XXX
12	Time to disconnect from Interconnect Switch Location	hrs	XXX
13	Any other labour required	hrs	XXX
14	Time to test	hrs	XXX
15	Hourly labour rate	EC$/hr	XXX

	Capital Costs	Units	Capital costs: Equipment purchase price	Import duty	Carriage	Installation labour	Planning	Total	Asset Life	Opex/ investment ratio
	Shared duct (4-bore)									
16	Duct - footway - unsurfaced	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
17	Duct - footway - concrete in situ	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
18	Duct - carriageway (asphalt)	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
19	Jointing box - footway - unsurfaced	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
20	Jointing box - footway - concrete in situ	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
21	Jointing box - carriageway (asphalt)	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
	Shared duct (6-bore)									
22	Duct - footway - unsurfaced	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
23	Duct - footway - concrete in situ	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
24	Duct - carriageway (asphalt)	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
25	Jointing box - footway - unsurfaced	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
26	Jointing box - footway - concrete in situ	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
27	Jointing box - carriageway (asphalt)	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
	Shared duct (24-bore)									
28	Duct - footway - unsurfaced	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
29	Duct - footway - concrete in situ	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
30	Duct - carriageway (asphalt)	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
31	Jointing box - footway - unsurfaced	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
32	Jointing box - footway - concrete in situ	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
33	Jointing box - carriageway (asphalt)	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
	Sub Duct									
34	sub-duct per km	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
	Cable									
35	Underground 24 fibre optical cable	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
36	Aerial 12 Fibre Cable	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
	Other Information									
37	Splicing cost per cable splice - underground	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
38	Cable laying cost including sub-duct- underground	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
39	Cable laying cost light cabling-including rodding	EC$/km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
40	Average separation of jointing boxes	km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
41	Average separation of fibre splices - underground	km	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
	Poles									
42	Shared Pole	EC$	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

ii) Generic Workings

This schedule calculates the investment costs per kilometre, and annual depreciation, capital costs, and operating costs on an on-going basis assuming normal regulatory lives. Present value of these service costs over the life of the asset class is then calculated. Next, an annual annuity payment is calculated based on the difference between the present value of the asset class over the life of the asset and the nonrecurring charge described above. The annual amount is divided by 12 to derive the monthly recurring charge.

This schedule also calculates the nonrecurring installation and disconnection charges based on the labour hour estimates and hourly labour rate.

		Investment	Depreciation	Cost of Capital Year 1	Operating Cost	Total Annual Cost	Present Value of Annual Cost	Non-Recurring Charge	Annual Recurring Charge	Monthly Recurring Charge	Monthly recurring charge (assuming no non-recurring	PV for Termination (excl opex)
		A	B	C	D	E	F	G	H	I	J	K
	Individual Element Cost											
1	STM-1 carrier system Hardware	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2	Network Management (software, licensing	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
3	Tributary Interfaces 12 T1 (Nortel OM3300	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
4	Spares	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
5	Rack/frame	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
6	ANSI SS7 signalling unit - per port	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
7	Joint Box	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
	Element Cost per Km											
8	24 fibre Cable	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
9	Cable splicing	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
10	Cable total	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
11	Aerial 12 Fibre Cable	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
12	4 Bore Duct - shared use before sharing	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
13	Jointing boxes - shared use before sharin	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
14	Duct total - shared use before sharing	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
15	Duct - shared use after sharing	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
16	6 Bore Duct - shared use before sharing	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
17	Jointing boxes - shared use before sharin	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
18	Duct total - shared use before sharing	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
19	Duct - shared use after sharing	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
20	24 Bore Duct - shared use before sharing	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
21	Jointing boxes - shared use before sharin	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
22	Duct total - shared use before sharing	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
24	Duct - shared use after sharing	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
25	Shared Pole	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX

The investment costs are linked into column A as follows:

Rows 1-6: total equipment capital costs linked from the Total column of the Input schedule

Row 7: joint box costs derived from the joint box unit costs weighted by surface mix

Row 8-10: costs of laying the cable. The first row relates to the cable costs made up from cable, sub-duct and laying costs from the Total column of the Input sheet (e.g. row 8). The second row (e.g. row 9) relates to the splicing costs derived from cost per splice / splices per km. The third row (e.g. row 10) is the sum of the previous two rows.

Row 11: Aerial Cable costs : derived from the total column of the Input schedule

Rows 12-24: The shared duct cost per kilometre is derived from the duct unit costs weighted by surface mix and converted to a cost per kilometre using the average separation of joining boxes identified in the Input schedule (row 39). Using rows 12-15 as an example, row 12 contains the shared duct costs derived from duct unit costs weighted by surface mix. Row 13 contains the

shared joint box costs per kilometre derived from joint box unit costs weighted by surface mix and converted to a cost per kilometre using the average separation of joining boxes identified in the Input schedule (row 39). Row 14 contains the shared duct total summed from rows 12 and 13. As the duct is shared all the costs are not attributable to the joining service so row 15 converts the cost to a cost per bore by dividing the total in row 14 by the number of bores.

Row 25: Shared pole costs: derived from the total column of the Input schedule

Column B: This calculates annual depreciation according to the asset life assumptions from the input sheet (assumes straight-line method)

Column C: This calculates year 1 cost of capital using a mid-year asset value and the WACC

Column D: This calculates the annual opex using the ratio from the final column of the input sheet.

Column E: This calculates the total annual cost by summing depreciation, cost of capital and opex (columns B-D)

Column F: This calculates the present value of the total annual cost over the asset life, discounting by the WACC.

Column G: This calculates the non-recurring charge by:

- Evaluating the Present Value of the annual capital charges (depreciation + cost of capital) over the asset life, using the risk-free rate; and
- Subtracting the Present Value of the annual capital charges over the contract period, again using the risk-free rate

Column H: This calculated the annual recurring charge by means of an annuity formula (i.e., capital payment due, where the principal is the Present Value of the total annual cost (column E) minus the non-recurring charge. The total period is the asset life and the rate is the WACC.)

Column I: This calculates the monthly recurring cost which is the annual recurring cost divided by 12

Column J: This calculates the termination payment worked out as 30% of monthly recurring charge per month

JOINING SERVICE - GENERIC TARIFF SCHEDULE

Footway Box Joining Service

	Once-off EC$	Monthly recurring EC$
Shared Duct per Km (4 Bore)	XXX	XXX
Shared Duct per Km (6 Bore)	XXX	XXX
Shared Duct per Km (24 Bore)	XXX	XXX
Underground Cable per Km (24 Fibre)	XXX	XXX
Aerial 12 Fibre Cable	XXX	XXX
STM-1 carrier system Hardware	XXX	XXX
Network Management (software, licensing and access terminal)	XXX	XXX
Tributary Interfaces 12 T1 (Nortel OM3300)	XXX	XXX
Spares	XXX	XXX
Rack/frame	XXX	XXX
ANSI SS7 signalling unit - per port	XXX	XXX
Joint box	XXX	XXX
Shared Pole	XXX	XXX
	XXX	XXX

Early Termination Charges

	Early Termination Charge per remaining month EC$
Shared Duct per Km (4 Bore)	XXX
Shared Duct per Km (6 Bore)	XXX
Shared Duct per Km (24 Bore)	XXX
Underground Cable per Km (24 Fibre)	XXX
Aerial 12 Fibre Cable	XXX
STM-1 carrier system Hardware	XXX
Network Management (software, licensing and access terminal)	XXX
Tributary Interfaces 12 T1 (Nortel OM3300)	XXX
Spares	XXX
Rack/frame	XXX
ANSI SS7 signalling unit - per port	XXX
Joint box	XXX
Shared Pole	XXX

Charges for Installation and Testing

	Installation and Testing Charges EC$
Switch testing charge	XXX

This schedule brings forward the results of the Workings schedule and presents them in tariff format. The majority of charges are a direct transfer from the Generic Workings schedule. The transmission one-off equipment costs however also include the relevant installation costs identified in the Input schedule (rows 10 & 15).

Workings for GNP Joining Service - Diverse Pole Routes

	A	B	C	D	E	F	G	H	I	J	K	L
										Chargeable to GNP		
Pole Routes	Once-off cost per Km	Monthly recurring cost per	Early termination cost per	Distance (Km)	Once-off cost per Bore	Monthly Recurring cost per	Early Termination cost per Bore	Fibres in Bore/Cable	Fibres Required	Once Off Costs	Monthly recurring	Early Termination
Shared Duct (24 Bore) per Bore	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Shared Duct (6 Bore) per Bore	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Shared Duct (4 Bore) per Bore	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
24 Fibre Underground Cable	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
12 Fibre Overhead Cable	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
	Once-off cost per Pole	Monthly recurring cost per	Early termination cost per	Number Poles	Once-off cost	Monthly recurring cost	Early termination cost	Users per Pole	required			
Shared Poles	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Terminal Equipment												
	Once-off cost	Monthly recurring	Early Termination	Quantity	Once-off cost	Monthly recurring	Early Termination					
STM-1 carrier system Hardware	XXX	XXX	XXX	XXX	XXX	XXX	XXX			XXX	XXX	XXX
Network Management	XXX	XXX	XXX	XXX	XXX	XXX	XXX			XXX	XXX	XXX
Tributary Interfaces 12 T1 (Nortel OM3300)	XXX	XXX	XXX	XXX	XXX	XXX	XXX			XXX	XXX	XXX
Spares	XXX	XXX	XXX	XXX	XXX	XXX	XXX			XXX	XXX	XXX
Rack/frame	XXX	XXX	XXX	XXX	XXX	XXX	XXX			XXX	XXX	XXX
ANSI SS7 signalling unit - per port	XXX	XXX	XXX	XXX	XXX	XXX	XXX			XXX	XXX	XXX
Joint box	XXX	XXX	XXX	XXX	XXX	XXX	XXX			XXX	XXX	XXX
										XXX	XXX	XXX

(1) Workings for GNP Joining Services

Using the unit cost of each element calculated in the generic pricing, the actual dimensions of the joining service were calculated in the following table:

Columns A, B & C contains the base data for the upfront charge, recurring charge and early termination charge.

Column D contains the length of duct and cable utilised for the specific joining service to GNP as per the earlier diagram.

Columns E, F and G show the actual cost of the bore used and are calculated by applying the lengths in column D to the per kilometre charges in columns A, B and C.

Column H contains the actual number of fibres that are present in the utilised bore

Column I contains the number of fibres actually used by the joining service.

Columns J, K and L contain the actual cost by element of the Joining Service to GNP. These cost have been calculated by taking the proportion of the fibres used (column I) over the total number of fibres in the bore (column H) and applying this to the bore/cable costs calculated in columns

E, F and G. It should be noted that the cost of the 12 overhead cable has been totally allocated to the joining service as this cable can have no further use.

Actual GNP Tariff schedule

The data from the GNP working schedule is then presented as part of the interconnect agreement.

Tariffs for GNP

I. Joining

Footway Box Joining

	Proportio of Cable/Duc	Once- EC$	Monthly recurrin EC$
4.524Km of Shared Duct (4	XXX	XXX	XXX
5.102Km of 24 Fibre Underground	XXX	XXX	XXX
196 Shared	XXX	XXX	XXX
Tributary Interfaces 12 T1 (Nortel		XXX	XXX
Spares		XXX	XXX
2 x ANSI SS7		XXX	XXX
2 x Joint		XXX	XXX
		XXX	XXX

Early Termination

	Proportio of Cable/Duc	Terminatio Charge per remaining EC$
0.037Km of Shared Duct (24	XXX	XXX
0.541Km of Shared Duct (6	XXX	XXX
4.524Km of Shared Duct (4	XXX	XXX
5.102Km of 24 Fibre Underground	XXX	XXX
7.026Km of 12 Fibre Overhead	XXX	XXX
196 Shared	XXX	XXX
Spares	XXX	XXX
Rack/fram	XXX	XXX
2 x Joint	XXX	XXX