ICT Decision 2005-4

Grand Cayman, 22 July 2005

DECISION FOR THE FORWARD-LOOKING LONG-RUN INCREMENTAL COSTING CONSULTATION (CD (2004) 1)

This decision is the conclusion of the first phase of a three phase process to implement an appropriate regulatory costing methodology. In this decision, the Authority specifies the twelve costing principles (see body of text and Appendix 1) which are to be adopted by Cable & Wireless (Cayman Islands) when it develops its regulatory costing model.

The Authority's May 2004 public consultation document (CD (2004) 1) identified the three purposes of the regulatory costing model. The model will be used to develop rates for interconnection services with other telecommunications service providers, to ensure that Cable & Wireless' retail rates are not anti-competitive, and to quantify any access deficit. In previous determinations, the Authority concluded that adopting a pricing methodology based on forward-looking, economic costs best replicates, to the greatest extent possible, the conditions of a competitive market and a forward-looking cost methodology reduces the ability of the incumbent Licensee to engage in anti-competitive behavior.

This decision stipulates that Cable & Wireless is required to develop a costing process that is consistent with the principles detailed below. In the next phase of the process, Cable and Wireless will develop a costing manual which will describe the specific methodology, parameters, inputs, and outputs of its costing model. Cable and Wireless will also produce costing studies for one example interconnection service and one example retail service. The draft manual and the example costing studies will be the subject to review by the Authority during the next phase in the regulatory costing methodology process.

In this decision, the Authority also provides guidelines to assist Cable and Wireless in the development of its costing methodology (see body of text and Appendix 2). As well, this decision provides draft filing requirements that Cable and Wireless should meet when it submits its cost studies (Appendix 3). The Authority will make a final determination on the model methods and assumptions and the final filing requirements in phase two of the costing methodology proceeding.

(Note: This overview is provided for the convenience of the reader and does not constitute part of the Decision. For details and reasons for the conclusions, the reader is referred to the various parts of the Decision.)

INTRODUCTION

1. In accordance with the terms set out in Cable & Wireless (Cayman Islands) Ltd.'s ("C&W") Licence, C&W filed an initial proposal regarding incremental costing principles and parameters on 10 September 2003. Following a discussion with the Authority, the company filed an updated proposal on 7 November 2003 ("updated proposal"). The Information and Communications Technology Authority ("the Authority" or "ICTA") initiated a public consultation on 24 May 2004 entitled "Forward-looking Long-Run Incremental Costing (CD (2004) 1)" in order to set out economic and regulatory costing principles and parameters for a forward-looking long-run incremental cost ("FLLRIC") model. The Authority's public consultation invited interested parties to comment on the key issues in C&W's updated proposal by 9 August 2004.

2. The economic and regulatory costing principles derived from this Decision will form the basis upon which C&W will develop a FLLRIC model. Prices set using FLLRIC costs should send efficient entry and investment signals to all new Licensees. Similarly such prices should provide C&W, the incumbent, an opportunity to recover the forward-looking costs of providing interconnection and access to infrastructure sharing services.

3. Forward-looking long-run incremental costs will be used initially for determining imputation tests for the company's retail services, for setting rates for services that are subject to the Interconnection and Infrastructure Sharing Regulations, and to calculate any access deficit that may exist for C&W.

4. Other uses for C&W's FLLRIC model may become evident as liberalisation of the information and communications technology ("ICT") market in the Cayman Islands continues to develop.

5. In this, the first of three phases, the Authority establishes the foundation of a FLLRIC model by setting out its preliminary determinations on the economic and best practice regulatory costing principles to be adopted by C&W in developing a FLLRIC model. In phase two, C&W will file a draft costing manual, proposed key assumptions and preliminary cost study results. Following the Authority's final determinations on the FLLRIC principles, parameters, assumptions and model implementation C&W will implement the FLLRIC model in phase three.

PROCESS

6. The initial process set out in CD (2004) 1 contemplated that, following an interrogatory process ending on 12 July 2004, interested parties would file comments by 9 August 2004 and the Authority would issue its preliminary determinations in October 2004. However, due to several procedural changes at

the request of C&W and interested parties, as well as to Hurricane Ivan which struck the Cayman Islands on 10-11 September 2004 and interrupted many of the Authority's proceedings which had been underway, the record was closed in mid-February 2005.

7. Digicel Cayman Ltd. ("Digicel"), Wireless Ventures (Cayman Islands) Ltd. (herein referred to as "Cingular") and the Authority sent interrogatories to C&W on 21 June 2004. C&W filed its responses on 30 July 2004. On 20 August 2004, the Authority issued additional interrogatories to C&W seeking further clarification on some of its initial responses and C&W filed its responses on 30 August 2004.

8. Comments were filed by WestTel Ltd. ("WestTel") on 9 August 2004, by TeleCayman Ltd. ("TeleCayman") on 30 August 2004, by Cingular on 3 September 2004 and by Digicel on 6 September 2004. As requested by C&W, the procedures were modified whereby C&W could file reply comments by 3 September 2004 (further amended to 17 September 2004 on 17 August 2004). The C&W's reply comments dated 23 November 2004 were received by the Authority on 10 February 2005.

LEGISLATIVE & REGULATORY FRAMEWORK

9. The regulatory framework for FLLRIC is set out in Annex 5 to C&W's Licence. The following discussion and the Authority's determinations should be viewed in the context of this framework.

10. Annex 5 to C&W's Licence states:

> 48. C&W commits to building a forward-looking long-run incremental cost (FLLRIC) model within an agreed time frame. The parties intend that the form of the FLLRIC model may draw on elements of the Canadian Phase II methodology. In establishing the prices for interconnection services and access deficit, if any, the Authority shall include a mark-up to provide a contribution towards the recovery of C&W's fixed and common costs. In establishing floor prices for imputation test purposes, the Authority shall decide whether to include such a mark-up.
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> 49. Once built, the FLLRIC model shall be used for:
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> (a) Interconnection Rates
> (b) Determining whether Access Deficit exists, and if so, setting Access Deficit Contributions (ADCs)
> (c) Imputation Tests
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> 50. Process:
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> (a) Two (2) months following the Effective Date, C&W shall submit a proposal on FLLRIC principles and parameters, the length of time and estimated costs to implement the proposed FLLRIC methodology.

(b) The Authority shall have ten (10) months thereafter to run a proceeding and make a decision (the period can be extended or shortened at the Authority's discretion).

(c) The Authority shall determine the type of FLLRIC model (and the level of granularity to be required) to be built taking into account the benefits to be derived as compared to the expense associated with achieving that level of detail.

(d) As part of its decision regarding the nature of the costing model to be implemented, the Authority shall provide a reasonable time frame within which C&W shall implement the Authority's determinations. It is estimated that, at present, it will take C&W one (1) year to implement a FLLRIC model.

(e) The Authority reserves the right to conduct, from time to time, additional processes that are required to determine the reasonableness of the results, and where necessary, to require adjustments to the model.

51. Cost Recovery. The Authority will consider an application from C&W for the recovery of start up costs for building the model. If the Authority determines that the costs were reasonably incurred, the Authority will set up a mechanism to allow C&W to recover its costs.

11. The Authority wishes to comment on the regulatory framework and the process that has been followed to date. With regard to section 48 above, C&W, Digicel and Cingular on 27 July 2004 reached an agreement regarding their dispute on the interconnection rate to be paid for mobile termination services and in it stated that they believed that 30 June 2006 would be the earliest date that a FLLRIC model could be developed and implemented. In its letter to those three parties, the Authority stated that it was not unreasonable to believe that 30 June 2006 would be the earliest date. Obviously, however, if FLLRIC can be implemented before 30 June 2006 with a reasonable expenditure of effort and resources, it should be done.

12. Two parties in particular, Cingular and Digicel, commented on the principles set forth by the Authority and C&W. Although the view was not explicitly made in their comments, the Authority is concerned that Cingular and Digicel and possibly other parties to the proceeding may be under a misconception that the Authority and C&W had agreed beforehand on the principles and it was this consensus view that was set out in CD 2004 (1). The Authority stresses that this was not the case and that the proposals set out in the consultation document were for the benefit of the parties and should not be viewed as predeterminations of the issues.

POSITIONS OF PARTIES - SUMMARY

13. In its comments, TeleCayman stated that it was concerned about the value of costing relative to the actual costs of developing a cost-based methodology. If prioritization needed to be given to the proceedings held, the net benefits of developing a cost-based methodology might not be as great as those yielded by other pro-competitive regulatory actions which could be taken by the ICTA such as setting interconnection rates or resolving regulatory disputes.

14. Notwithstanding the above, TeleCayman supported the FLLRIC approach to costing; however, its main concern, apart from the cost of the exercise was how C&W's costing document failed to make clear how it would implement the methodology and how it would ensure that rates would be forward-looking.

15. TeleCayman made no specific proposals as to how the FLLRIC methodology should be implemented; however, it stated that the Authority should take advantage of previous efforts by many international organizations and national regulatory authorities and cited, as an example to follow, a similar costing exercise being undertaken by the Regional Tariff Group for Latin American and the Caribbean under ITU Study Group 3.

16. Cingular stated that it agreed with a number of the most general principles set forth by the Authority and C&W. However, it added that all the components of the forward-looking long-run incremental cost standard have somewhat ambiguous meanings and that practical meanings of whatever principles are adopted would be revealed fully only in the implementation phase. Cingular's specific comments are addressed in the sections below.

17. Digicel stated that it believed it was imperative that the Authority conduct some form of cost-benefit analysis for two reasons. First, C&W's estimate for developing and implementing a FLLRIC cost methodology was in the order of US$550,000 and Digicel was concerned that the Authority would require it to pay a portion of the FLLRIC development costs. Second, if interconnection costs decreased as a result of moving rates to their FLLRIC costs, there was no guarantee that benefits would accrue to the consumer in the form of lower rates because, according to Digicel, C&W is currently dominant in the market and would likely remain so. Digicel added that if settlement rates fell below mobile termination rates because those rates were now cost-based, mobile operators' availability of investment funds would be greatly reduced. Digicel strongly recommended that the Authority conduct a scenario-based analysis to help quantify the benefits that would likely result from implementing FLLRIC. Digicel's specific comments are addressed in the sections below.

18. WestTel made similar comments as TeleCayman; as a result, its comments are not repeated here.

19. C&W's reply comments, dated 23 November 2004, were originally due by 17 September 2004 but were late because of the disruption caused by Hurricane Ivan. However, C&W's comments were only received by the Authority in early February 2005. In general, C&W commented on the issues raised by various parties on its proposed key parameters and attributes for the FLLRIC model.

DEFINITIONS

20. In light of the various possible definitions of a number of critical economic terms used in this Decision, the following terms are defined and the economic rationale behind the concepts is provided:

> "incremental costs",
> "economic costs",
> "embedded or accounting costs",
> "common costs",
> "forward-looking", and
> "joint costs".

21. "Incremental costs" are the additional costs (usually expressed as a cost per unit) that a company will incur as a result of expanding the output of a good or service by producing an additional quantity of the good or service. Incremental costs are forward-looking in the sense that these costs are incurred as the output level changes by a given increment. The costs that are considered incremental will vary greatly depending on the size of the increment. For example, the incremental cost of carrying an additional call from a residence that is already connected to the network to its end office is virtually zero. The incremental cost of connecting a new residence to its end office, however, is the cost of the loop. Forward-looking incremental costs and, in some jurisdictions, a portion of the forward-looking joint and common costs, are sometimes referred to as "economic costs".

22. "Embedded or accounting costs" are costs that a company incurred in the past for providing a good or service and are recorded as past operating expenses and depreciation. Due to changes in input prices and technologies, incremental costs may differ from embedded costs. In competitive markets, the prices of goods or services will tend towards long-run incremental cost.

23. "Common costs" refers to costs that are incurred in connection with the production of multiple products or services, and remain unchanged as the relative proportion of those products or services varies (e.g., the salaries of corporate managers). Such costs may be common to all services provided by a company or common to only a subset of those services or elements. If a cost is common with respect to a subset of services or elements, a company avoids that cost only by not providing each and every service or element in the subset.

24. "Forward-looking costs" are calculated as if the service was provided for the first time by a new carrier and reflect planned adjustments in the company's plant and equipment. Forward-looking costs ignore embedded or historical costs; rather, they are based on the least cost technology currently available whose cost can be reasonably estimated based on available data. Forward-looking cost estimates must reflect technologies that are currently operational and available in the marketplace.

25. "Joint costs" refers to costs incurred when two or more outputs are produced in fixed proportion by the same production process (i.e., when one product is produced, a second product is generated by the same production process at no additional cost).

26. For the purpose of this Decision, joint and common costs are simply referred to as common costs unless the distinction is relevant in a particular context.

AUTHORITY'S ANALYSIS AND DETERMINATIONS

Incremental Costing Principles

a. Economic Efficiency

27. In its updated proposal, C&W proposed as a FLLRIC principle, a competitive market standard: "... the costing methodology should capture those costs for network elements or services that would lead to prices found in an efficient competitive market for provision of such elements or services." [1]

28. In its comments, Cingular stated that "the economically efficient price of a network element (service) is equal to the minimum economic costs of duplicating the services provided by the element (or the service itself) using current technology."[2] However, Cingular recommended discarding the "competitive market standard" because it was confusing and unnecessary to the principle of economic efficiency. Cingular stated that "prices are not economically efficient simply because they arise in a competitive market. Prices are efficient because they satisfy a number of conditions unrelated to industry structure. Indeed, under certain conditions, a monopolist may set economically efficient prices and competitive markets may produce prices that deviate substantially from economic efficiency."[3]

[1] C&W Updated Proposal, paragraph 2.1 a).
[2] Cingular Comments, page 2.
[3] Cingular Comments, page 4.

29. In its comments, Digicel stated that while it agreed with the principle of economic efficiency, it stated the principle must be balanced against a requirement that existing operators are allowed to remain viable. Specifically, because of the reciprocal nature of interconnection rates, Digicel stated that "... the [FLLRIC] model will need to take account of the FLLRIC costs of the highest cost operator … ."[4] Hence, Digicel recommended revising the principle to state "Economic efficiency that takes account of economies of scale and scope."[4]

30. In its comments that were received on 10 February 2005, C&W stated that the "competitive market standard" is no different than the "economically efficient standard" and that it had no difficulty with using the term "economic efficiency" instead of "competitive market standard".

31. The weaknesses of a historical cost approach are well documented in many jurisdictions including the U.S. and Canada where forward-looking incremental costs have been used as the bases for establishing regulated service rates and price floors for some time. An historical cost approach is highly dependent on the accuracy of an incumbent's accounting records. Not only does this create a significant information asymmetry that benefits the incumbent, such an approach does not necessarily provide efficient investment signals to potential entrants. As many economists have noted, it is forward-looking costs, not historical costs, that are relevant in setting prices in competitive markets. If historical costs are higher than the forward-looking costs an entrant would face, setting rates on the basis of historical costs could result in interconnection and infrastructure sharing prices that deter entry generally, or cause entrants to build their own facilities when it is inefficient from a general economic perspective to do so. In both cases, an entrant's costs are increased to levels that could limit competitive entry and/or impede the development of sustainable competition.

32. This can thwart one of the central purposes of the ICTA Law: the promotion of competition. Hence, the FLLRIC costing rules must produce rates that are consistent with the ICTA Law's goal of promoting sustainable competition. Any such rates should not create incentives for carriers to over-invest nor to avoid investment in facilities.

33. In general, all parties agreed with the economic efficiency principle but there was some disagreement over what was intended by the use of particular terms or statements. The Authority agrees that the phrase "competitive market standard" is confusing and, hence, does not refer to it further.

34. C&W stated in its updated proposal that efficient market prices are those that ensure the service provider has the opportunity to recover the costs of prudent investment. This alludes to the concept of recovering of past investment which is

[4] Digicel Comments, page 7.

contrary to the concept of forward-looking and economic costs. The Authority does not agree with this concept and does not refer to it in its principles.

35. Digicel stated that, in order for the economic efficiency principle to take account of economies of scale and scope, the model would need to take account of the costs of the highest cost operator. This would be contrary to the concept of basing costs on an efficient carrier using the least cost technology currently available; hence, the Authority does not adopt this concept.

36. Accordingly, the Authority determines that the following principles are appropriate:

Principle 1: The FLLRIC methodology should capture those costs for services or network elements that would lead to prices found in an efficient market for provision of such elements or services. Efficient market prices are those than ensure the service provider has the opportunity to recover efficiently incurred, forward-looking costs and encourage the service provider to operate in a cost effective manner. In addition, efficient market prices should provide the right incentives for efficient facilities-based investment, entry and exit.

Principle 2: Forward-looking costs are the costs to be incurred by a carrier in the provision of a service. These costs shall be calculated as if the service was being provided for the first time by a new carrier and shall reflect planned adjustments in the company's plant and equipment. Forward-looking costs ignore embedded or historical costs; rather, they are based on the least cost technology currently available whose cost can be reasonably estimated based on available data. As such forward-looking cost estimates must reflect technologies that are currently operational used and available in the marketplace.

Principle 3: The forward-looking long-run incremental costs of services or network elements are to be based upon those costs assumed to be incurred by an efficient carrier operating in the Cayman Islands for the first time. A carrier is deemed to be efficient where the total capital and operating expenditures are those that are necessary and sufficient in order to meet the required demand at a particular grade of service.

b. Cost Causality

37. In its updated proposal, C&W stated that the FLLRIC model output should account for all relevant directly and indirectly attributable costs and reflect the

nature in which costs are incurred. It added that "costs are attributed to a service on the basis of underlying cost drivers. This principle has implications for cost allocation: only costs associated with the relevant increment of service provided are included in costing. It also has implications for the structure of cost-based pricing, e.g., distance dependence and separation of per-call and per-minute charges will follow from the underlying cost structures."[5]

38. While Cingular agreed with C&W that the cost associated with the provision of service should reflect all relevant direct attributable operational expenditures and capital-related costs, it stated that it was unclear what C&W was implying by including the term "indirectly attributable costs" since a properly constructed model would measure all incremental costs. In Cingular's view, indirectly attributable costs that are considered to be fixed and common costs should not be added to incremental costs. Cingular argued that "any allocation of fixed and common costs to interconnection services should exclude the portion of such costs that cannot be reasonably allocated to the establishment and maintenance of basic network functionality required to render the interconnection service or to the development of the network base."[6]

39. Digicel stated that it did not object to the idea of excluding any costs that would be avoided if the service was not provided, but it had difficulty envisaging situations when costs could be avoided. It added that it would accept the idea if the Authority could show that certain costs should be excluded from C&W's baseline costs before any upward adjustments were made.

40. In reply, C&W clarified that indirectly attributable costs only referred to a portion of shared and common costs that must be allocated to each interconnection service and not to any other service. C&W stated that it "... does not intend to allocate any shared and common costs except when setting prices for interconnection services and access."[7]

41. Cost causality is a key principle of any sound costing methodology, but one that can be difficult to apply in practice because of the integrated nature of telecommunications. While the Authority agrees with Cingular's statement that common costs should not be included in the FLLRIC of a service or element, the Authority believes that fixed costs (i.e., costs that do not vary with the volume of the service or network element provided) that can be directly attributed to the provision of a service or element should be included, similar to many other jurisdictions that have implemented incremental costing systems.

42. Accordingly, the Authority determines the following principles are appropriate:

[5] C&W Updated Proposal, paragraph 2.1 b).
[6] Cingular Comments, page 5.
[7] C&W Reply Comments, page 9.

Principle 4: FLLRIC should include only those forward-looking costs that are incurred as a direct result of providing the service or network element in question. These are referred to as "causal" costs. Conversely, only costs that could be avoided by not offering the service or network element should be included in FLLRIC.

Principle 5: Costs that remain the same whether or not the relevant course of action (e.g., proposed introduction of a new service, proposed reduction or increase in rates, or other changes to existing services) is undertaken are not causal to the course of action and therefore are not taken into account in calculating the incremental costs associated with that course of action. Since costs and revenues that have been realized prior to the start of the course of action cannot be affected by that course of action, incremental costs and revenues do not consider cost and revenue components prior to the course of action. Historical or sunk costs are an example of this type of cost because no action after a decision point can affect costs already incurred prior to that decision point.

Principle 6: A FLLRIC study should include all relevant service or element-specific start-up costs, including installation costs.

Principle 7: The FLLRIC of a service or network element should include both volume-sensitive and non-volume sensitive costs.

Principle 8: The FLLRIC of a service or network element is the forward-looking additional costs incurred by an efficient company to provide the entire output of a service or network element, including any required additional resources such as labour, plant, and equipment. These are the direct incremental costs of providing a service. FLLRIC excludes any costs, including any common costs that would be incurred if the service is not produced.

Principle 9: Long-run costs are the economic costs over a planning horizon long enough so that there are no sunk inputs or costs.

c. Common Costs

43. A properly conducted FLLRIC methodology will attribute costs to specific elements to the greatest possible extent. Nevertheless, there will remain some common costs that must be allocated among network elements and services. Certain types of costs arise from the production of multiple products or services. Common costs also include costs incurred by the company's operations as a whole that are common to all services and elements (e.g., salaries of executives involved in overseeing all activities of the business).

44. There are three main issues:

a. whether shared and common costs should be allowed to be recovered from or, in the case of calculation of an imputation test, should be required to be recovered from, the rates of services;

b. if so, what types of services or from which services should such costs be recovered, and

c. what approach or approaches should be used to recover shared and common costs.

45. Regarding the first issue, C&W agreed with Cingular that a properly constructed FLLRIC model will only measure direct incremental costs and that forward-looking long-run incremental costs do not include any shared and common costs. C&W stated that such costs are usually recovered by a mark-up over LRIC where the total value of the mark-up over all services is equal to the total value of common costs related to those services included in the model.

46. TeleCayman stated that "10% is usually regarded as the upper limit of unattributable common costs."[8] WestTel stated that "C&W has proposed to apply a 13.5% mark-up on its identified shared and common costs. … As a rule of thumb such costs should not exceed 10 percent of all costs incurred by a carrier."[9] C&W, in its reply, argued that TeleCayman's and WestTel's statement of a 10% cap on shared and common costs was entirely without support and moreover, was inappropriate for the telecommunications industry where there are a high degree of fixed and common costs. C&W stated that WestTel's statement that C&W was proposing a 13.5% mark-up was based on a misunderstanding of C&W's proposal and this was not its position.

47. The Authority considers that C&W has the onus to prove the specific nature and magnitude of any forward-looking shared and common costs. This will be dealt with in the second phase of this proceeding.

48. Regarding the second issue, in its reply comments, C&W stated that "it did not intend to allocate any shared and common costs except when setting prices for interconnection services and access."[10] It added that "...costs for non-essential inputs (e.g., retail functions), should be based on LRIC, which by definition does not include common costs. It is up to a company to determine how common costs are recovered for non-essential inputs in light of competitive market conditions."[11] While parties generally agreed with the recovery of a portion of

[8] TeleCayman Comments, paragraph 12.
[9] WestTel Comments, paragraph 17.
[10] C&W Reply Comments, page 9.
[11] C&W Reply Comments, pages 9-10.

shared and common costs in interconnection and access services, parties did not unanimously support C&W's position that shared and common costs for non-essential inputs should not be included in services other than interconnection and access services. Cingular stated that "since the fixed and common costs related to retail services should not be recovered by interconnection services, it may be the case that the fixed and common cost mark-up for interconnection is different than that for retail services."[12] In its reply, C&W agreed that it is possible for the mark-up to be different for various classes or types of services if it can be shown that shared and common costs differ across these classes or types of services.

49. The Authority concludes that forward-looking common costs shall be allocated among elements and services in a reasonable manner, consistent with one of the objectives of the ICTA Law which is to promote competition. Some of these costs are common to only a subset of the elements or services provided by C&W. Such costs shall be allocated to that subset, and should then be allocated among the individual elements or services in that subset, to the greatest possible extent. For example, shared maintenance facilities and vehicles should be allocated only to the elements that benefit from those facilities and vehicles. Because forward-looking common costs are consistent with the forward-looking, economic cost paradigm, a reasonable measure of such costs should be included in the prices for services.

50. C&W proposed that it not be required to allocate any shared and common costs except when setting rates for interconnection services and access. One problem with C&W's proposed approach is that it provides C&W with a competitive advantage in choosing which markets and how much of shared and common costs it would recover from any one particular service. C&W would be able to reduce the rate of a service to a price floor equal to FLLRIC plus a portion of shared and common for interconnection and access costs and FLLRIC for "non-essential" inputs (e.g., retail functions). Competitors providing a similar service at FLLRIC would have to recover any shared and common costs for such "non-essential" functions from other services. However, in the early stages of competition, competitors might not be able to offer a range and breadth of service offerings similar to that of the incumbent, and therefore would be at a relative disadvantage in determining from which services common costs could be recovered, if at all. Under these circumstances, competitors would have to be prepared to sustain losses for a longer period than otherwise. Alternatively, competitors could choose to forgo such "non-essential" functions although it is likely this would significantly affect their sales in a negative manner.

51. A second problem is that there is, at present, no clear, working definition of essential and non-essential inputs. C&W's approach presumes that a consensus among the interested parties and the Authority could be easily and quickly reached on what should be deemed to be essential versus non-essential inputs. It

[12] Cingular Comments, page 19.

is also unclear whether definitions used by other jurisdictions would be appropriate for the Cayman Islands, at this stage of competition.

52. A third problem is that there are also, at present, no means of determining whether in fact C&W would be recovering all its shared and common costs for its non-essential inputs. Under its proposal, C&W could choose to not recover any shared and common costs for non-essential inputs in the short term, knowing that it could do so when some or all competitors exited the market. For all of the above reasons, the Authority concludes that shared and common costs should be recovered from all of C&W's services.

53. Regarding the third issue of what approaches should be used to recover shared and common costs, the Authority considers that C&W's proposed EPMU approach is too complex and burdensome and that certain other allocation methods such as a Ramsey approach are not reasonable. The Ramsey allocation methodology relies exclusively on allocating common costs in inverse proportion to the sensitivity of demand for various network elements and services. Not only is such an approach difficult to implement in practice, but, in the Authority's view, would unduly limit entry into the voice market by allocating more costs to, and thus raising the prices of, the most essential inputs such as interconnection, the demand for which tends to be relatively inelastic. Such an allocation of these costs would undermine the pro-competitive objectives of the ICTA Law.

54. Instead, the Authority would like to receive proposals from parties in the second phase of this proceeding. The following option is offered for assistance only and should not be interpreted as a preliminary view of the Authority: allocate common costs using two fixed percentage allocators which would vary depending on whether the service was provided to other Licensees or whether the service was a retail service. This would allow a relatively small share of common costs to be assigned to certain critical network services such as interconnection and elements that are the most difficult for new entrants to replicate quickly (i.e., bottleneck facilities). Allocation of common costs on this basis ensures that the prices of network elements that are least likely to be subject to competition are not artificially inflated by a large allocation of common costs. The complexity underlying other methods would be considerably simplified by the use of fixed percentage allocators.

55. Accordingly, the Authority determines the following principle is appropriate:

Principle 10: Common costs are those costs that a carrier must incur in order to operate and are not directly attributable to any particular service or network element or group of services or network elements. C&W has the onus to prove the specific nature and magnitude of any forward-looking common costs. A reasonable assignment of common costs should be applied to all services and network

elements regardless of whether the purpose of the FLLRIC cost is a "price floor" or a "price ceiling".

d. Transparency

56. C&W stated that "transparency implies that the processes for generating cost information are clear and understandable, and that the numbers are objective and based on verifiable data. Transparency enhances the credibility of the costing information, and therefore its value. Where the processes for producing the costing information are clear and understandable, and the cost information is objective and verifiable, there is a higher level of confidence that the information is free of manipulation."[13] However, C&W believed that only the Authority or a third party auditor engaged by the Authority needed to view the detailed cost inputs and to verify that the model accurately reflected the FLLRIC principles and guidelines.

57. Cingular agreed with C&W generally, but added that "transparency requires C&W to provide all parties in this proceeding fully functional versions of all cost models relevant to the determination of prices, including any and all source information for inputs and assumptions to that model (under relevant confidentiality agreements, if necessary)."[14] Cingular stated that "without the ability to closely scrutinize the cost models and support materials, it will be impossible to verify the accuracy of the models inputs or outputs. To the extent C&W is unable or unwilling to provide to interested parties particular elements of the cost model or support, those elements should be purged from the FLLRIC model and replaced with modules or information the parties can evaluate and verify."[14]

58. Digicel agreed with Cingular that C&W's proposed transparency principle should be modified to address the need for other parties to view the results of the FLLRIC model. Digicel stated that this was in light of the fact that, in the past, it had discovered that C&W had misallocated costs in its fully allocated cost model.

59. Digicel stated that, at the very minimum, the Authority should be represented at all meetings held between C&W and its eventual consultants and that C&W's consultants should be asked to keep the Authority abreast of any and all correspondence between C&W and themselves. Finally, Digicel stated that if it was expected to contribute to the cost of the FLLRIC model, it should have the opportunity to input in the tendering and interviewing process and choice of consultant used by C&W.

[13] C&W Updated Proposal, paragraph 2.1 d).
[14] Cingular Comments, page 7.

60. In its reply comments, C&W noted that none of the interveners stated it was necessary for them to review the intermediate results during the implementation of FLLRIC. The company said that not only would this be impractical but also that intermediate results from an incomplete FLLRIC model were immaterial and irrelevant. The key, the company stated, was that the FLLRIC comported with the principles and guidelines set out by the Authority. C&W stated that it agreed with the other parties that the completed FLLRIC model must be sufficiently transparent to verify that it reflects the principles and guidelines set forth by the Authority.

61. C&W agreed with Digicel's suggestion in principle, however, C&W qualified its agreement by stating that it would not be adverse to the Authority being present at all significant project meetings between C&W and its consultants. C&W also stated that if its consultant had any questions interpreting the phase one principles and guidelines, such questions should be resolved in a public manner and the parties to the proceeding should have the opportunity to comment on the implementation questions. Finally, C&W stated that notwithstanding its concessions above, it maintained that all company-specific data must be kept confidential.

62. The ICTA notes that compliance with principles and guidelines are a first and important step in developing cost-based rates. In addition, the process used to generate FLLRIC cost information must be transparent in order to ensure that the methodology accurately reflects the FLLRIC principles and guidelines. In this context, transparency means that the processes for generating cost information are clear and understandable, that the numbers are objective and based on verifiable data, and that any models used in the FLLRIC process are fully documented.

63. The Authority is aware of the need to balance the commercial sensitivity and competitive value of certain information and the ability for competitors to scrutinise and call into question costs that they must pay. In particular, the Authority must weigh the benefit of putting commercially sensitive information on the public record against the harm that such disclosure may cause a Licensee, such as the incumbent. Placing information on the public record is all the more important where it concerns rates for services or network elements for which Licensees have few or no practical alternatives other than using those offered by the incumbent. For this reason, the Authority is pre-disposed to allowing parties to have sight of the final costing methodology, including the underlying actual data used, for services covered under the Interconnection and Access to Infrastructure Sharing Regulations, provided the interveners sign the appropriate non-disclosure agreements and undertake to strictly adhere to such arrangements. See section IV below for further detail.

64. The Authority notes and accepts C&W's proposal that the Authority be present at significant project meetings between the company and its consultant.

65. Accordingly, the Authority determines the following principle is appropriate:

Principle 11: The process used to generate FLLRIC cost information should be transparent. In this context, transparency means that the processes for generating cost information are clear and understandable, that the numbers are objective and based on verifiable data, and that any models used in the FLLRIC process are fully documented.

e. Burden of Proof

66. C&W stated in its reply comments that it believed that it is the Authority's responsibility to confirm that implementation of the FLLRIC cost study accurately reflects the phase one principles and guidelines: "Thus, we do not agree that the burden of proof should lie solely with C&W. The implication of this is that the FLLRIC model must, however, be transparent enough that the Authority or any third-party can verify that the Authority's principles have been implemented."[15]

67. Digicel stated throughout its evidence that C&W should not, of its own accord, decide whether to implement a principle or guideline in a particular manner; rather, at a very minimum, the Authority should be invited to attend all meetings and should have the right to seek separate reports from C&W's consultant.

68. The "burden of proof" issue was raised by the Authority in the public consultation document and there appears to be some confusion over what was intended by the issue. The phase one principles and guidelines are not intended to be, nor should they be, specified to the level of detail, where development of the FLLRIC model becomes a mere programming exercise. Not only would the information requirements to do so be significant, it would excessively and unnecessarily prolong the development and implementation of FLLRIC.

69. It is commonplace in other jurisdictions that have implemented incremental costing rules to place the burden of proof on the carrier to show that the incremental costing methodology complies with approved principles and guidelines. While the incumbent may view this as a risky proposition, it also provides a check that is not unreasonable in the implementation of the phase one principles and guidelines. The incumbent is incented to develop the model in as transparent a fashion as possible and to exercise reasonableness in its choice of assumptions and underlying methodologies.

70. It should be of considerable benefit that use can be made of similar costing exercises undertaken in other jurisdictions. For example, TeleCayman, in its comments, noted that a similar costing exercise was being undertaken by the

[15] C&W Reply Comments, pages 11-12.

Regional Tariff Group for Latin American and the Caribbean under ITU Study Group 3. In Annex 5 to C&W's Licence, paragraph 48 states that "... The parties intend that the form of the FLLRIC model may draw on elements of the Canadian Phase II methodology." It is noted that C&W, the other parties and the Authority have already drawn lessons from the costing exercises undertaken by the federal regulators in the U.S. and Canada, as evidenced by the degree of agreement among the parties on the principles and guidelines. For this reason, as well as for cost containment purposes, in the implementation phase of this proceeding, C&W is encouraged to make use of LRIC models from other jurisdictions.

71. Accordingly, the Authority determines the following principle is appropriate:

Principle 12: C&W has the onus to establish to the satisfaction of the Authority that its costing methodology complies with the approved FLLRIC principles and guidelines and produces reasonable results.

FLLRIC General Methods & Assumptions

72. Given that general modelling methods and assumptions were discussed largely in the abstract, without supporting data particular to the Cayman Islands, the Authority believes it is more reasonable to issue the following as guidelines and not principles. These guidelines are intended to assist C&W in furthering its assessment of how to best develop its costing methodology, including possibly making use of a LRIC model from another jurisdiction. The Authority will make a final determination on the model methods and assumptions in phase two of this proceeding.

a. Methods for Modelling Network and Retail Costs

73. In its updated proposal, C&W proposed that a bottom-up approach be used for modelling network costs and a top-down approach be used to determine non-network costs. C&W referred to this as a "hybrid approach."

Network Capital Costs

74. C&W proposed to model the FLLRIC costs using a bottom-up model. However, it also proposed that the top-down costs be reconciled with the bottom-up model, "... solely to provide some assurance that the bottom-up model accurately reflects the actual costs that would be incurred by an efficient operator, and that the theoretic design of the network does not stray from the other relevant factors

influencing cost in a specific market."[16] The company also stated that it did not plan to build a full top-down LRIC model to reconcile the results of the bottom-up model with a current costing of C&W accounts.

75. Cingular agreed, in its comments, that the "bottom-up" approach to estimating network capital costs is most compatible with a forward-looking cost standard. However, it strongly opposed incorporating the concept of top-down reconciliation, stating this was entirely inconsistent with bottom-up modelling. "To adjust the bottom-up model to better comport with the less accurate top-down model necessarily degrades the quality of the estimate of forward-looking cost."[17] "Any observed difference between the bottom-up and top-down result proves only that the top-down methodology is incorrect or incomplete."[17]

76. Digicel, on the other hand, agreed with C&W's approach, provided that the reconciliation to existing costs was made in reference to the capital costs for a GSM (not TDMA) network.

77. The Authority agrees with parties that a "bottom-up" methodology is more consistent with the theoretical principles underlying FLLRIC. By contrast, a "top-down" approach where the network costs that have actually been incurred are spread between the services that use the network.

78. C&W's proposed reconciliation between a top-down and a bottom-up model would be contrary to Principle 2 above which states that "forward-looking costs ignore embedded or historical costs; rather they are based on the least cost technology currently available ... ." Moreover, it is unlikely that a reconciliation, partial or full, to top-down costs would be useful. Given the forward-looking nature of a bottom-up approach, differences would be expected between a top-down and bottom-up approach. However, if adjustments were made to the bottom-up results to account for such differences, this would potentially taint the results and lead to less economically efficient prices.

79. In consideration of the above, the Authority provides the following guidelines.

Guideline 1: The FLLRIC of a service or network element should be developed using a bottom-up methodology. That is, costs should be built up from the costs of the components that would be required in order to deliver those services or elements. The bottom-up approach requires the following steps:

a. specifying the components necessary to provide the volume increment,

[16] C&W Reply Comments, page 13.
[17] Cingular Comments, page 13.

b. estimating the volume increment and required capacity of each of these components,
c. dimensioning the components to serve the estimated increment on an efficient, forward-looking basis,
d. determining the cost of different components,
e. estimating the capital costs and operating expenses associated with the different components,
f. quantifying the unit costs of each component, and
g. aggregating the component unit costs by the use made of them by different services or network elements. Routing factors may be used for this purpose pursuant to the definition and requirements specified below.

Guideline 2: The modelled network should also be capable of providing a particular grade of service. The issue of the appropriate service standards for the mobile and fixed line networks and services shall be addressed in phase two of this proceeding.

Approach to Network Design

80. C&W proposed that the scorched node approach be adopted, recognising the organic nature of network growth. C&W further explained that "organic nature of the network" referred to the actual manner in which networks grow. "One of the disadvantages of a bottom-up model is that in many cases it is interpreted as an opportunity to model a 'hypothetical' network where facilities are instantaneously deployed with the most efficient technology in the most optimal network configuration. A rational telecommunications carrier, however, grows its network in a more 'organic' manner. A rational carrier will gradually replace existing facilities with new technology over time, and will expand capacity and modify its network structure incrementally to serve growing and changing demand. A LRIC model, whether bottom-up or top-down, *should* account for the real-world, 'organic' nature of network growth, but one of the disadvantages of a bottom-up model is that in many cases it does not. In the US, for example, the federal regulator is considering precisely this question in its review of TELRIC methodology and has tentatively concluded that, 'TELRIC rules should more closely account for the real-world attributes of the routing and topography of an incumbent's network in the development of forward-looking costs'."[18]

81. Cingular stated that the main difference between the two methodologies, total service long run incremental cost ("TSLRIC"), and growth long-run incremental cost ("GLRIC") is that GLRIC assumes that a network already exists whereas in TSLRIC, the existence of an embedded network is ignored. It added that the choice of methodology was a fall-out of the number of assumptions one made

[18] C&W Response to ICTA Interrogatory 1-22.

with respect to the network: the more "constraints", the stronger the case was for GLRIC.

82. Cingular stated that the FLLRIC model would more accurately estimate forward-looking costs, the fewer constraints one imposed on the model. If existing locations can be shown to be reasonably consistent with those produced from a "scorched earth" optimization routine, Cingular would not object to locating switching nodes in their current locations. However, it stated that evidence of consistency between the two approaches should be presented to the parties to evaluate. "C&W's proposal does not present a consistent treatment of network topology (i.e., scorched node) and the means by which to measure of [sic] the increment (i.e., TSLRIC). However, in response to Interrogatories, C&W appears to be amenable to a 'scorched earth' approach."[19]

83. Digicel generally agreed with C&W's use of scorched node approach, provided a mark-up is made in C&W's mobile model to reflect the real-world assumptions that entrants cannot duplicate this network. "... Digicel (or AT&T) cannot possible replicate this network given that it [Digicel] is forced to collocate on sites with C&W. … There is no point in making unrealistic assumptions about the optimal deployment of capital at nodes in Cayman if the planning laws of the country simply do not allow for such a replication."[20]

84. In its reply, C&W stated that there was no support for Cingular's statement that the use of GLRIC and TSLRIC depends on the decision about whether to use "scorched earth" or "scorched node" approach. "Indeed, in the US, the federal regulator adopted a TSLRIC model that employs a 'scorched node' assumption. Similarly, we have proposed a TSLRIC model in the Cayman Islands with a 'scorched node' assumption, taking into account the organic growth of networks."[21]

85. For the reasons stated at the beginning of this item, there was considerable confusion among the parties as to what C&W intended by its proposal and what the implications were for costs. It was also unclear from C&W's response to ICTA interrogatories as to what its proposal to recognise "the organic nature of network growth and the nature of coverage conditions" meant in terms of modelling network costs. As a result, the Authority is pre-disposed to adopting much simpler assumptions concerning the network to be modelled.

86. At the same time, given Principle 3, the Authority agrees that the forward-looking cost methodology should more closely account for the constraints faced by an efficient carrier operating in the Cayman Islands for the first time. Hence, given that all Licensees except for C&W are required to locate their mobile switches in the Cayman Islands, it is reasonable that C&W be required to

[19] Cingular Comments, page 12.
[20] Digicel Comments, page 13.
[21] C&W Reply Comments, page 15.

develop a stand-alone mobile model. Its mobile model should make reasonable assumptions with respect to the number of shared towers and number of stand-alone towers, which are generally reflective of the forward-looking costs of new mobile entrants.

87. In consideration of the above, the Authority provides the following guidelines.

Guideline 3: The FLLRIC study shall be based upon the locations of, and planned locational changes to, the existing central office and facilities configuration. "Facilities" shall be interpreted to include feeder routes, central offices, drop wire, network interface devices, and other specific items that make up the facilities of a telecommunications company. This is referred to as the "scorched node" approach. The adoption of this approach does not imply that the modelled equipment located at the network nodes is of the same type or function as the equipment currently situated at those locations; however, the locations themselves are retained.

Guideline 4: Carriers are constantly upgrading, developing and refining their networks. As a result, a carrier's network will at any time include a range of technologies and vintages of equipment types, all of which must interwork. A FLLRIC approach, however, should approximate those costs that would be faced by a new carrier investing in the network at the time of the study. Thus, it is assumed that the network will be fully constructed using the current generation of technology, without any allowance for the need to interwork with previous generations. This is referred to the "instantaneous build" approach.

b. Size of the Increment

88. C&W proposed that the FLLRIC methodology should model the total service increment as opposed to a growth increment.

89. As noted in the previous item, Cingular's concern was one of consistency between the service increment modelled and the network topology assumed: if one used TSLRIC, one should assume a scorched earth network topology; if one used a GLRIC methodology, one should assume a scorched node network topology.

90. Digicel agreed in principle with the use of TSLRIC where TSLRIC costs are calculated for discrete fixed and mobile services. However, Digicel stated that it would be an optimal strategy for the Cayman Islands if settlement rates were kept as high as possible. If TSLRIC costs are higher than international rates, the

"shortfall in cost recovery needs to be accounted for in the form of a mark-up to the cost of domestic termination services."[22]

91. The term "total service," in the context of TSLRIC, indicates that the relevant increment is the entire quantity of the service that a company produces, rather than just a marginal increment over and above a given level of production. Depending on the services that are the subject of a study, TSLRIC may be for a single service or a class of similar services. TSLRIC includes the incremental costs of dedicated facilities and operations that are used only by the service in question.

92. In consideration of the above, the Authority provides the following guideline.

Guideline 5: The increment to be modelled is the total service increment.

c. Network and Non-network Operating Costs

93. C&W proposed that operating costs (exclusive of depreciation) should be derived from actual costs allocated through an activity-based costing ("ABC") system. "That is, operating costs should be included in the model on a top-down basis being reconcilable to the Company's general ledger."[23]

94. Cingular opposed the top-down approach to determining network operating costs primarily because operating costs are correlated with the network assets to which they are associated. Moreover, it stated that applying two different approaches (bottom-up for capital and top-down for operating expenses) was inconsistent. If top-down was used for estimating service operating costs, one runs the risk of over-stating expenses since they would be related to embedded/current network rather than the forward-looking network.

95. Cingular stated that, at a minimum, C&W's proposal was premature. "Clearly, it is absurd to decide *a priori* that current expenses are suitable proxies for a forward-looking network whose characteristics, including its size, topology and technology, have yet to be determined."[24]

96. Cingular was sceptical of C&W's proposed use of ABC methodology. To Cingular, it was unclear whether C&W proposed to use its ABC methodology to allocate or to determine expenses. Cingular was concerned that C&W's ABC methodology would not be transparent, verifiable or replicable and, in light of this, stated that it reserved judgement on the use of C&W's ABC methodology until its purpose was more clearly stated or when transparency of the methodology could be assessed more fully.

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[22] Digicel Comments, page 10.
[23] C&W Updated Proposal, paragraph 3.40 and C&W Reply Comments, page 21.
[24] Cingular Comments, page 15.

97. Cingular stated that a bottom-up approach to both capital costs and capital operating costs is widely accepted, where capital operating costs are typically estimated using expense factors that are the ratio of current expenses, adjusted for efficiencies, to the current value of the embedded network and multiplying the expense ratios by the forward-looking investment in the network. "The provision of multiple services may allow C&W to allocate its existing expenses to particular elements and services in order to strategically benefit its business by raising the cost of rivals or giving greater retail pricing flexibility on particular services (by affecting the imputation test). A bottom-up calculation of expenses should attenuate strategic cost allocation by C&W."[25]

98. Cingular stated that C&W provided no explanation for why it preferred a top-down approach for network operating costs. Given the inconsistency of the top-down approach and lack of rationale, Cingular proposed using a bottom-up approach for network operating and maintenance expenses.

99. Digicel opposed the use of ABC as an allocation methodology, if the allocation was going to be left to the discretion of C&W. "C&W has noted that the ABC approach is currently used in its FAC [fully-allocated cost model] – this highlights exactly why Digicel is opposed to this methodology, given the complete misallocation of costs in that model."[26] In the event the Authority determined that C&W's proposed ABC methodology was appropriate, Digicel stated that it should be allowed full sight of such cost allocation in order that it can make as full and reasoned a response as possible on the issue with reference to its own operating expenses.

100. Digicel also added that any forward-looking efficiency adjustments that were made must be attainable by all three mobile operators. "Any efficiency adjustments must be consulted on and determined solely by the Authority following this consultative process rather than allowing C&W or its consultants to make assumptions."[26]

101. In its reply, C&W stated that it was not opposed to Cingular's proposal that expense factors be adopted in developing network costs for the FLLRIC model. It noted that this approach was not inconsistent with its own proposal. However, it disagreed that the expense factors should be benchmarked, as this would be a complex and time-consuming exercise.

102. In theory, the monthly operating cost should be calculated by estimating the total forward-looking operating expense associated with a particular network element (e.g., by conducting time and motion studies of likely maintenance activities) and then dividing the total operating expense by the appropriate number of units,

[25] Cingular Comments, page 16.
[26] Digicel Comments, page 11.

such as lines, to obtain the expected average operating expense. Such an approach is difficult to implement in practice, however, so regulators often require carriers to estimate projected operating expenses by multiplying the projected investment in the network by an annual cost factor ("ACF"). An ACF typically is a ratio of current expenses to current investment for a particular account. The ratio, which is then sometimes adjusted, is multiplied by the projected investment to obtain the projected expenses. An alternative method of calculating monthly operating costs is to look at current operating expenses and make any adjustments to reflect anticipated experience in the period for which the projection is made, such as adjustments for productivity and inflation.

103. The Authority agrees with Cingular's comments that the calculation of operating costs should be developed based on a bottom-up approach. The Authority also considers that the use of expense factors, adjusted for expected productivity gains, is a reasonable method of estimating operating costs. However, expense factors shall be based on historical costs only to the extent that it can be demonstrated that those historical costs are relevant to the study of forward-looking costs. This is consistent with Principle 2. Consistent with Principle 12, C&W has the onus to demonstrate that any historical cost information that it proposes to use for estimating FLLRIC costs is relevant and appropriate.

104. The Authority agrees that it would be a very useful exercise to review expense factors from carriers in other jurisdictions where competition exists. In the Authority's view, this would be a good indication of the reasonableness of C&W's factors vis-à-vis those of other world-class carriers in competitive environments. Accordingly, in the next phase of this proceeding parties are requested to provide, to the best of their ability, any information from other jurisdictions regarding the determination and level of expense factors. Parties are also asked to provide information supporting the applicability of such factors to the Cayman Islands and whether any adjustments would be necessary in order to apply such factors to the Cayman Islands.

105. C&W also proposed estimating its non-network costs on a top-down basis, where those costs could be reconciled to the operating costs in the company's general ledger.

106. Cingular was not opposed to C&W's proposed approach to estimating costs of retail services for two reasons: 1) it was not capital intensive and 2) current costs were likely to be similar to forward-looking costs. However, it added that the costs of retail services should reflect the expected market structure of the industry to which it applied. "Retail costs may be higher (or lower) in a competitive market than a monopolistic one, so historical or current data may need to be adjusted to reflect any differences between the current/historical and the expected market structure with which they will be associated."[27]

[27] Cingular Comments, page 17.

107. Digicel agreed with C&W's approach for estimating costs of retail services, but re-iterated its view that the Authority must be involved at every stage.

108. As with network operating costs, the Authority considers that non-network operating costs should be estimated bottom-up to be consistent with the forward-looking nature of the incremental costing method.

109. In consideration of the above, the Authority provides the following guideline.

Guideline 6: If cost factors are based on historical data, historic averages or rely on ABC, C&W must provide the underlying supporting studies, analysis and documentation showing that those historical data, historic averages or the ABC relationships are relevant to the study of forward-looking costs.

d. Asset Lives and Depreciation Expense

110. C&W proposed that an asset's depreciation life be based on its economic life as opposed to a life determined for regulatory purposes, and that the asset lives C&W uses for its audited financial reports serve that purpose. In addition, C&W maintained that a tilted annuity approach that captures price trends of assets, most closely approximates economic depreciation given the alternatives.

111. Cingular stated that, ideally, one should use economic depreciation rather than arbitrary schedules. However, some effort needs to be made to estimate the actual economic life of an asset. Because actual economic lives are often difficult to estimate, benchmarks should be used as a check of reasonableness and in some cases, financial lives may be used as a benchmark assumption. Finally, Cingular proposed that straight-line depreciation be used.

112. Economic depreciation is a method of reflecting anticipated declines in the value of an asset over the course of its useful life. If equipment prices are expected to decline over time, the value of equipment currently in use in the network (and therefore the price under a forward-looking methodology) should decline over time at the same rate. There are two main components of depreciation: the useful life of the asset, and the rate at which the asset is depreciated over that useful life.

113. The asset lives used in FLLRIC analysis for purposes of determining depreciation expense should be forward-looking and should reflect the projected useful lives considering market factors and forecasted technological obsolescence of the current generation of technology. Economic lives may be based on international benchmarks, forecasts of technological obsolescence and current accounting practices.

114. In order to establish a reasonable starting point for developing the methodology for calculating depreciation expense to be used for FLLRIC, C&W is requested to provide a list of economic asset lives along with supporting asset life studies.

115. The Authority is not inclined to endorse the tilted annuity approach proposed by C&W simply because insufficient information was provided as to the complexity and impact of this approach.

116. Because capital equipment is useful for more than one year, a life estimate is normally developed for each piece of equipment. Usually, depreciation studies are conducted to estimate the retirement pattern of equipment and its associated economic life. Wear and tear, decay and obsolescence are some of the factors that result in the retirement of plant from service. This pattern of retirement is also known as the survivor curve.

117. From the retirement pattern, the Average Service Life (ASL) of the equipment is calculated. The ASL for a particular depreciation category represents the past, realized life of equipment in that category, plus an estimate of future life expectancy of the surviving investment. ASL is considered the best estimate of the economic life for equipment. Unless it can be shown that the asset lives used by C&W in its audited financial reports are supported by such studies, the Authority is not inclined to rely on asset lives in the company's financial reports.

118. In consideration of the above, the Authority provides the following guideline.

Guideline 7: Each FLLRIC study shall identify and provide a basis for the projected economic life used to calculate depreciation costs of the equipment involved in providing the service or element or group of services or elements.

e. Cost of Capital

119. In its updated proposal, C&W proposed that a weighted average cost of capital ("WACC") of 13.5% be used in the FLLRIC model. However, in a later submission, C&W proposed that the appropriate measure of cost of capital to use in the FLLRIC model is WACC and agreed with Cingular that the magnitude of WACC to be included in FLLRIC should be determined in phase two.

120. Cingular disagreed with C&W's proposed 13.5% cost of capital for the following reasons: there was no evidence that it is an appropriate assumption to use for C&W's cost of capital, and even the information that C&W presented showed many examples where 13.5% was higher than the approved cost of capital in other jurisdictions. Cingular recommended that the issue be dealt with in phase two of this proceeding.

121. Digicel stated that, if interconnection rates were to be reciprocal, it was necessary that the Authority use the highest WACC of the three mobile operators in the Cayman Islands. "In the event that the Authority does not use the highest cost of capital of the three mobile operators in the Cayman Islands, then it is *'de facto'* not allowing such operators to recover their legitimate costs."[28]

122. FLLRIC should allow a carrier to earn a reasonable return on its investment, equivalent to a current weighted average cost of capital ("WACC"). WACC is used synonymously with the general term cost of capital where the cost of capital is a forward-looking estimate that represents expectations of return on equity and debt.

123. The Authority agrees with C&W and Cingular that no evidence was provided supporting C&W's original proposed 13.5% WACC and that an appropriate WACC should be determined in phase two of the proceeding.

124. Therefore, the Authority determines that the estimated WACC should reflect the cost of capital to be incurred by a new carrier providing service for the first time (Principle 2), on a forward-looking basis. Digicel's proposal that the WACC should reflect the highest cost of capital of the three mobile operators is contrary to the efficient carrier principle of FLLRIC and, as a consequence, is not adopted.

125. In consideration of the above, the Authority provides the following guideline.

Guideline 8: FLLRIC should allow the carrier to earn a reasonable return on its investment as measured by a weighted average cost of capital ("WACC"). The carrier is required to provide support for the forward-looking WACC assumed in its FLLRIC analysis. Among other things, the carrier is required to demonstrate, with specificity, the business risks it faces in providing certain carrier services such as interconnection and access to infrastructure sharing, as contrasted to the business risks it faces when providing retail services in competition with other carriers. Alternatively, or in the absence of sufficiently robust supporting information, benchmarking analysis of the WACCs of similarly situated carriers providing comparable services may be used to support a proposed forward-looking WACC for C&W.

PHASE 2 PROCESS

126. C&W proposed a revised schedule for the remaining process in FLLRIC Phase 1 and for FLLRIC Phases 2 and 3, based on moving every date in the Authority's

[28] Digicel Comments, page 13.

17 August 2004 letter ahead by two months. As discussed in this Decision and summarised below, further process is required to resolve certain outstanding issues. As a result, C&W's proposed schedule in its reply comments is not achievable. However, as set out in this section, C&W and parties will have an opportunity to provide their input in developing the timetable for the next phase of this proceeding.

127. The following issues which are identified in this Decision, are to be resolved in Phase 2:

- final FLLRIC general methods and assumptions,
- asset lives and depreciation expense,
- expense ratios,
- reasonable rate of return (weighted average cost of capital), and
- appropriate service standards for the mobile and fixed line networks and services.

128. Concurrent with the development of a proposed set of asset lives and a proposed WACC, and subject to the Principles and Guidelines in this Decision, C&W is encouraged to investigate LRIC models in other jurisdictions to determine their application in the Cayman Islands.

129. C&W is required to implement a FLLRIC model that satisfies the above noted principles and guidelines. However, C&W shall keep the Authority abreast of the development of the model and of significant issues in a timely and accurate manner, particularly if there are issues of interpretation of how a particular principle should be implemented.

130. The Authority is minded to allow interveners to the proceeding the opportunity to assess the final costing methodology, including the underlying data, provided by C&W for services covered under the Interconnection and Access to Infrastructure Sharing Regulations, provided that interveners sign the appropriate non-disclosure agreements and undertake to strictly adhere to such arrangements.

131. For all other services, the Authority is open to considering proposals from all parties to the proceeding as to how an appropriate balance can be struck between competitors' stated need to view the underlying service cost data and the benefits thereof and the harm that may accrue to C&W, particularly given the emerging competitive environment and the fact that C&W does not have sight of similar detailed information from competitors. One solution may be that, once the FLLRIC model is developed, C&W may file the underlying data under a claim of confidentiality which would be subject to the Confidentiality Regulations. However, unless there are strong compelling reasons, it would seem reasonable that detailed service-specific cost information should be maintained in confidence, provided, in the view of the Authority, the model fully complies with

the phase one principles and guidelines. The above is merely one possible solution and does not represent the Authority's preliminary view.

132. Based on the proposed FLLRIC methodology, C&W is directed to produce a draft costing manual that meets the regulatory requirements outlined in Annex 5 of its Licence and in this Decision. The Authority also notes that sound economic costing models can assist the company in making robust business decisions and encourages the company to consider adopting a FLLRIC modelling approach that suits both its regulatory and business purposes.

133. The costing manual should describe the basic framework for conducting economic studies. It should be based on sound and widely accepted financial and economic principles.

134. The manual should address the basic principles, types of regulatory studies, market information and demand estimation, expense and capital expenditure estimation, economic evaluators, presentation of results, and updates to data and costing procedures. It should be at a level of detail such that it can serve as a general reference for personnel who are responsible for performance of economic studies, estimation of study inputs and management of projects and products.

135. The costing manual should contain a description of the costing methodology including:

- all algorithms and methodologies,
- a flow chart describing the costing process,
- any validation measures such as comparison with benchmark estimates,
- explanation of variances,
- examples to illustrate the use of the methodology, and
- a list of data sources and contacts.

136. The draft costing manual will be used by the company later in Phase 2 of this proceeding to produce studies for two services: an interconnection and access to infrastructure sharing service for interconnection pricing purposes and a retail service for imputation test purposes. A draft list of filing requirements for cost studies is given in Appendix 3.

137. By 9 September 2005, C&W is directed to identify the date by which it will be prepared to file a completed draft costing manual and to identify its estimated time frame for the completion of the two example cost studies. Other parties may provide comments on C&W's suggested time-frames by 23 September 2005. Subsequently, the Authority will issue procedures and milestones for Phase 2 of the proceeding.

Appendices:

1. Incremental Costing Principles Adopted by the Authority
2. Incremental Costing Guidelines Issued by the Authority
3. Draft Filing Requirements for Cost Studies

Appendix 1

INCREMENTAL COSTING PRINCIPLES ADOPTED BY THE AUTHORITY

Principle 1:
The FLLRIC methodology should capture those costs for services or network elements that would lead to prices found in an efficient market for provision of such elements or services. Efficient market prices are those than ensure the service provider has the opportunity to recover efficiently incurred, forward-looking costs and encourage the service provider to operate in a cost effective manner. In addition, efficient market prices should provide the right incentives for efficient facilities-based investment, entry and exit.

Principle 2:
Forward-looking costs are the costs to be incurred by a carrier in the provision of a service. These costs shall be calculated as if the service was being provided for the first time by a new carrier and shall reflect planned adjustments in the company's plant and equipment. Forward-looking costs ignore embedded or historical costs; rather, they are based on the least cost technology currently available whose cost can be reasonably estimated based on available data. As such forward-looking cost estimates must reflect technologies that are currently operational used and available in the marketplace.

Principle 3:
The forward-looking long-run incremental costs of services or network elements are to be based upon those costs assumed to be incurred by an efficient carrier operating in the Cayman Islands for the first time. A carrier is deemed to be efficient where the total capital and operating expenditures are those that are necessary and sufficient in order to meet the required demand at a particular grade of service.

Principle 4:
FLLRIC should include only those forward-looking costs that are incurred as a direct result of providing the service or network element in question. These are referred to as "causal" costs. Conversely, only costs that could be avoided by not offering the service or network element should be included in FLLRIC.

Principle 5:
Costs that remain the same whether or not the relevant course of action (e.g., proposed introduction of a new service, proposed reduction or increase in rates, or other changes to existing services) is undertaken are not causal to the course of action and therefore are not taken into account in calculating the incremental costs associated with that course of action. Since costs and revenues that have been realized prior to the start of the course of action cannot be affected by that course of action, incremental costs and revenues do not consider cost and revenue components prior to the course of action. Historical or sunk costs are an example of this type of cost because no action after a decision point can affect costs already incurred prior to that decision point.

Principle 6:
A FLLRIC study should include all relevant service or element-specific start-up costs, including installation costs.

Principle 7:
The FLLRIC of a service or network element should include both volume-sensitive and non-volume sensitive costs.

Principle 8:
The FLLRIC of a service or network element is the forward-looking additional costs incurred by an efficient company to provide the entire output of a service or network element, including any required additional resources such as labour, plant, and equipment. These are the direct incremental costs of providing a service. FLLRIC excludes any costs, including any common costs that would be incurred if the service is not produced.

Principle 9:
Long-run costs are the economic costs over a planning horizon long enough so that there are no sunk inputs or costs.

Principle 10:
Common costs are those costs that a carrier must incur in order to operate and are not directly attributable to any particular service or network element or group of services or network elements. C&W has the onus to prove the specific nature and magnitude of any forward-looking common costs. A reasonable assignment of common costs should be applied to all services and network elements regardless of whether the purpose of the FLLRIC cost is a "price floor" or a "price ceiling".

Principle 11:
The process used to generate FLLRIC cost information should be transparent. In this context, transparency means that the processes for generating cost information are clear and understandable, that the numbers are objective and based on verifiable data, and that any models used in the FLLRIC process are fully documented.

Principle 12:
C&W has the onus to establish to the satisfaction of the Authority that its costing methodology complies with the approved FLLRIC principles and guidelines and produces reasonable results.

Appendix 2

INCREMENTAL COSTING GUIDELINES ISSUED BY THE AUTHORITY

Guideline 1:
The FLLRIC of a service or network element should be developed using a bottom-up methodology. That is, costs should be built up from the costs of the components that would be required in order to deliver those services or elements. The bottom-up approach requires the following steps:

a. specifying the components necessary to provide the volume increment,
b. estimating the volume increment and required capacity of each of these components,
c. dimensioning the components to serve the estimated increment on an efficient, forward-looking basis,
d. determining the cost of different components,
e. estimating the capital costs and operating expenses associated with the different components,
f. quantifying the unit costs of each component, and
g. aggregating the component unit costs by the use made of them by different services or network elements. Routing factors may be used for this purpose pursuant to the definition and requirements specified below.

Guideline 2:
The modelled network should also be capable of providing a particular grade of service. The issue of the appropriate service standards for the mobile and fixed line networks and services shall be addressed in phase two of this proceeding.

Guideline 3:
The FLLRIC study shall be based upon the locations of, and planned locational changes to, the existing central office and facilities configuration. "Facilities" shall be interpreted to include feeder routes, central offices, drop wire, network interface devices, and other specific items that make up the facilities of a telecommunications company. This is referred to as the "scorched node" approach. The adoption of this approach does not imply that the modelled equipment located at the network nodes is of the same type or function as the equipment currently situated at those locations; however, the locations themselves are retained.

Guideline 4:
Carriers are constantly upgrading, developing and refining their networks. As a result, a carrier's network will at any time include a range of technologies and vintages of equipment types, all of which must interwork. A FLLRIC approach, however, should approximate those costs that would be faced by a new carrier investing in the network at the time of the study. Thus, it is assumed that the network will be fully constructed using the current generation of technology, without any allowance for the need to interwork with previous generations. This is referred to the "instantaneous build" approach.

Guideline 5:
The increment to be modelled is the total service increment.

Guideline 6:
If cost factors are based on historical data, historic averages or rely on ABC, C&W must provide the underlying supporting studies, analysis and documentation showing that those historical data, historic averages or the ABC relationships are relevant to the study of forward-looking costs.

Guideline 7:
Each FLLRIC study shall identify and provide a basis for the projected economic life used to calculate depreciation costs of the equipment involved in providing the service or element or group of services or elements.

Guideline 8:
FLLRIC should allow the carrier to earn a reasonable return on its investment as measured by a weighted average cost of capital ("WACC"). The carrier is required to provide support for the forward-looking WACC assumed in its FLLRIC analysis. Among other things, the carrier is required to demonstrate, with specificity, the business risks it faces in providing certain carrier services such as interconnection and access to infrastructure sharing, as contrasted to the business risks it faces when providing retail services in competition with other carriers. Alternatively, or in the absence of sufficiently robust supporting information, benchmarking analysis of the WACCs of similarly situated carriers providing comparable services may be used to support a proposed forward-looking WACC for C&W.

DRAFT FILING REQUIREMENTS FOR COST STUDIES

1. The following is draft list of filing requirements that a service or element cost study should address:

Study report

2. The study purpose, service description, assumptions and study results are summarized in a study report for submission to the Authority. A FLLRIC study shall be filed with the ICTA under the following circumstances:
   - to support rates for interconnection and access to infrastructure sharing services,
   - to determine C&W's price floor for retail services, and
   - to identify any access deficit.

Service description

3. Each cost study shall include a definition of the service or element being studied. This definition shall be in terms of technical characteristics, functionality, application, targeted market, and availability. The component costs of the network element or of the service shall also be defined.

4. For example, the FLLRIC study must explain with specificity why and how specific functions are necessary to provide interconnection and access to infrastructure sharing services and how the associated costs were developed. Only those costs that would be incurred on a forward-looking basis in the provision of the above-noted services in the long-run shall be directly attributable to the services.

Transparency

5. The process used to generate FLLRIC cost information should be transparent. This means that the processes for generating cost information are clear and understandable, and that the numbers are objective and based on verifiable data. In addition, any models used in the FLLRIC process should be fully documented with respect to user instructions, methodology, algorithms and assumptions employed. In addition, models used to estimate FLLRIC for interconnection and access to infrastructure sharing services should be capable of being made available and run by the ICTA and affected parties. The provision of the model to affected parties will be subject to appropriate non-disclosure agreements.

Planning Horizon

6. Each FLLRIC study shall identify and provide a basis for the planning horizon used in the study. The long run approach as described in Principle 9 ensures that rates recover not only the operating costs that vary in the short run, but also fixed investment costs that, while not variable in the short term, are necessary inputs directly attributable to providing the network service or element.

Input prices

7. Each FLLRIC study shall approximate input prices (e.g., the prices for materials, labour, and capital) that a new carrier investing in the network at the time of the study would actually be expected to face. C&W shall provide a breakdown of the material involved in supplying the service. The labour component should consist of the labour required to install and put into service, capital assets.

8. C&W shall provide the underlying bases for projected changes in input price levels, using, wherever possible and assuming sufficient support exists, projections based on market expectations and rates set in labour contracts. Where appropriate and assuming sufficient support exists, costs shall be based on prevailing vendor prices or vendor prices under consideration that reflect volume discounts or term discounts off listed input prices. These discounts shall be reflected in the cost study.

Operating Expenses

9. Each FLLRIC study should identify and describe the basis for each operating expense cost estimate. If factors are used, the filing carrier must describe the development and basis of all factors utilized. If the filing carrier relies on ABC based operating cost estimates, the filing carrier must provide any underlying ABC supporting studies, analysis and documentation.

Cost Factors

10. All factors used to estimate costs, such as maintenance, labour costs, depreciation rates, utilisation factors, routing factors, etc. and their bases shall be described in the FLLRIC study. Any such factors shall be based upon historical costs only to the extent that it can be demonstrated that those historical costs are relevant to the study of forward-looking costs.

Utilization Factors

11. Utilisation factors or fill factors measure the forward-looking efficient utilisation of capital resources relative to the available capacity provided by the resource. Hence, investment should reflect efficiently provided spare capacity.

12. Investment may be adjusted to reflect the utilisation by dividing the dollar amount of investment by a utilisation factor. Or alternatively, depending on the particular modelling approach employed, unit costs may be derived by dividing the total cost of the modelled network, including investment in spare capacity, by a reasonable estimate of the forward-looking demand for the service or element in question. In the case of usage-based services or elements, the network should be sized to provide the appropriate level of capacity at the appropriate busy hour.

Routing Factors

13. A key component of FLLRIC modelling is network usage or routing factors. Routing factors should reflect how various services and network elements use the underlying network components identified in bottom-up cost analysis. Further, in addition to providing the translation of service or network element demand into network demand, they also form part of the denominator used to define unit network element costs as well as the multiplier used to translate network element costs into interconnection and other service costs. As such, the same routing assumptions and routing factors should be consistently used in all FLLRIC cost studies.

Cost of Capital

14. Each FLLRIC study shall identify and provide the basis for the WACC used in the analysis.

15. The WACC reflects a reasonable profit to be recovered by the incumbent in the prices of its services

16. The use of WACC should be symmetrical when costing both interconnection and retail services: that is, a WACC should be included as a cost in the imputation test for retail services as well as in the costing for interconnection and infrastructure sharing services.

Depreciation

17. Each FLLRIC study shall identify and provide a basis for the projected economic life used to calculate depreciation costs of the equipment involved in providing the service or element or group of services or elements.

Shared and Common Costs

18. Each FLLRIC study should identify and describe the basis for each shared and/or common cost estimate. If factors are used, the filing carrier must describe the development and basis of all factors utilised.

Demand Information

19. The carrier shall provide the demand figures and/or forecasts used in the FLLRIC computations and an explanation detailing the explicit and implicit assumptions and methods used to derive the figures and/or forecasts.

Burden of Proof

20. The filing carrier bears the burden of proof and must demonstrate that any FLLRIC study filed with the ICTA meets the requirements set forth in the approved Principles and Guidelines and Costing Filing Requirements.