C&W Cayman Islands Response to ICTA/Telcordia Round 2 LRIC Interrogatories

Questions

2.1.1   As per the terminology above, the difference between Fixed Common and Joint Costs is that FCCs are fixed with respect to volume whereas Joint Costs are variable.

        a. Do C&W's Fixed and Mobile Models provide the same treatment to FCCs and Joint Costs (or, in other words, do they treat FCCs and Joint Costs as if they were the same thing)? If so, please explain why.

C&W Response

The C&W Fixed and Mobile models do distinguish between fixed common and variable common costs (which appears effectively to be the distinction between fixed common and joint costs as Telcordia uses them). It should be noted that the models do this for those costs that are shared network-wide. One can see the values in the "Total Mark-up" sheet of the Consolidation file. "BU-F Common Fixed" in columns K-N and "BU-M Common Fixed" in columns O-Q provide the network-wide fixed common costs. "BU-F Common Variable" in columns W-Z and "BU-M Common Variable" in columns AA-AD provide the network-wide Joint Costs.

At the level of service group (what we have referred to as ISFCs), the distinction between fixed and variable common or joint cost is not made. We did not feel this necessary for a number of reasons. First, it is likely that in most cases the distinction would not appreciably alter the results. The classic example of joint costs in telecommunications is peak demand dimensioned capacity. This is to say, that if the capacity of the network is dimensioned to produce an additional peak hour demand, additional minutes of traffic are inherently available for every other hour of the day. The cost of this additional capacity is being averaged across all traffic using the capacity anyway in the mark-up.

Secondly, attempting to make the distinction can lead to further questions and complications. For example, as Berg and Tschirhart (1988) wrote,

> …if the telephone company increases the number of circuits between two points, then the increased capacity is available equally to day and nighttime calls. Thus, the investment involves a joint cost (fixed output proportions). However, the peak capacity provides varying proportions of residential and business calls - so for a given rating period it represents a common cost…[1]

Similarly, where the distinction may be quite significant, e.g., the local loop, the Authority is likely to have a number of different policy considerations that it will want to take into account that are likely to be more appropriate to deal with in a separate proceeding.

Thirdly, it is quite usual in costing to disregard the differences between these fixed and joint costs. Please see, for example, the British Telecom, Primary Accounting Documents, 2 September 2005 (page 49), where the distinction between the two types of costs is made in both the fully allocated

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[1] Natural Monopoly regulation, Cambridge University Press, p. 92, footnote 10.

cost and LRIC context, but both are treated as Fixed Common Costs (FCC). We attach the document as Appendix I.

b. Are the Bottom-up models able to identify what portion of these costs is fixed (with respect to volume) and what portion is variable? Please explain how.

C&W Response

Again, the models do break down the common costs into volume-variable and non-volume variable for the network-wide common costs. That breakdown does not exist for the common costs of the service groups, i.e. access and traffic in the fixed model, and subscriber and traffic in the mobile model.

2.1.2 As per the terminology above, the difference between ISFCs and FCCs is that ISFCs can only be attributed to a single increment whereas FCCs are costs shared by two or more increments.

a. Are the Bottom-up models able to identify the ISFCs (fixed with respect to volume) associated with each Increment/Service? Please explain how.

C&W Response

Before we address the specific question, we want to address the possible confusion over terms. Telcordia has defined the term "Increment-Specific Fixed Costs" as those costs which do not vary with a particular driver volume, but which can be attributed to a single increment. C&W used this term to refer to common costs of a service group to which in belongs (in the fixed case, this will be either access or traffic). Those common costs may be either fixed or variable. Also, an ISFC would not refer to the fixed costs of an increment if the increment was a single service.

With respect to the Bottom-up models, yes, they do identify the ISFCs associated with each service group. It does this by setting service levels iteratively. It first calculates the total cost of the network with each service at each volume. Call this A. Then, service by service, it sets individual volumes to zero (Call this B_i for each service i). The difference between the total cost at full service volume (A) and the total cost when service i is set at zero B_i, ie. $A - B_i$ is service i's pure LRIC. The model then determines the ISFCs. It sets all the volumes of the group of services (i.e. for the fixed model-access and traffic) in turn to zero. Call the resulting total cost C_j for service group j. The ISFC for the group of services j is the total cost A, less C_j less all the incremental costs of the services with service group j, ? B_i all I in j. This is to say $ISFC_j = A - C_j - ?\, B_i$ all i in j.

b. Is the Top-down model able to identify the ISFCs for each Cost Category? Please explain how.

C&W Response

There may be confusion between what top-down data and top-down model. The top-down model is Access model which uses CVRs to break down retail costs. That analysis determines ISFCs for groups of retail services. The bottom up also generates ISFCs. Part of those bottom-up ISFCs are drawn from top-down data via expense factors. The expenses factors assign cost to network elements. It is by means of the network elements and the iteration described above that the models identifies how much of what expense is qualifies as ISFC. For more on this please see our response to interrogatory 5.1.4.

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      c.   Please provide an example of an ISFC as calculated in the C&W model.

C&W Response

Please see our response to a. above. Also, in our case study given under interrogatories 2.7, we will be making a full analysis of the ISFC for a particular service.

2.1.3   As per the terminology above, the difference between FCCs/Joint Costs and Network-Wide Common Costs is that Network-Wide Common Costs are common to all Increments/Services of each network.

      a.   Is the Top-down model able to identify the Network-Wide Common Costs for each Cost Category? Please explain how.

C&W Response

Yes, again, we want to clarify that the answer to this question depends on whether one is talking about the top-down MS Access model, which is retail focused, or top-down data which lead to expense factors. The Network-Wide Common Costs that are derived from the ABC top-down analysis are captured by the expense factors in the fixed and mobile bottom up models and the consolidation Expense Factor sheet. The model does not report the detailed expenses by service, but one could manually trace these back. For example, the Overhead opex (Consolidation sheet Expense factor item) identified by service in "DET_VAL" sheet of the consolidation file can be traced back to its components in the "Expense Factor" sheet.

2.1.4   In C&W's response to ICTA/Telcordia interrogatories, C&W mentions that there is implicitly another type of common cost that must be dealt with at the time of generation of inputs for the LRIC model: the costs that are common to both fixed and mobile within C&W. These costs – which include operational expenditure and non-network capital costs – are allocated within the top-down financial analysis between fixed and mobile. However, in paragraph 128 of the Background Document C&W stated that it calculated the total values of Common Costs for "TD Common" as LRIC values of Total Increment minus the sum of LRIC values of Sub Increments that belong to the specified group (and these Common Costs are allocated proportionally based on the sum of Pure LRIC and allocated FCCs/Joint Costs).

      a.   Please explain whether "TD Common" was calculated through the process described in paragraph 128 of the Background Document, or using the top-down financial analysis (and accounting data) mentioned on C&W's response to ICTA/Telcordia interrogatories.

C&W Response

Paragraph 128 of the Background document outlined the principle employed by the Access Model in calculating and allocation the various types of Common Cost, when in stated that "The total values of Common Costs for BU Fixed Common, BU Mobile Common and TD Common are calculated as LRIC values of Total Increment… …minus the sum of LRIC values of Sub Increments that belong to the specified group…" However, the actual total values of the common cost categories were derived through the ABC Cost Model as a first step. These values were then allocated using CVRs through the Access Model under the principle outlined above.

2.1.5   In C&W's response to ICTA/Telcordia interrogatories, C&W provided the list of all non-network cost categories (operating expenses and capital balances) for which the Top-down approach was used in order to allocate these costs to network elements and services (enclosed in Appendix IIc).

a.   Please provide the total costs attributed to each non-network cost category and reconcile back the calculation of these costs to the total activity costs extracted from the ABC model.

C&W Response

See the attached Appendix III which captures the following sheets:

All Cost Categories – Final output sheet showing all expense factor categories and values and retail (non network) categories and values. The Non network categories and values referred to in this query are captured in range A201 – D295. These values can be traced step-by-step using Excel's Audit function to the 'FAC Values allocated' sheet, which is an intermediate sheet used to sort and group the various expense factor categories and non network (retail) categories, and thus to one of the three FAC Input Values sheet (FAC Opex Input, FAC Asset Input or FAC Working Capital Input). The three FAC input sheets contain the reconcilable results of the ABC Cost Model.

FAC Values allocated – This sheet captures and groups all the various expense factor and retail cost categories obtained from the three input files described below. For example, the value of retail cost category 100-Retail Billing shown in sheet 'All Cost Categories', cell B204 which contains the formula '='FAC Values allocated'!K4' linking it to the 'FAC Values allocated' sheet. This link can be traced to cell K4 (formula: =SUMIF('FAC Opex Input'!J:J,'FAC Values allocated'!J4,'FAC Opex Input'!H:H) of the 'FAC Values allocated ' sheet, under 'col. J', a section that captures the RETAIL BUSINESS EXPENSES group. Cell K4 contains the sumif formula which sums the opex values of all references to the retail category '100-Retail Billing' in the FAC input sheet 'FAC Opex Input'.

FAC Opex Input – This sheet captures the operating cost results of the ABC cost model. It shows the cost centers, expense types, activities, cost drivers and values.

FAC Asset Input – This sheet captures the fixed and mobile assets and values as allocated through the ABC model.

FAC Working Capital Input – This sheet captures the working capital categories and values as allocated through the ABC cost model.

b.   Please explain which of these non-network cost categories are considered TD Common.

i.   Please provide the full set and description of all non-network cost categories considered TD Common.

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C&W Response

See Appendix II for a list of Non Network Cost considered Top Down Common (TDC) and a description of each.

    ii.   Please provide the full description of all other non-network cost categories (Retail & Other).

C&W Response

See Appendix II for a description of all Non Network Cost categories.

    c. It should be noted that some non-network capital and operating costs that are common to both fixed and mobile have already been captured by the Expense Factors used in the Consolidation Model (these include costs such as the finance department and legal and regulatory costs).

        i.   Please explain the differences between TD Common and the Expense Factors of the Consolidation Model and why C&W used two different approaches for these costs (top-down vs. bottom-up).

C&W Response

Some cost categories may have been allocated to both retail and network elements, examples as cited in the query are finance department and legal regulatory costs. The amounts allocated to retail versus the amounts allocated to networks were initially determined through the ABC cost model. These costs are incurred in providing support to both the retail business and networks. The LRIC methodology adopted allocates retail costs through the Ms Access model and network related expenses using expense factors, thus the two types of allocation methods.

TD Common refers to those cost categories that are considered retail and as such are allocated directly to retail services through the Access model, in contrast the expense factor listing in the consolidation sheet represents those operating overhead type cost categories that are allocated to both Mobile and Fixed Network elements. All network related expenses are allocated to network elements through the use of expense factors.

        ii.   Please explain how C&W apportioned these common non-network capital and operating costs among the non-network cost categories of the TD model and the expense factors of the consolidation model.

C&W Response

All of the non-network cost categories were initially allocated to network elements and retail services through the ABC cost model which have been explained in detail in the FAC methodology document submitted to the Authority previously. However extracts from the ABC model shown in Appendix III and referred to in interrogatory 5a above formed the key inputs necessary for the allocation of all non network common costs.

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See Appendix III for the working files showing the allocation of all non network capital and operating costs and Appendix IV for a flow diagram explaining the movement of cost categories through the various models.

   d. It should be noted that some non-network capital and operating costs that are specific to either fixed or mobile have already been captured by the Expense Factors used in the Fixed and Mobile Models (these include some working capital costs and costs of support assets).

       i. Please explain how C&W apportioned these non-network capital and operating costs among the non-network cost categories of the TD model and the expense factors of the bottom-up models.

C&W Response

See Appendix III for the working files showing the allocation of all non network capital and operating costs and Appendix IV for a flow diagram explaining the movement of cost categories through the various models.

       ii. For example, please explain the differences between 100-Cash Retail – Fixed Retail, 100-Cash Retail – Mobile Retail, 100-Cash Networks – Fixed Network, 100-Cash – Networks – Mobile Networks and how it derived the values of each cost category/expense factor.

C&W Response

100-Cash – "Fixed Retail, Mobile Retail, Fixed Network or Mobile Network" represent the allocation of the working capital Cash account, the value of which was derived from the ABC Cost Model, to Fixed Retail, Mobile retail, Fixed Network and Mobile Network cost categories. Appendix III together with the following audit steps and reference to Appendix IV (flow diagram) should help provide an understanding of how these costs were determined.

Working backwards from the 'All Cost Categories' sheet of Appendix III, we obtain the cell locations of the four Cash allocations. Fixed Retail – cell B263; Mobile Retail – B276; Fixed Network – B85; and Mobile Network – B137. Each one of these may be traced back to the 'FAC Values allocated' sheet. For example, the 100-Cash Mobile Network category is traced to cell E84 under the sub group 'Mobile Network Cost of Working Capital'. Continuing with this example we can trace back the value obtained in cell E84 to the 'FAC Working Capital' input sheet, cell AD31. As described in interrogatory 5a above, this sheet forms one of three main input sheets derived from the ABC Cost Model. Tracing all of the 100-Cash categories will lead to the 'FAC Working Capital' input sheet.

2.1.6   In section 2.2 of C&W's response to ICTA/Telcordia interrogatories, C&W provided a table derived from using the "Reconciliation" sheet in the Consolidation Model detailing the Pure LRIC in the first column, ISFC (FCCs/Joint Costs as per the specialized literature) in the second and third columns and FCCs (Network-Wide Common Costs as per the specialized literature) in the fourth column for the fixed network.

a. Please explain how C&W derived that table from the Reconciliation sheet of the Consolidation Model.

b. Please explain whether the column on Fully Loaded LRIC (in the last/fifth column) already includes the TD Common Costs.

c. Does the Reconciliation sheet in the Consolidation Model also calculate and provide information about the TD Common Cost? If yes, please explain how. If no, explain where that information on TD Common Cost can be found.

d. Please provide another table including an additional column detailing the TD Common Costs.

C&W Response

[May 25]

2.1.7   In the abovementioned table there appear to be some calculation errors, since the Fully Loaded LRIC is not equal to the sum of the Pure LRIC and the respective mark ups for FCCs/Joint Costs and Network-Wide Common Costs for some of the lines in that table.

e. Please revise/correct the numbers in this table.

f. Please provide a similar table detailing the Pure LRIC, ISFC (FCCs/Joint Costs as per the specialized literature), FCCs (Network-Wide Common Costs as per the specialized literature) and TD Common Costs for both the fixed and mobile network.

g. Please also show the total (actual) values of FCCs/Joint Costs for each Group Increment (Fixed-Access; Fixed-Traffic; Mobile-Subscriber; Mobile-Traffic), total (actual) values of the Network-Wide Common Costs (both for the fixed and mobile networks) and the total (actual) value of TD Common Costs.

C&W Response

[May 25]

2.1.8   Please explain the analysis it has undertaken to prove that the Network-Wide Common Costs (for the fixed and mobile networks) and the TD (current) Common Costs are also the forward-looking common costs.

C&W Response

With respect to the Network-wide Common Costs as part of our response to 2.4.3, we are proposing changes to the expense factors to account for the forward looking nature of technologies. Also, in Appendix III we have listed in column C of the All Cost Categories sheet adjustment factors taking into consideration those costs that are not forward looking. With respect to the TD Common Costs, we believe that adjustments would be dependent on highly subjective assumptions. As a way forward, however, we propose that the productivity efficiency

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reduction of 4.8% that is found in C&W licence and Agreement with government for the adjustment of the FAC model.

2.1.9   As per ICT's Decision 2005-4, C&W has the onus to prove the specific nature and magnitude of any forward-looking common costs. In principle, the LRIC methodology can be applied to any increment, so that it is possible to calculate, for example, the LRICs of the network elements comprising the Access Network, as well as the LRIC of the Access increment itself. Depending on how FCCs/Joint Costs and Network-Wide Common Costs are allocated, the totals of these calculations are likely to be different, so it's important to define the correct methodological increment to calculate the correct service costs.

   h.   Please provide an explanation/justification on why it chose the two broad Service Group Increments (G-Fixed Access, G-Fixed Traffic) for identifying and allocating common costs in the fixed model (as described in paragraph 128 of the Background Document).

C&W Response

The use of the access and traffic (core) increments is standard in best practice regulatory costing. There are numerous cites we could give from the literature we produced for the initial LRIC proceeding on principles and methodology. Here we give an additional quote from Peter Cartwright's Interconnection Costing[2]

   …it is usual to expect the regulator to give at least an indication of what those increments should be. However, it is unlikely to go much beyond an indication, and may well be limited to:

   • Giving simple names to the main increments (for example, the Access increment, and the Call Conveyance increment).

   • Describing some key products and services (probably including the basic voice interconnect products such as call origination and call termination) that must be included in the main increment.

2.2.1   In C&W's response to ICTA/Telcordia interrogatories, C&W explains that it applied a planning factor (equal to 2 percent in both Fixed and Mobile Models) over all capital expenditures in order to estimate the cost of planning associated with capital investments (or planning cost as a percent of Capex). C&W also explains that the application of this planning factor is reserved for those assets where an associated planning cost is not explicitly stated.

   a.   Please be more specific and describe which tasks are captured by this planning factor.

C&W Response:

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[2] 2nd edition, 2004. BWCS, p. 77.

On further observation of the models and the expense factor categories we have discovered that there may be a case of double counting the planning cost. The 2% planning factor should be excluded from the capital cost calculations as there are expense factors for planning in both the mobile and fixed models. See expense factor sheet of the Fixed BU model for example, row 30 expense factor '100-Plan Distribution Network' considers planning cost for the distribution network and row 37, expense factor '100-Plan Core Network' considers planning cost for the core network and row 31 of the Mobile BU model for the planning expense actor 100-Plan Mobile Network.

      b. Please describe for which assets an associated planning cost is explicitly stated and for which assets the associated planning costs are captured by this planning factor.

C&W Response:

See response to 'a' above

      c. Please provide evidence and/or justification (e.g. historic averages) for the planning factor of 2 percent used in both the Fixed and Mobile Models.

          i. Is it in line with those assets where an associated planning cost is explicitly stated?

C&W Response:

See response to 'a' above

2.3.1   In section 3.7 of C&W's response to ICTA/Telcordia interrogatories, C&W explains that it chose the asset lives assigned in the model, considering the ones identified in the benchmarks "where applicable". Where there were instances where C&W experience was at variance with the benchmarks, C&W said it used its own experience.

      a. Please explain the instances where C&W experience and estimates of asset lives were at variance with the benchmarks, and explain why the views of their own engineers and network staff are so different from those benchmarks.

          i. Please note that in ICTA's Decision 2005-4, the Authority made it clear that the onus is on C&W to demonstrate that its methodology complies with the Authority's principles and guidelines, and Guideline 7 states that the LRIC studies should identify and provide a basis for the projected economic life used to calculate depreciation cost of the equipment involved in providing the service or element or group of services or elements).

C&W Response

[June 1]

2.4.1   In Appendix IIa of C&W's response to ICTA/Telcordia interrogatories, C&W provides the mapping of cost center/ activity combination to the expense factors (of the fixed, mobile and consolidation models).

a. Please merge Appendix IIa and Appendix IIb into a single spreadsheet and include an additional column with the total activity costs assigned to each cost center/ activity combination (as extracted from the ABC model). In other words, please provide a table with the following columns: CC#, CC Description; Expense Type; Activity; ABC Driver; Expense Factors in the LRIC (or Non-network Cost Category – see bellow); Direct Element/Service; Total Activity Costs assigned to each cost center/activity combination.

C&W Response:

See Appendix III.

b. Please provide the mapping of cost center/ activity combination to non-network cost categories (as per Appendix IIc).

C&W Response:

See Appendix III.

c. Please provide those costs and reconcile back the calculation of total value of each expense factor and non-network cost category to the total activity costs extracted from the ABC model.

C&W Response:

See Appendix III.

d. Please reconcile back total activity costs extracted from the ABC model to C&W's financial accounts.

C&W Response:

See Appendix III.

2.4.2 In C&W's response to ICTA/Telcordia interrogatories, C&W explained that the ABC model allocations were used to inform the development of the Expense Factor Driver Elements in the Bottom-Up models and pointed out to columns E and F of Appendix IIb as a reference.

a. Please explain how C&W used the ABC Driver to inform the Expense Factor Driver Elements in the BU models.

i. Take for example CC# = 230, Expense Type = "Employee Costs" and Activity = "Monitor Data Network". How did the ABC Driver = "Direct" help inform the Expense Factor Driver Element "Core Network" (100-Monitor Core Network)?

C&W Response

The driver type called "Direct" refers to any activity or cost category in the ABC model that can be allocated directly to a retail/wholesale service or network element. So in the case of the Expense Type = "Employee Costs" and Activity = "Monitor Data Network", the ABC driver "Direct" allocates costs directly, 100% to Data. Also see previously submitted "Appendix I_ Cayman Cost separation _confidential_ 07_03_12" for a description on the driver types used in the ABC model.

The Expense Factor Driver Element assignment seeks to group the ABC activity/driver categories in broad pools, therefore, and referring to the example above, the driver element " 100-Monitor Core network" was chosen as the Expense Factor Driver pool for " Monitor Data Network" and "Monitor Core PSTN Network".

See Appendix 102 for further detail on each activity type used in the ABC Cost model.

    ii.   Take for example CC# = 250, Expense Type = "Employee Costs" and Activity = "Plan, operate and maintain fleet". How did the ABC Driver = "Number of Vehicles" help inform the Expense Factor Driver Element "All Network Elements" (100-Operate Fleet)?

C&W Response

Similar to i above, the expense factor "100-Operate Fleet" represent the broad expense factor category that was used to group all ABC costs associated with maintaining and operating vehicles. Therefore the ABC activity "Plan, operate and maintain fleet" which was allocated to network elements and services in the ABC Cost Model using the driver "Number of Vehicles" would naturally fall into the Expense factor group "100-Operate Fleet".

See Appendix V for further detail on each activity type used in the ABC Cost model.

    iii.   In general, how did C&W use the ABC Driver to inform the Expense Factor Driver Elements in the BU models?

C&W Response

Generally, by combining the Activity Description and the Drivers used in the ABC Cost model to allocate activity costs to network elements and services we were able to determine the most appropriate Expense Factor group.

See Appendix V for further detail on each activity type used in the ABC Cost model.

2.4.3   In C&W's response to question 2 of section 3.10 of ICTA/Telcordia interrogatories, C&W states that "the jury is still out on the balance of expense savings in the transition to

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NGN", implying that in the transition from PSTN to NGN there may be some cost savings and some cost additions, so that the balance is still unclear.

    a.   Please provide C&W's best effort estimate of the cost savings and cost additions (to the respective expense factors and non-network cost categories), instead of assuming the balance will be "zero".

    b.   Please comment on the potential cost savings coming from:

        i.   Having one single fixed network to maintain and manage (instead of different networks for voice and data services).

        ii.   Reduction in the number of routes to be maintained and reduction in the number of access nodes.

C&W Response

[May 25]

2.5.1   In C&W's response to ICTA/ Telcordia interrogatories, C&W provided Appendix III, which captures the underlying analysis of the CVRs developed for the top-down part of the model. With regards to the data provided in Appendix III, please explain:

    a.   For the Summary worksheet:

        i.   What C&W means by DRIVER ENTITY?

C&W Response

Driver Entities are the link between the Entity_IDs and the Driver Elements. They are sub groups of Entity_Ids that tie Driver Elements to Entity _IDs. For example, the Driver Element 'Volume – Calls' which is used to allocate the cost category (Entity_ID) '100-Retail Billing' is associated with the Driver Entity 'G-900-ALL RETAIL SERVICES' and coded '900' to indicate the order in which it is allocated in the model and that it is driven to retail services. This is shown in the 'Group List' sheet, under the col. heading 'Group_3' we look for all instances of the Driver Entity 'G-900-ALL RETAIL SERVICES' and reading across to the left most column we find the services that are grouped as 'G-900-ALL RETAIL SERVICES'. In this case the first instance of 'G-900-ALL RETAIL SERVICES' occurs in row 37 and reading across to column 'A' is the service '900-ADSL RETAIL'. This tells the model that the cost category (Entity_ID) '100-Retail Billing' is allocated to all services as shown in column 'A' in the Group List sheet that have an instance of 'G-900-ALL RETAIL SERVICES' in column group 3 and one of those serves is '900-ADSL RETAIL' shown in row 37.

The other codes used to identify subsets and the levels of allocation are: Entity_ID - '400' used to allocate to Network elements and '100' used to allocate to cost categories. The 100s are allocated first and the 900s allocated last.

        ii.   What C&W means by DRIVER ELEMENT?

C&W Response

Driver Elements identifies the Cost Driver used to allocate the various cost categories (Entity_IDs) to either services (900), network elements (400) or cost categories (100).

       iii.   Please describe:

          1.   Volume Calls

C&W Response

This is a traffic related cost driver based on volume values (e.g. Volume Traffic, Number of Minutes, Number of calls, etc.).

          2.   Operating Cost

C&W Response

This is a cost related cost driver based on the value of operating cost of selected retail expenses. See column Group_1 for each instance of the Driver Entity 'G-100-RETAIL EXPENSES'.

          3.   Revenue Total

C&W Response

This is a revenue related cost driver based on the relative revenue values of selected services as shown in the Group List sheet.

          4.   G-ALL VOLUMES

C&W Response

This is a special cost driver used to allocate cost to the mobile service '900-Mobile Subscriber'.

          5.   Did C&W use any other driver element?

C&W Response

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The driver elements shown in the summary sheet represent all the drivers employed to allocate the TD retail costs.

b. For the Group Lists worksheet, please provide a detailed explanation of the dependency groupings listed (describing the dependency hierarchy) and explain the meaning of each column.

    i.   Entity ID

    ii.   Entity Type

    iii.   Group 1

    iv.   Group 2 … Group 6

C&W Response

The explanation provided for interrog. 2.5.1.a.i above is relevant to this interrog. and is repeated below:

Driver Entities are the link between the Entity_IDs and the Driver Elements. They are sub groups of Entity_Ids that tie Driver Elements to Entity _IDs. For example, the Driver Element 'Volume – Calls' which is used to allocate the cost category (Entity_ID) '100-Retail Billing' is associated with the Driver Entity 'G-900-ALL RETAIL SERVICES' and coded '900' to indicate order in which it is allocated in the model and that it is driven to retail services. This is shown in the 'Group List' sheet, under the col. heading 'Group_3' we look for all instances of the Driver Entity 'G-900-ALL RETAIL SERVICES' and reading across to the left most column we find the services that are grouped as 'G-900-ALL RETAIL SERVICES'. In this case the first instance of 'G-900-ALL RETAIL SERVICES' occurs in row 37 and reading across to column 'A' is the service '900-ADSL RETAIL'. This tells the model that the cost category (Entity_ID) '100-Retail Billing' is allocated to all services as shown in column 'A' in the Group List sheet that have an instance of 'G-900-ALL RETAIL SERVICES' in column group 3 and one of those serves is '900-ADSL RETAIL' shown in row 37.

The other codes used to identify subsets and the levels of allocation are: Entity_ID - '400' used to allocate to Network elements and '100' used to allocate to cost categories. The 100s are allocate first and the 900s allocated last.

In addition the following definitions are appropriate:

Entities are the building blocks of the model and contain, for example, operating cost, assets, liabilities, revenues and other data items. They can be recognized by their coding structure. Typical examples of entities include:

- Cost Categories (eg; 100-Respond to Customer Queries)

- Asset Categories (eg; 100-Furniture and Fittings - Fixed Retail)

- Network Elements (eg; 400-Host-Host Tx)

- Products (eg; 900-ADSL RETAIL)

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Each Entity is identified by the following information:

A unique Entity Code. The prefix of each Entity Code represents the level (eg; 100, 400 or 900) in the system. Levels exist between 000 and 999. The level information describes the step number in which the Entity is allocated in the model.

Entity Type - Typical examples:

- CO: Cost Pool (Cost and Asset Categories),
- NE: Network Elements,
- CP: Commercial Product

Groups (group 1 – group 5 etc) A number of entities can be grouped together to form Entity Groups (for example "All Commercial Products", "Traffic Products" etc) and each Entity can belong to several groups.

c. For the LDA worksheet, please provide a detailed explanation of the dependency order and drivers assigned, indicate whether the cost categories are Independent, Semi-Independent or Dependent and explain the meaning of each column.

C&W Response

The LDA (LRIC Driver Affected) table is a key input table into the MS Access model that groups together and defines the relationships between Drivers and the cost categories affected.

i. Ord

C&W Response

This is a unique identifier for each Driver Entity

ii. Driver Entity

C&W Response

See response to interrog. 2.5.1.a and 2.5.1.b

iii. Driver Element

C&W Response

See response to interrog. 2.5.1.a and 2.5.1.b

iv.   Affected Entity

This is the cost category or Entity_ID 'affected' by the selected Driver Element.

v.   Affected Element

This represents the cost category type of the Affected Entity.

vi.   Graph Name

This represents the type of Cost Volume Relationship (CVR) associated with the Affected Entity. For example, Affected Entity '100-Retail Billing' is allocated using CVR 05 to retail services grouped under Driver Entity 'G-900-ALL RETAIL SERVICES'.

d.   For the LGS worksheet, please explain the meaning of each column:

Before address each term below we note that this table in this worksheet is used to capture each CVR, 01 – 06, in a manner suitable for input into the MS Access model.

Each graph definition contains information about the graphical shape of the relationship between the cost driver and the Affected Reductions. All graphical shapes are stored in a graph sheet. Graph definitions are defined in the *LGS* sheet.

Each graph is defined as a continuous function, which is linear on subintervals between 0% and 100%. Such approximation of CVRs and CCRs are represented by a list of a plot points.

Each Graph Definition must have:

- A minimum point, where the driver value is equal to 0%,
- All driver and affected values must be between 0% and 100% and
- A maximum point of 100%, 100% *(situation before any reduction is performed)*.

i.   Graph Description

C&W Response

The heading 'Graph Description' is a bit misleading in that it does not provide a descriptive of each CVR but represents the number of data points used to define each CVR. For example, CVR 01 has 5 data points on the X axis, they are 0, 0.25, 0.5, 0.75 and 1, therefore, its Graph Descriptions are 1, 2, 3, 4 and 5 respectively.

ii.   Driver Element

C&W Response

This is the actual data points used to define a CVR. For example, CVR 01 has 5 data points on the X axis that define the graph; they are 0, 0.25, 0.5, 0.75 and 1. This is also shown in the graph spreadsheet, CVR_01, on the x axis in terms of a percentage. There are corresponding data points at 0%, 25%, 50%, 75% and 100%.

iii.   Affected Element

C&W Response

The Affected Element represents the corresponding Y axis values of each CVR graph. Again for example, where CVR 01 has a Y axis value (Affected Element) of 0.39583 (row 3) the corresponding X axis value is 0.25 (Driver Element). The X and Y values define the respective data point of the graph as shown in the sheet 'CVR_01'.

iv.   Comment

C&W Response

Entries under this heading are the respective cost categories or Entity IDs of the listed CVRs.

e.   For the ISFC worksheet, please provide a detailed explanation of the dependency order and explain the meaning of each column:
   i.   Order
   ii.   Entity
   iii. ISFC Perc
   iv.   Comment

C&W Response

Some of the fixed costs could belong to a specific increment. Increment Specific Fixed Cost Definition maps the relationship between Increments, Dependencies and Percentage Values of

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Increment Specific Fixed Cost. Increment Specific Fixed Cost Definitions are stored in the ISFC sheet. Definitions of Increment Specific Fixed Cost are directly defined in the ISFC sheet.

Each record of the ISFC table contains the following information:

- Dependency **Order** – this information identifies used Cost Dependency (therefore it also includes information about the definition of the Driver and Affected Reductions);

- **Entity**_ID, Increment or Service affected.

- **ISFC Perc** – Percentage Value of Affected Cost that will be taken as Increment Specific Fixed Cost. *(Percentage value must lie between 0% and 100 %.)*

- **Comment** – Lists the cost categories or Entity_ID affected.

The values calculated in column 'C', ISFC Perc., are the relative percentages of the retail services revenue values captured in the ISFC workings and calculated in the 'Revenue Mapping' sheet.

f. For the ISFC Workings worksheet, please provide the missing values (in columns A and B), explain the purpose of that worksheet and explain the meaning of each column:

  i. Order

  ii. Affected Cost Category

  iii. Workings

  iv. Perc

C&W Response

This sheet represents an intermediate stage working sheet in the process of calculating the ISFC Perc values in the ISFC sheet. This sheet is not missing any values, all information relevant to the calculation of the values in the ISFC sheet are captured in columns 'C' and 'D'.

2.5.2 In C&W's response to ICTA/Telcordia interrogatories, C&W provided the list of CVRs that have been explicitly developed together with the respective CVR curves on worksheets CVR_01 to CVR_06, but C&W provided insufficient information on how it derived the cost category values for CVR_01, and C&W provided no information on how it derived the cost category values for CVRs_02, CVR_03, CVR_04, CVR_05 and CVR_06 (not even the cost driver associated to each CVR--as per the Driver field of the abovementioned worksheets that were left blank).

g. Please provide a detailed explanation on how it derived the cost category values used to build the abovementioned CVR curves.

h. Please provide the associated complete technical studies.

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C&W Response

Append III_CVRs (confidential)_f submitted in our response to the first round of interrogatories contains a spreadsheet with a graph that defines each of the 6 CVRs derived.

CVR 01 – Cost Driver as shown in the 'Summary' sheet is 'Volumes Calls'. This CVR has 5 data points, the derivation are all shown in detail from row 30.

CVR 02 – Cost Driver for this CVR is 'Revenue Total'. This graph is a SLTO derived after consultation with the respective cost holder. The cost category is 'Advertising' and it varies directly with revenue, defined using 2 data points set at 0% and 100%.

CVR 03 – Cost Driver for this CVR is 'Volumes Calls'. This graph is a SLTO derived after consultation with the respective cost holder. The cost category is '100-Respond to Customer Queries' and it varies directly with volume of calls, defined using 2 data points set at 0% and 100%.

CVR 04 – Cost Driver for this CVR is 'Revenue Total' and is defined as FLAT, shown in the graph by one data point set at 100%. The underlying note to this CVR is that the cost of maintain the Cable & Wireless Cayman Islands and b-mobile brands is considered to be a fixed cost, attributable on an equi-proportionate basis.

CVR 05 – Cost Driver for this CVR is 'Volume Calls' and is defined as SLTO after consultation with the respective cost holder. As shown in the graph this CVR is determined using two data points set at 0% and 100%.

CVR 06 – 100 Vehicle – Fixed Retail: This CVR uses the cost driver 'Operating Cost' and is defined as detailed in the graph sheet from row 36.

2.5.3 In C&W's response to ICTA/Telcordia interrogatories, C&W provided the list of CVRs that have been explicitly developed (CVRs 01 to 06) and the list of cost categories for which the CVRs were modeled as SLTO and HFE, but C&W has provided no information about the CVRs modeled as SLTO and HFE. For example, cost categories 100-Credit Control and 100-Collect Revenue are both linked to CVR SLTO, but (i) it is not clear whether they are linked to the same or to different CVRs modeled as straight line through origin; (ii) there is no information on that CVR.

  a. Please provide a detailed description of the CVRs that were modeled as SLTO and HFE (cost category values, slope of the curve, y-intercept), together with the associated technical studies.

C&W Response

Any CVR defined as SLTO (Straight Line Thru the Origin) carries a minimum value of 0% and a maximum value of 100%. This is defined in the LGS sheet rows 40 and 41. Likewise HFE or FLAT is defined in the LGS sheet rows 38 and 39. A CVR defined as FLAT has one data point set at 100%.

b. Please identify which CVRs apply to which cost categories.

C&W Response

The 'Summary' sheet of Appendix III submitted in our first round response captures all the CVRs employed and the associated cost categories.

2.5.4 For each of Cost Category (either explicitly developed, SLTO or HFE), please describe:

a. The CVR associated to that cost category;
b. The cost driver identified for that CVR;
c. The characteristics of the cost function (slope, y-intercept, CVR curve, etc);
d. The impact of not providing a specific increment over the volume of the cost driver;
e. The ISFC and Common Costs identified for that cost category (and explain how it derived these values).

C&W Response

C&W submitted a document titled 'Append III_CVRs (confidential)_f' in its response to the first set of interrogatories that captured the complete list of CVRs and the associated graph of each employed in the TD Access model. The 'Summary' sheet of the said document captures the following:

Cost Categories – Column B

Cost Type – Column C

Value – Column D

Driver Group or Entity – Column E

Cost Driver or Driver Element – Column F

CVR employed – Column G

Further information on the treatment of CVRs and ISFCs are detailed in the following sheets:

GROUPS LIST – selection and grouping of Drivers and Cost Categories.

LDA – Input sheet that captures the cost drivers, cost categories and CVRs employed.

LGS – CVRs data points and shape of graphs defined.

ISFCs – defined

The CVR types SLTO and FLAT are defined in the LGS sheet, rows 38 thru 41.

2.5.5   With regards to the use of the top-down approach to estimating costs of retail services, please provide the underlying supporting studies, analysis and documentation showing that those historical data and ABC relationships are relevant to the study of forward-looking costs.

C&W Response

Appendix III contains all the intermediate analysis used in developing the Top Down inputs to the MS Access model and consolidation file expense factors. The sheet 'All Cost Categories', column C contains an 'adjustor' used to adjust for those costs that are not considered entirely forward looking. For example, row 38, cost category '100-Maintain International Switching', contains an adjuster of '0%' effectively eliminating this cost from input into the LRIC model. The reason for elimination this elimination is captured in column E and repeated here: 'EXCLUDED - Saving incurred through elimination of separate int'l switch in modeled network'.

2.6.1   Please submit a copy of the Souce Data used (Ibbotson Associates data) in Appendix IV and mark each piece of data used that will show where the percent shown in Appendix IV came from and that it is accurate.

C&W Response

The total annual returns data that was presented in Appendix IV came directly from a table 2-5 page 38-39 of Ibbotson Associates SBBI 2005 Yearbook. The yearbook may be obtained in its entirety by ordering at www.ibbotson.com for $110, less than the processing fee of request for permission to reproduce materials from it. We have no way of verifying Ibbotson Associates calculations, but, given the reputation of the firm, have no reason to doubt their accuracy.

The index values in the columns marked $1.00, as is evident from the spreadsheet, were derived from the Ibbotson data. The values indicate the implied growth assuming an initial value of $1.00. These values are not used for the calculations of the average annual return.

2.6.2   For each Large Co. Stocks data record used to show the percent by year in Appendix IV, please identify the company, the nature of its business, the services and products the percent figure applies to, how the figure was computed, and what period the % applies for.

C&W Response

The large company stock total returns index is based on the S&P Composite Index. That index since 1957 has been made up of 500 of the largest publicly traded stocks. Prior to March 1957, the S&P Composite Index consisted of 90 of the largest stocks. The industry composition of the

index is intended to be a representative sample of leading companies in leading industries within the U.S. economy. Stocks in the Index are chosen for based on size (large-cap), liquidity, and industry group representation. A recent list of companies in the S&P 500 can be found on line at:

http://en.wikipedia.org/wiki/List_of_S%26P_500_companies

For the small company stock data, since 2001 Ibbotson has drawn on data from a reputable micro cap fund (Dimensional Funds Advisors). It is a fund that picks out companies with market capitalization in the lowest 4% among companies traded on the New York Stock Exchange, American Stock Exchange and NASDAQ. At year end 2004, those companies numbered 2,494. For the data before 2001, Ibbotson drew on similar sources for the bottom end of the market: for the period 1982-2001 the DFA Small Company fund and prior to 1982 analysis of the Fifth Quintile of the New York Stock Exchange.

The total return for the annual for each year is based on the daily reinvestment of dividends.

2.6.3   For each Large Co. in the Large Co. Stocks percent state if the company is a regulated telecommunications company, state if the company is an efficient company and how C&W determined it is an efficient company, state if the company is similarity situated in the telecommunications industry as C&W, and why C&W concluded it is so identified.

C&W Response

The selection of the data was obviously not designed to identify telecommunications companies, and only use telecommunications companies for this analysis. We do not believe it would be appropriate to focus on only telecommunications companies to arrive at a measure of equity risk premium. The purpose of this sample is to measure the amount of added expected return that investors require to hold a broad portfolio of common stocks instead of risk-free securities. Limiting the sample to telecommunications stock would not be an appropriate measure of an general equity risk premium.

2.6.4   For each Long term Gov Bonds data record used to show the percent by year in Appendix IV, identify the type of bond, the government entity issuing the bond, how the percent was computed, and what period the percent applies for.

C&W Response

Ibbotson used US government bonds with a term of 20 years. It does not provide a list of the exact bonds used. Total returns are calculated as the change in the average of the bond's bid and ask price plus the accrued coupon. The return indicates how much a dollar invested in these bonds, with coupons reinvested, grows over the year.

2.6.5   For Appendix IV spreadsheet pages 1, 2 and 3, please explain if the dollar amounts under the six $1.00 columns and the Inflation column was used in computing the Average to 2004 for Large Co. Stocks figure of 12.3 percent and Long term Gov. Bonds figure of 5.82 percent. If the data was used, please identify the data that was used, how it was used, why it was used, and what would be the averages if the data was not used.

C&W Response

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The data in the six $1.00 columns and inflation columns were not used in the computation of the 12.39% and 5.82% growth figures.

2.6.6　Identify any other data used in any of the columns shown in Appendix IV in computing the Average to 2004 Large Co. Stocks figure shown and Long term Gov Bonds figure shown. Explain why the data was used, and what the Average to 2004 would be if the data in these columns was not used.

C&W Response

The formula in cells e88 and f88 indicates that no other data was used other than that in the Large Co. Stock column and Long term Gov Bond column.

2.6.7　Please describe the method used and the show the calculation to develop the Average to 2004 of 12.39 percent for the Large Co Stocks and 5.82 percent for the Long term Gov Bonds. Are any adjustments made to the Ibbotson Associates data before the Averages to 2004 are developed? If any adjustments are made, please list each adjustment that was included and its impact on the final Average to 2004 show on the third page of Appendix IV.

C&W Response

The way the interrogatory is written suggests that the author was viewing a hard-copy of the spreadsheet submitted to the Authority on 26 February 2007. In the spreadsheet the formula clearly indicates that the averages come straight from the data in the two columns. No adjustment was made to the Ibbotson data before the averages were developed.

2.6.8　Please explain why data from 1926 to 2004 was used to develop the Averages to 2004 for the Large Co Stocks and Long term Gov Bonds. Why is it appropriate to use such a period for a risk premium for a LRIC Model that will provide regulated telecommunications studies for periods going forward from 2007 and beyond, rather than a shorter period?

C&W Response

The question is why use a backward looking measure of equity risk premia rather than a forward looking one? Our use of the historical measure of the equity risk premia is based on two reasons. First, there is more precision to a historical measure in which you have a long term series to base your measurement on. A forward looking measure would be inherently more likely to be biased in one direction or another. Secondly, there is nothing that we are aware of to suggest that in the future the equity risk premium will be greater or smaller than in the past.

2.6.9　Please explain why the negative percentages are being used in the calculation, and why is it appropriate to include such data.

C&W Response

The purpose of the exercise is to determine the expectations of return over time for equity as opposed to risk-free securities. Investors expect down years as well as up years. In fact, if one were to exclude the negative return years, one would be distorting the analysis.

2.6.10   Is any other data not shown on the three sheets of Appendix IV used to develop or compute the Average to 2004 figures of 12.39 percent and 5.82 percent shown on the third page after the 2004 line of data? If so, please provide any such data.

C&W Response

Please see our response to interrogatory 2.6.7.

2.6.11   What Large telecommunications companies are included in the Large Co Stocks data from 1926 to 2004? Please provide a list by year of the telecommunication companies included in the data. What would the Average to 2004 for the Large Co Stocks be if only the telecommunication company data in the Ibbotson Associates data was used to develop the Average for 2004? What Large Co Stocks are included in the data for each and every year from 1926 to 2004?

C&W Response

As indicated in our response to interrogatory 2.6.3, we do not believe that methodologically it makes any sense to measure equity risk premium by comparing telecom equity returns to risk-free returns. It would be highly unusual in the field of cost of capital measurement to do so.

Quite apart from this methodological inappropriateness, it will be very time-consuming to identify year-on-year the telco stocks within the Ibbotson sample and their returns for the time period required. Ibbotson does not provide this data, so we would have to research this from other sources. To be responsive, we have begun to carry out this work; however, we urge the Authority, to reconsider, having read our responses to the WACC-related interrogatories, whether such a study is truly necessary.

2.6.12   Please provide a list by year of the Small telecommunications companies included in the Small Co. Stocks data for each year 1926 to 2004. Why was the Small Co Stocks not used in developing the Average to 2004 for Stocks?

C&W Response

The answer to this is similar to the answer to the question of why not look at just telecommunications companies. The purpose of this exercise, effectively, is to measure what you have to pay an individual to invest in stocks rather than risk-free securities. Choosing a sample limited to small-cap companies might provide a distorted view of that premium. C&W would not be averse to using a combined average of both large company and small company stocks, but using small company stock data alone would not be appropriate.

2.7.1   In Section 4 of both Fixed Network and Mobile Network Costing Manuals, C&W states "Again, we have made these simplifications to facilitate presentation. Upon request we

will be happy to provide a more detailed demonstration of the Model." In its response to section 3.12 of ICTA/Telcordia interrogatories, C&W explains that the statement quoted above is meant to convey that C&W would be happy to make a direct presentation (in confidence) of the model if so desired. C&W submitted that this was in recognition that a full understanding of the model may be better achieved through a "one on one" presentation where questions or issues can be raised, discussed and indeed, where possible, answered immediately. To the greatest extent possible, the Authority wishes to generate a full record of the proceeding and also enable participation by any interested parties.

    a.   Please provide an extended case study showing the calculation steps, intermediate outputs and final outputs to demonstrate how the model determines the D-LRIC and full LRIC for the Residential Access Service (as an extension of the Fixed Model Case Study) and the D-LRIC and full LRIC for the Mobile Termination Service (as an extension of the Mobile Model Case Study).

    b.   C&W may make the simplifications it considers appropriate in order to make the presentation of results clearer, but it should demonstrate how the models calculate and allocate FCCs/Joint Costs, Network-Wide Common Costs and TD Common Costs.

C&W Response

[June 8]

2.7.2   As requested in section 5.1 of ICTA/Telcordia interrogatories, please provide a Case Study for the Consolidation Model with a complete description, including screen shot extracts showing how actual numbers flow through the model, of the calculations for the Service unit cost of one fixed network service and one mobile network service.

C&W Response

[June 8]

3.1.1   Please provide revised versions of both the fixed and the consolidated model, correcting the numeric and formula errors in the fixed model that were identified in the previous interrogatories and acknowledged by C&W in its responses. With it, please provide a list of all the changes made.

C&W Response

Previously completed and submitted.

3.2.1   In the previous round of interrogatories, ICTA requested a complete description of the fixed network components complete with their engineering and dimensioning information. In response, C&W identified Subsections 9 through to 13 of the "Methodology" section of the Fixed Model document as fully describing the network components modeled in the fixed bottom up model. Subsections 9 through 13 only provide a brief definition of the

network components. This level of detail is satisfactory for Access Network components and the Core Transmission components. However, for the Switching components more detail is required. In the model, the Media Gateway (MG) component is not treated as a whole. The investment associated with the MG component is split into the RSU Traffic Sensitive and RSU Line Sensitive network element categories. Likewise, in the model the Softswitch/Multi-Service Edge and Voice Packet Gateway component is not treated as a whole. The investment associated with the Softswitch/Multi-Service Edge and Voice Packet Gateway component is split into the PSTN/Host Switch Call Sensitive and PSTN/Host Switch Duration Sensitive network element categories. Please provide a breakdown of the MG component and the Service Edge and Voice Packet Gateway component into their sub-components and provide a thorough description of each sub-component.

C&W Response

[June 1]

3.2.2   In the previous round of interrogatories, ICTA requested a full description of the network dimensioning rules and assumptions used in the dimensioning of the fixed network. In response, C&W identified Subsections 15 through to 37 of the "Methodology" section of the Fixed Model document as fully describing the dimensioning rules employed in dimensioning the fixed model network elements. Subsections 15 through 37 only provide a brief definition of the rules and assumptions that underpin the dimensioning of the fixed network. This level of detail is satisfactory for Access Network components and the Core Transmission components. However, for the Switching components more detail is required.

Subsections 30 through 33 describe how the total cost per MG is calculated and how the total cost is split into fixed and variable costs by calculating a ratio of fixed costs as a percent of total. In order to determine if the split of the MG investment into fixed and variable costs is correct, the dimensioning rules for each of the MG sub-components is required. Please provide the dimensioning rules for each of the MG sub-components.

Subsections 34 through 37 describe how the total cost per Softswitch is calculated. An examination of the model shows that the total Softswitch investment is split into call and duration sensitive costs by using the Softswitch ratio of call-sensitive/duration-sensitive. In order to determine if this split is correct, the dimensioning rules for each of the Softswitch sub-components is required. Please provide the dimensioning rules for each of the Softswitch sub-components.

C&W Response

[June 1]

3.3.1   In C&W's Comments filed 7July 2006, C&W states in paragraph 3 that the IP-based network is lower cost in comparison with traditional PSTN equipment even in the consideration of the shorter asset lives. Table 1 is included and said to contain a comparison of the annualized capital costs and depreciation of traditional PSTN assets and NGN network elements as produced by the LRIC model. In C&W's response to ICTA/Telcordia interrogatories, C&W explains how it derived Table 1 and provided

Appendix V comparing the cost bases used for the FAC (PSTN) and LRIC (NGN) models.

     a. Is the FAC cost data based on CCA or HCA? If this is based on HCA, please populate Appendix V with the FAC-CCA data (PSTN).

C&W Response

The FAC cost data is based on HCA. Regarding the repopulating of Appendix V, C&W seeks to clarify what the Authority's consultant has in mind with a CCA analysis. If the consultant truly wants C&W to take its most recent FAC model and revise its entire asset base to make it CCA-consistent, it is asking for a multi-month exercise, numerous parameters of which would have to be agreed in advance.

Moreover, we believe the exercise would be of little or no value at this time. Please recall the origin of this comparison. There was a statement made by one of the interested parties that the fixed FLLRIC model produced higher costs than the interconnection rates derived under the 2003 FAC model. The fact we are in the middle of a proceeding within which the fixed FLLRIC model is going to be altered (indeed already has been) suggests that this question is now at best academic. Engaging a comparison of what the original (March) FLLRIC produced and the FAC model is already irrelevant.

If, after the Authority has made its determinations on the aspects of the FLLRIC model, the fixed model is generating costs for fixed interconnection that are higher than the old FAC model, it *might* be worth conducting such a comparison.   But at this point to initiate what amounts to a new, separate proceeding on the FAC model would not, we respectfully submit, be the best use of already scarce resources.

3.3.2   In the first round of interrogatories, ICTA asked if the engineered "Grade of Service" and "Quality of Service" associated with the IP network for the support of voice traffic are equivalent to that of the PSTN, as well as for C&W to detail what steps, if any, it has taken to achieve this goal and to validate that it has been met. C&W responded that C&W monitors overall peak traffic over all IP links and ensures there is enough capacity to carry peak traffic. To supplement this response, please provide validation that the QoS is equivalent to that of the PSTN.

C&W Response

[May 25]

3.4.1   In the first round of interrogatories, C&W was asked to explain and justify the assumption on the "Technical Assumptions" worksheet of cell C15: Softswitch ratio of call-sensitive/duration-sensitive. In response, C&W noted that "the results of the LRIC models are posted on a per minute basis in any event, making such a split immaterial." Telcordia would agree that the split has little impact on total costs. However, changes to the assumption do have an impact on costs of network element categories and services. Please provide any basis for the 50 percent values used for this technical assumption. If there is no basis, please develop an estimate C&W can support with current or projected data and please provide any such data and derivation of the estimate.

C&W Response

[May 25]

3.4.2   In the first round of interrogatories, C&W was asked to provide explanation and justification for the assumption on the "Technical Assumptions" worksheet of cell C19: Max Lines per MG. In response, C&W noted that "this represents the maximum number of customer lines typically carried by an MG/MSAN and indeed as is currently installed in C&W's network."   Please clarify if this is the maximum number of lines possible per MG/MSAN or the maximum currently install on an MBMSAN in C&W's network. If it is the maximum possible, please provide vendor documentation for this limitation.

C&W Response

[June 1]

3.4.3   In the first round interrogatories, C&W was asked to provide explanation and justification for the assumption on the "Technical Assumptions" worksheet of cell C21: Circuit Efficiency Factor.   In response, C&W noted that the percentage of 66 percent used "represents a reasonable and conservative estimate of the level of utilization obtained for optical transmission systems, which may range between 65 percent and 75 percent." Please provide documentation for 66 percent as a reasonable and conservative estimate or for 65 percent and 75 percent as the range between which utilization is expected to vary.

C&W Response

[May 25]

3.5.1   An inconsistency arises when computing dimensioning demand for network elements which have "lines" as the driver. In such cases, the model applies two growth factors to the actual demand; once to account for the 3 percent expected growth in lines, and a second time to account for another 5 percent growth in expected demand (referred to as the "Provisioning Allowance"). It is not clear what the justification is to apply two different growth factors to the line service demand figures. When det ermining dimensioned demand for elements having minutes or calls as the driver, only a single growth factor is used (the provisioning allowance). Please explain this apparent inconsistency.

C&W Response

The provisioning allowance is designed to provide for additional lines beyond what are currently in use. It allows for the fact that there will be a certain percentage of installed lines that will not necessarily be in use. It is not therefore a growth factor.

3.6.1   In the first round interrogatories, C&W was asked whether the unit cost inputs for fixed equipment/materials were based on supplier list pricing or if they reflect any kind of

discount. C&W responded that the prices used were pre-discounted current prices. Why were post-discounted (final) current prices not used?

C&W Response

C&W did indeed use supplier list pricing for inputs for fixed NGN equipment. The fact is we were not sure how to treat these discounts as we did not know how "representative" they may have been. As the modeling exercise is predicated on building a hypothetical representative network and these discounts can vary among buyers and assets purchase as well as over time, we did not use the discounts that our vendor offered to us. This situation contrasts with the mobile network where the mobile operators are similarly placed with respect to their vendors and may expect a similar level of discounting.

3.6.2   In their response to interrogatories, C&W notes that "a consideration for spares has been included in the investment costs listed" for the fixed model. Please show how and where consideration for spares has been included in the investment costs listed.

C&W Response

[May 25]

3.6.3   Please provide further explanation and justification for the planning cost as percent of Capex (cell B11 in the "Cost Assumptions" worksheet). How was it derived? Is it in line with those assets where an associated planning cost is explicitly stated?

C&W response

Please see our response to Interrogatory 2.2.1.

3.6.4   In their response to interrogatories, C&W acknowledges an error in the calculation of duct planning costs, and states that the formula to be used should be [(Equipment purchase price X Installation Labor) X planning cost as % of Capex]. We think the correct formula to be applied should be [material purchase price + installation labor] x planning factor. Please indicate whether this is an oversight, or if not, please explain the rationale for using the former. This refers to answers 3.5.4 and 3.5.6 in the first round interrogatory responses.

C&W Response

The correct formula is: [material/Equipment purchase price + installation labor] x planning factor and indeed this is the formula quoted in the model.

3.6.5   Poles investment expenditures correspond to an assumption on the cost of renting (rather than acquiring and erecting) the poles (Cost Assumptions sheet). If poles are assumed to be rented, the cost would be considered an ongoing expense and therefore not subject to depreciation considerations and the corresponding annualized cost calculations performed in the model. The model takes the pole rental expense and

applies the same capital annuity calculations as all other investments using an asset life of 20 years (Access Costs sheet). Please explain.

C&W Response

Cell C107 of the "Access Costs" sheet shows the cost of the poles falling under the Direct Capex heading as if it is being treated as a capex item, but this is not the case. The cost of poles in the "Access Costs" sheet is linked directly to the "Cost Summary & Mapping" cell E29 under the Opex heading and thus treated as an Opex item. C&W however acknowledges that the capture of the pole cost under the Direct Capex heading is indeed misleading. This will be corrected.

3.7.1 The current state of long haul transmission technology allows the implementation of much higher capacity submarine systems – from 10 Gbps to multi-terabit. The use of estimates for an STM4 transmission system would tend to result in a higher cost per STM1 compared to a deployment based on a higher capacity transmission system. As a result, the representative STM4 deployment used in the analysis would tend to overestimate the international transmission per unit investment. Were other fiber configurations explored? Was the use of existing fiber routes with available bandwidth considered?

C&W Response

[May 25]

3.8.1 In explaining the process for development of the routing factors used in the fixed model, C&W cited individual service analysis in collaboration with the C&W engineers as the basis for the factors. Please provide this analysis for each fixed service.

C&W Response

[May 25]

3.9.2 In the first round interrogatories, C&W was asked to explain some aspects of the calculation for the Fixed Cost per MG and the Variable Cost per MG on the "MG Calculations" worksheet. Based on its answer, the ICTA has the following observations and questions of clarification:

    a. Please provide the NGN dimensioning rules these MG unit cost calculations are consistent with.

C&W Response

The MG dimensioning rules for the unit cost calculations in the 'MG Calculations' sheet can be found in the 'MG Dimensions' sheet, 'Cost Assumptions' sheet from row 236 and the 'MG Analysis' sheet.

b. Please refer to the attached Excel spreadsheet "2007_04_16_ICTA_to_C&W_MG_calculations_example.xls"

c. Cell C10 (shaded green) shows the calculation of Fixed Cost as % of Total RSU/MG Investment. Please note that the value calculated on this sheet is the same as calculated in the fixed model.

d. Cells A13 through K61 is a table of all MG/RSU's in the fixed model with columns G,H,I,J and K of the table (shaded yellow) being the subset of RSU/MG's used to calculate the Fixed Cost as a percent of Total RSU/MG Investment. Columns J (Total Inv. US$) and K (Lines at time of Invoice) are the data used in the calculation of the Fixed Cost as a percent of Total RSU/MG Investment. Also included is a line graph of Columns J and K showing the Total investment per RSU/MG vs Total Lines per RSU/MG. Please note that the line graph indicates that the total investment vs total lines is not strictly a linear relationship.

e. The calculation of Fixed Cost as a percent of Total RSU/MG Investment is the intercept of the Total investment per RSU/MG vs Total Lines per RSU/MG line graph (calculated in cell J66 (shaded green)) divided by the sum of the total Investments per RSU/MG (calculated in cell J63 shaded) brown.

f. The fixed investment per RSU/MG in cell C11 (shaded yellow) is calculated by the following fromula: Fixed_Cost_as_Prcnt_of_Total_RSU_MG_Inv (cell C10 shaded green) * Total_RSU_MG_lines (cell E63 shaded green) *

g. RSU_MG_Inv_per_port (cell C8 shaded brown) / Number_of_RSU_MG_s_with_more_than_0_lines (cell E69 shaded green)This calculates to a value of $### (note this value is different than the value calculated on sheet "MG calculations" in the fixed model due to the documented calculation error in the fixed model).

C&W Response

Yes, this is correct. The formula in the submitted model is picking up those MGs with zero lines for a total of ### MGs, whereas the correct number of MGs, non-zero MGs, should be ###.

h. On the basis of the NGN dimensioning rules, please justify designating $### of every MR as fixed investment and unitized by minutes and the rest of the investment as variable unitized by lines.

C&W Response

The MGs are predominantly line sensitive and thus their costs, for the most part, vary by the number of lines (similar to circuit switched line concentrators), however a portion of the MGs support traffic and it is this portion that C&W considers to be fixed relative to the predominant line sensitive component.

3.9.2   In the first round interrogatories, C&W was asked to explain the calculation for the Fixed RSU/MG Investment per port (worksheet "Cost Assumptions" E270), noting that calculation appears to be based on two different types of equipment: (the Nortel NGN and the AXE RLU/RSM). C&W responded:

> *The reference 'worksheet "Cost Assumptions" E270' seems to be incorrectly stated as checks have not revealed the above issue. Please clarify further.*
>
> *It should be noted however that cell E270 of the "Cost Assumptions" sheet provides a cost per line based on MG equipment actually installed in C&W's network at the time. The list of MG equipment is cited in rows 255:266.*

To clarify, please refer to the attached Excel spreadsheet "MG calculations example.xls"

a.   Cell C8 (shaded brown) shows the calculation of RSU/MG Investment per port. Please note that the value calculated on this sheet is the same as calculated in the fixed model.

b.   Cells A13 through K61 is a table of all MG/RSU's in the fixed model with columns G,H,I,J and K of the table (shaded yellow) being the subset of RSU/MG's used to calculate the RSU/MG Investment per port. This table was created by combining the information provided on sheets Cast Assumptions, MG Calculations, MG dimensions.

As this table shows, the calculation appears to be based on two different types of equipment: (the Nortel NGN and the AXE RLU/RSM). Please provide more detail about each type of equipment and explain the use of each in this calculation.

C&W Response

This seems to be a misunderstanding. The MGs used to calculate the per port value in the Cost Assumptions sheet are all NGN equipment that were being installed at the time of model development. These MGs were being phased in to gradually replace the then existing legacy line concentrators called AXE RLU/RSM. The locations may be the same but the equipments used to dimension the MGs are all NGN.

The list provided in the MG Dimensions sheet shows those MGs that were installed and commissioned along with the then existing AXE RLU/RSMs. The MGs already installed at the time carried the label Nortel NGN under the table heading 'Type/Actual Equipment'. The MGs used in the calculation of the per port value and the proportion of fixed cost represented those MGs that were being installed and those already installed.

4.1.1   Please provide a schedule (identifying the estimated start and end dates and any key milestones) for C&W to submit a completed cost model and manual for a mobile network based on forward-looking 3G technology. This model should be based on the technologies and design that would be used today by a new entrant in the Cayman Islands and should respect all the principles and guidelines previously outlined by the ICTA. This model should be accompanied with an explanatory manual, as provided with the fixed and mobile models.

C&W Response

As we have stated before, we do not believe that the Authority should mandate a 3G model. There is no 3G operator in currently on the market and a 3G mobile model was not contemplated at the time of our commitment to produce a LRIC model. It will be a very expensive—preliminary estimates suggest that it will be at least US$100-$120k—and unbudgeted add-on to the process, so late in the proceeding. Needless to say, this would be on top of any ever-lengthening LRIC process.

C&W estimates that it would take around 2 months to construct and fully document this model. The scale of such a modeling exercise and therefore possible likelihood of falling on the inside or outside of that 2 month mark would depend on two key factors:

- the first relates to the nature of the network to be modelled and

- the second relates to the analysis required for opex and retail

Nature of the Network

In order to provide a timeline, there are a number of issues to be considered with respect to the nature of the network:

A. overlay or greenfield

- o   In the overlay case, in which the 3G network is built out over an existing 2.5 G network, the modelling would be simpler – cell site locations fixed, and the traffic handling of each cell location would determine the configuration and hence cost of each cell site.

- o   In the greenfield, in which the 3G network is assumed to be built out on a greenfield basis where the operator has no existing presence, there would be considerable more work and liaison with C&W engineers needed to determine the cell planning parameters.

B. Proposed product portfolio.

The level of complexity in the dimensioning of the network will depend on the degree to which the additional functionality of a 3G network would be used to support next generation services over and above legacy voice and low-bandwidth data services. For example, the existence of high-bandwidth products like video calling could significantly affect the dimensioning of the network, and hence impact the unit costs for regulated services such as voice.

Opex and Retail analysis and integration

There are basically two ways to handle opex and retail expenses. One is to build a full-fledged top-down LRIC model, which would be integrated with the existing suite of models. This approach could be expected to be significantly more time consuming given the additional

programming work that is likely to be required in respect of updating the access model to support the input from three bottom-up models. The other alternative is a stand-alone model using an expense factor approach to the calculation of non-network and retail costs.

Time requirements

If we assume that the Authority would mandate a stand-alone model with a overlay approach, with a standard product portfolio and expense factored non-network and retail costs, and given a start date of mid-June we would anticipate submission of the model in mid August. However, these assumptions are not yet givens, and we note that the Authority conducted a detailed proceeding in 2004-5 in order to determine these matters with respect to the current process (which contemplates a 2.5G network).

C&W Response

4.1.2   In the first round interrogatories, C&W was asked to explain the determination of the allocation percentage into Call Attempts, Minutes, and Subscribers of various equipment. C&W responded that in the absence of a more accurate allocation basis for MSC and HLR, C&W thought it reasonable to apply a 50/50 split to these components. It reported that all other components are allocated 100 percent to their respective function. However, in order to determine if for the MSC the 50/50 split between Traffic Minutes and Call Attempts is appropriate, and for the HLR the 50/50 split between Call Attempts and Subscribers is appropriate, and for the BTS, BSC, TCU, SGSN, and GGSN the 100 percent allocations are appropriate, more detailed is required. Please provide a breakdown of the MSC, HLR, BTS, BSC, TCE, SGSN, and GGSN into their sub-components and provide a thorough description of each sub-component along with the dimensioning rules for each of the sub-components.

C&W Response

[June 1]

4.2.1   In section 4.2 of C&W's responses to ICTA/Telcordia interrogatories, C&W states that the "site costs" listed in the Mobile Network Model consist of the equipment, rigging and installation cost of a cellular tower plus any ancillary equipment such as cable trays, cabinets, platforms, etc. Please show the calculation of these costs in detail.

C&W Response

[June 1]

4.3.1   In explaining the process for development of the routing factors used in the mobile model, C&W cited individual service analysis in collaboration with the C&W engineers as the basis for the factors. Please provide this analysis for each mobile service.

C&W Response

Given the fairly simple network structure of the mobile network modeled C&W found it unnecessary to conduct detail call routing analysis to determine the routing factors. Rather the majority of routing factors were developed through observational or thought analysis and confirmatory discussions with the mobile engineers. These can be verified quite easily by anyone with an understanding of the mobile network modeled, and that is, a mobile network with one switch. The exceptions are as follows:

1) C&W used the data produced by OFTEL in their submission to the Monopolies and Mergers Commission (MMC) 1998 in the UK to allow for the difference of switch processing time for inbound versus outbound calls (as detailed in our previous submission). This was applied to the following call types and network element:

Call Type	GSM: MSC -call sensitive
MOBILE INTERNATIONAL INCOMING	###
MOBILE ON NET CALL	###
MOBILE TERMINATION	###

2) The analysis for Inbound Roaming and SMS routing factors could be found from row 21 of the 'Routing Factors Input' sheet in the mobile BU model.

3) The routing for the Prepaid Platform of ###% is based on the estimated proportion of active prepaid subscribers to total active subscribers. Which was around ### (pre) / ### (total).

The other routing factors were simply developed, for example, a mobile on-net call would use 2 cell sites to complete a call, thus the BTS routing factor for such a call is 2.

4.4.1   The Demand Assumptions tab shows a total of 30,000 mobile subscribers. The same number is being used to represent the number of Data and SMS subscribers (a cell label indicates that this number is used in the sizing of SMS and Data traffic). Although the vast majority of mobile users do have SMS and/or data enabled handsets, only a fraction of them actually use these services. Please explain the assumption.

C&W Response

[May 25]

4.4.2   In question 3.4.5 of the first round of interrogatories, C&W was asked to describe how C&W had accounted in its demand and traffic projections due to use of VoIP, for possible

changes in fixed-mobile calling patterns or for mobile substitution? In its response, C&W noted that "we have accounted for an expansion of those types of fixed traffic where VOIP options are currently available, in particular in fixed-to-fixed national calling and international outbound and inbound calling.   The fact that the mobile traffic is not assumed to be susceptible to that effect means implicitly that there is movement in relative terms in favour of fixed calling." However, we could not find any mention of the impact (potential erosion) of VoIP services from non-facilities based companies like Vonage, Skype and others in the near future. Neither did we see references to the estimated impact of fixed to mobile substitution (displacement of fixed line service in favor of mobile usage) in terms of traffic and/or line counts. Please elaborate on how these were addressed, if at all.

C&W Response

[May 25]

4.5.1   In the previous interrogatories, C&W was asked to explain how the following technical assumptions were determined:

a.	MSC increment	cell D49
b.	HLR increment	cell D50
c.	Number of cell sites per BSC	cell D51
d.	PCU Capacity	cell D52
e.	SGSN capacity	cell D55
f.	GGSN capacity	cell D56
g.	Internet Gateway Capacity increment	cell D59

C&W responded that "these represent the minimum capacity constraint applied to each listed increment and are all industry benchmark figures supported by C&W's engineers and considered to be reasonable and appropriate estimates."   Please provide the documentation for each of these minimum capacity constraints.

C&W Response

[June 1]

5.1.1   Referring to the Fixed Service Cost and Mobile Service Cost worksheets of the Consolidation Model, please confirm whether the values of "Total Service Cost" and "Service Unit Cost" include the calculated LRIC values of Annualized capital costs, Network opex (expense factors), Overhead opex (expense factors of the consolidation model) and Retail costs (TD analysis), and that they do not include the calculated markup values for the common costs associated with the Group Increments (G-Fixed Access; G-Fixed Traffic; G-Mobile-Subscriber; G-Mobile-Traffic), Network-Wide Common Costs (Fixed Network; Mobile Network) and TD Common.

C&W Response

Yes, the values associated with the 'Total Service Cost' and 'Service Unit Cost' do contain the calculated LRIC values of Annualized capital costs, Network opex (expense factors), Overhead opex (expense factors of the consolidation model) and Retail costs (TD analysis),

the calculated markup values for the common costs associated with the Group Increments (G-Fixed Access; G-Fixed Traffic; G-Mobile-Subscriber; G-Mobile-Traffic), Network-Wide Common Costs (Fixed Network; Mobile Network) and TD Common.

5.1.2   Referring to the explanation C&W provided for the Expense Factor worksheet in pages 8 and 9 of Appendix IX, please explain the meaning, purpose and calculations performed in the lines 2 to 8 and lines 98 to 100 of the Expense Factor sheet of the Consolidation Model.

C&W Response

Generally the purpose of this sheet is to apply each expense factor against the GRC, and is some cases the Network Opex, of each Network element to generate the allocation of Overhead Opex to Network Elements.

Rows 2 to 4 bring in the pre calculated GRCs from the BU models that are stored in the pivot table located in sheet 'BU_Results'. These values are stored in row 2.

Rows 6 to 8 bring in the pre calculated Network Opex values from the BU models that are stored in the pivot table located in sheet 'BU_Results'. These values are stored in row 6.

Rows 98 to 100 capture the results of the expense factor allocations (captured in range A54 to AO96) and stores the totals in value paste format in row 100. This is done to avoid circular errors.

5.1.3   Regarding the explanation C&W provided for the REL_PERC worksheet in page 9 of Appendix IX, please explain how the allocation percentages (column C of that sheet) are calculated in the model. Please take the network element 400-Access Local Loop as an example and demonstrate how the model calculated the allocation percentages shown in the REL_PERC worksheet for the list of 900-Level Products.

C&W Response

This pivot table expresses the relative volume of each service as a percentage of total network increment volume. For example, 400-Access Local Loop has six services, namely:

900-DOMESTIC LEASED CIRCUITS RETAIL	###
900-DOMESTIC LEASED CIRCUITS WHOLESALE	###
900-INTERNATIONAL PAYPHONE	###
900-ISDN ACCESS RETAIL	###
900-PSTN ACCESS BUS	###
900-PSTN ACCESS RES	###

The sum total increment volume is = ### lines, expressing each as a percentage of the total produces:

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400-Access Local Loop	900-DOMESTIC LEASED CIRCUITS RETAIL	###%
	900-DOMESTIC LEASED CIRCUITS WHOLESALE	###%
	900-INTERNATIONAL PAYPHONE	###%
	900-ISDN ACCESS RETAIL	###%
	900-PSTN ACCESS BUS	###%
	900-PSTN ACCESS RES	###%
400-Access Local Loop Sum		100.0000%

As shown in the REL_PERC sheet.

5.1.4   Regarding the explanation C&W provided for the DET_VAL worksheet in pages 10 and 11 of Appendix IX, please explain how these bottom-up LRIC results are calculated/derived from the MLRIC sheet. Please provide a simplified but complete description of the calculation process performed to obtain the bottom-up results by Increment, Network Element and Cost Type (as shown in the DET_VAL worksheet).

C&W Response

Recall that the purpose of the consolidation file is to primarily report on values already calculated, either in the BU models, the TD MS Access model or the consolidation expense factor sheet. Therefore, what is reported in the DET_VAL sheet has already been calculated and is only being reported in a certain format for ease of reference.

The table in the 'MLRIC Values' sheet captures all the costs allocated to network increments and services expressed in columnar form (a database format). This table being difficult to read is expressed in the DET_VAL sheet in a manner for easy interpretation. The 'MLRIC Values' sheet values were obtained from the following models:

1) MS Access Top Down model (treats the retail costs)

2) BU Fixed and Mobile models for GRC, Annualised Network Costs and Network Opex values (taken from the BU Output sheets)

3) Consolidation File, Expense factor sheet for the Overhead expenses allocated to Network Elements.

For example, in the DET_VAL sheet and using the first network element, 400-Access Local Loop, we can trace the costs of each service but using '900-FIXED CALL TO C&W MOBILE' for simplicity sake. We have the following:

Working in the DET_VAL sheet, double click on cell C8. This opens a secondary sheet which contains a break down of the value in cell C8. In this case the following table emerges:

INCREMENT_ID	ENTITY_ID	ELEMENT_ID	LRIC_VALUE	Markup Type	Calculation Type
900-FIXED CALL TO C&W MOBILE	400-Access Local Loop	Annualised Cost	- ###	G-Fixed traffic	G-BU-FIXED
900-FIXED CALL TO C&W MOBILE	400-Access Local Loop	Annualised Cost	- ###	BU-F: COMMON - VARIABLE	G-BU-FIXED

This table indicates that the components of the value of cell C8 are G-Fixed traffic markup and BU-F: Common Variable markup. These values can be found in the 'MLRIC Values' sheet by filtering in succession the following table headings: 'INCREMENT_ID' (filter for the service '900-FIXED CALL TO C&W MOBILE'), 'ENTITY_ID' (filter for network element '400-Access Local Loop') and 'ELEMENT_ID' (filter for 'Annualised Cost').

Now 'filter all' in the 'INCREMENT_ID' column heading and then filter the column heading 'Markup Type' for the markup 'G-Fixed traffic', this would reveal all the proportionate allocations of the 'G-Fixed traffic' markup (ISFC) to traffic related services.

#

INCREMENT_ID	ENTITY_ID	ELEMENT_ID	LRIC_VALUE	Markup Type	Calculation Type
900-DOMESTIC LEASED CIRCUITS RETAIL	400-Access Local Loop	Annualised Cost	###	G-Fixed traffic	G-BU-FIXED
900-DOMESTIC LEASED CIRCUITS WHOLESALE	400-Access Local Loop	Annualised Cost	###	G-Fixed traffic	G-BU-FIXED
900-DOMESTIC TRANSIT	400-Access Local Loop	Annualised Cost	###	G-Fixed traffic	G-BU-FIXED
900-FIXED CALL TO C&W MOBILE	400-Access Local Loop	Annualised Cost	###	G-Fixed traffic	G-BU-FIXED
900-FIXED CALL TO OTHER MOBILE	400-Access Local Loop	Annualised Cost	###	G-Fixed traffic	G-BU-FIXED
900-FIXED INTERNATIONAL INCOMING	400-Access Local Loop	Annualised Cost	###	G-Fixed traffic	G-BU-FIXED
900-NATIONAL PAYPHONE	400-Access Local Loop	Annualised Cost	###	G-Fixed traffic	G-BU-FIXED
900-FIXED CALL to OLO	400-Access Local Loop	Annualised Cost	###	G-Fixed traffic	G-BU-FIXED
900-INTERNATIONAL TRANSIT to OLO	400-Access Local Loop	Annualised Cost	###	G-Fixed traffic	G-BU-FIXED

#

The sum of the values under column heading LRIC_VALUE is approx. 61,075 which is the same value obtained in the BU Output sheet of the Fixed BU model as shown below.

Filter the column heading 'ENTITY_ID' for the network element '400-Access Local Loop' and then filter the column heading 'ELEMENT_ID' for the cost type 'Annualised Cost', the following table should emerge:

#

INCREMENT_ID	ENTITY_ID	ELEMENT_ID	LRIC_VALUE	
900-DOMESTIC LEASED CIRCUITS RETAIL	400-Access Local Loop	Annualised Cost	###	
900-DOMESTIC LEASED CIRCUITS WHOLESALE	400-Access Local Loop	Annualised Cost	###	
900-NATIONAL PAYPHONE	400-Access Local Loop	Annualised Cost	###	
900-PSTN ACCESS BUS	400-Access Local Loop	Annualised Cost	###	
900-PSTN ACCESS RES	400-Access Local Loop	Annualised Cost	###	
G-Fixed access	400-Access Local Loop	Annualised Cost	###	
G-Fixed traffic	400-Access Local Loop	Annualised Cost	###	###
G-ALL-PROD	400-Access Local Loop	Annualised Cost	###	

#

Subtracting the values shaded yellow above from the value shaded blue would produce the result 61,075. The same vale calculated above in the 'MLRIC Values' sheet above. Again this represents the total G traffic markup value for the network element '400-Access Local Loop'.

The other values of the DET_VAL sheet can be traced similarly.

5.1.5 With regards to the explanation C&W provided for the ABS_VAL worksheet in pages 11 and 12 of Appendix IX, does that mean that the total markup values for FCCs/Joint Costs and Network-Wide Common Costs (as per the terminology described in this document) have been allocated to the individual Network Elements? If yes, take the Group (Service) Increment G-Fixed Traffic as an example and explain how the model allocates the FCCs/Joint Costs to the different network elements as shown in ABS_VAL worksheet.

C&W Response

The G-Fixed Traffic markup captured in the ABS-VAL sheet would have been captured similarly to the values explained above in part 4 but just reported differently.

Filtering the pivot heading 'Mark-up Type' for 'G-Fixed Traffic' will produce the following table:

\#

Markup Type	G-Fixed traffic				
INCREMENT_ID	(All)				
Abs Value	ELEMENT_ID				
ENTITY_ID	Annualised Cost	GRC	Opex	OVERHEAD OPEX	Grand Total
400-Access Local Loop	###	###	###	###	###
400-Contact Centre Platforms			###	###	###
400-Data Network Equipment	###	###	###	###	###
400-DQ Operator services equipment			###	###	###
400-Host-Host Tx	###	###	###	###	###
400-Interconnect billing platform	###	###	###	###	###
400-Interconnect Specific Costs	###	###	###	###	###
400-International Tx	###	###	###	###	###
400-IP Equipment	###	###	###	###	###
400-National submarine Tx	###	###	###	###	###
400-PSTN Host Switch - call sensitive	###	###	###	###	###
400-PSTN Host Switch - duration sensitive	###	###	###	###	###
400-PSTN Voicemail	###	###	###	###	###
400-RSU traffic sensitive	###	###	###	###	###
400-RSU-Host Tx	###	###	###	###	###
Grand Total	###	###	###	###	###

\#

And following the example cited in part 4, the highlighted area above clearly shows the same total value calculated in part 4 (###) for the network element 400-Access Local Loop.

5.1.6 In the explanation C&W provided for the RET_VAL worksheet in pages 12 and 13 of Appendix IX, C&W states that the RET_VAL worksheet contains calculated top-down

LRIC retail results from the associated retail cost models. C&W then states that retail costs are reported "per Increment", per "Element" and "With or Without Markup". Please explain:

    a. The meaning, purpose and calculations performed in columns B to F of that worksheet.

C&W Response

The values presented in this pivot table are used for reporting in the Fixed Service Costs and Mobile Service Costs sheets, rows 46 and 38 respectively.

The relevant columns are Increment (col. A) and Total Cost (col. D).

    b. Are these just the retail costs captured by the TD analysis tool and that still need be summed to the non-retail costs (annualized capital costs + network opex (expense factors) + overhead opex (expense factors of the consolidation model))?

C&W Response

Yes, as is done in the Fixed Service Costs and Mobile Service Costs sheets, rows 46 and 38 respectively.

    c. Do these costs include the allocation of TD Common?

C&W Response

Yes, these also include TD Common as handled by the MS Access model.

    d. What does the retail model markup calculation capture that has not been captured by the markup calculation in the respective network cost models? Please explain the "With or Without Markup" calculation performed here.

C&W Response

The network models (BU Fixed and Mobile Models) are focused on strictly Network Capital and Opex values. The markups captured in these models are directly network related whereas the retail markup values are strictly of a retail nature such as advertising or costs borne out of support for retail services or functions, such as supporting IT costs attributed to retail services.

    e. Please explain where in the model the retail costs are reported "per Element" and what this means.

C&W Response

This depends on how 'Element' is defined. The RET_VAL sheet has 'Element_ID' as a selection in its pivot table, but here Element is defined as a Cost type consistent with the Top Down

definition of Element_ID. It does not refer to network Elements as retail values are not allocated directly to network elements.

    f.   Please explain the mark-up types:

        i.   TD: COMMON-VARIABLE

C&W Response

Retail costs common to all services.

        ii.   G-Fixed other

C&W Response

Retail costs allocated only to CPE.

        iii.   G-Subscriber?

C&W Response

Retail costs are allocated only to Mobile Subscribers.

    g.   Where in the models can one find all pieces that constitute the incremental cost of 900-Level Products (as per bellow)? Please provide that information in a single spreadsheet (one column for each item bellow):

        i.   Annualized capital costs

        ii.   Network opex (expense factors)

        iii.   Overhead opex (expense factors of the consolidation model)

        iv.   Retail costs (TD analysis)

        v.   Markups for FCCs/Joint Costs associated with the Group Increments (G-Fixed Access; G-Fixed Traffic; G-Mobile-Subscriber; G-Mobile-Traffic)

        vi.   Markup for Network-Wide Common Costs (Fixed Network; Mobile Network)

        vii.   Markup for TD Common Costs

C&W Response

These values can be found in the Reconciliation sheet.

5.1.7   In the explanation C&W provided for the MLRIC worksheet in pages 13 and 14 of Appendix IX, C&W informs that the MLRIC worksheet contains the calculated LRIC

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values from the bottom-up models, the calculated LRIC values from the Expense Factors components of the Consolidation model and the calculated markup values.

    a. Column E of the MLRIC worksheet informs the "Markup Type" calculation performed: LRIC without markup; Fixed-Access; Fixed-Traffic; BU-F: COMMON-VARIABLE; BU-M: COMMON VARIABLE.

        i. Please explain what it means with the latter two "Markup Types" (BU-F: COMMON-VARIABLE; BU-M: COMMON VARIABLE).

C&W Response

BU-F: COMMON-VARIABLE – This is the Bottom UP Fixed Model Joint Common Costs or the difference between the G-All Prod values and the sum of the G traffic and G Access values. These are calculated from the BU Output sheet of the Fixed BU model.

BU-M: COMMON VARIABLE – This is the Bottom Up Mobile Model Joint Common Costs or the difference between the G-All Prod values and the sum of the G traffic and G Subscriber values. These are calculated from the BU Output sheet of the Mobile BU model.

        ii. Does it mean the markups for the Network-Wide Common Costs for the fixed and mobile networks respectively (as explained in the Background Document)?

C&W Response

Yes.

        iii. How did C&W calculate the markups values for the FCCs/Joint Costs associated with the Group Increments G-Mobile-Subscriber and G-Mobile Traffic?

C&W Response

This calculation is similar to that explained in interrog 5.4 above.

G-Mobile Subscriber represent the subscriber related common cost as calculated in the Mobile BU model, however, if this value is zero it will not be shown in the MLRIC sheet. And this is the case as the MLRIC sheet does not contain a value for G Mobile Subscriber that originated from the BU Mobile model.

The other common cost item G-Mobile Traffic is present in the MLRIC sheet and is calculated accordingly:

Note: This is done for the annualized cost only; the other cost types can be traced similarly.

Starting in the MLRIC sheet and filtering for the common cost G-Mobile Traffic under the column heading 'Markup Type', immediately following, filter column heading 'Element ID' for the cost type 'Annualised Cost'. This should produce the following table:

#

INCREMENT ID	ENTITY ID	ELEMENT ID	LRIC VALUE	Markup Type	Calculation Type
900-INBOUND ROAMING	400-GSM: BTS	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-MOBILE INTERNATIONAL INCOMING	400-GSM: BTS	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-MOBILE INTERNATIONAL OUTGOING	400-GSM: BTS	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-MOBILE ON NET CALL	400-GSM: BTS	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-MOBILE TERMINATION	400-GSM: BTS	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-MOBILE TO FIXED	400-GSM: BTS	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-MOBILE TO OTHER MOBILE	400-GSM: BTS	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-SMS	400-GSM: BTS	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-INBOUND ROAMING	400-GSM: MSC -duration s	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-MOBILE INTERNATIONAL INCOMING	400-GSM: MSC -duration s	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-MOBILE INTERNATIONAL OUTGOING	400-GSM: MSC -duration s	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-MOBILE ON NET CALL	400-GSM: MSC -duration s	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-MOBILE TERMINATION	400-GSM: MSC -duration s	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-MOBILE TO FIXED	400-GSM: MSC -duration s	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-MOBILE TO OTHER MOBILE	400-GSM: MSC -duration s	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE
900-SMS	400-GSM: MSC -duration s	Annualised Cost	###	G-Mobile traffic	G-BU-MOBILE

###

#

Column 'LRIC_Value' produces a total of ###. The question is, how was this value derived? Remembering that the common costs (in this case, Mobile traffic also considered an ISFC) are allocated to services based on the proportionate LRIC values calculated previous.

Now turning to the BU Mobile model to show where this value came from. Sheet BU Output, filtered for annualized cost only in column 'C' and to exclude G-All-PROD and G-Subscriber in column A produces the following table.

#

INCREMENT ID	ENTITY ID	ELEMENT ID	LRIC VALUE	
900-MOBILE INTERNATIONAL INCOMING	400-GSM: BTS	Annualised Cost	###	
900-MOBILE INTERNATIONAL INCOMING	400-GSM: BSC	Annualised Cost	###	
900-MOBILE INTERNATIONAL INCOMING	400-GSM: MSC -duration sensitive	Annualised Cost	###	
900-MOBILE INTERNATIONAL OUTGOING	400-GSM: BSC	Annualised Cost	###	
900-MOBILE ON NET CALL	400-GSM: BTS	Annualised Cost	###	
900-MOBILE ON NET CALL	400-GSM: BSC	Annualised Cost	###	
900-Mobile Subscriber	400-GSM: HLR/VLR - subscriber sensitive	Annualised Cost	###	
900-MOBILE TO OTHER MOBILE	400-GSM: BTS	Annualised Cost	###	
900-MOBILE TO OTHER MOBILE	400-GSM: BSC	Annualised Cost	###	
900-MOBILE TERMINATION	400-GSM: BTS	Annualised Cost	###	
900-MOBILE TERMINATION	400-GSM: BSC	Annualised Cost	###	
900-MOBILE TERMINATION	400-GSM: MSC -duration sensitive	Annualised Cost	###	###
G-Mobile traffic	400-GSM: BTS	Annualised Cost	###	
G-Mobile traffic	400-GSM: BSC	Annualised Cost	###	
G-Mobile traffic	400-GSM: MSC -duration sensitive	Annualised Cost	###	###

###

#

The side calculations explain: The sum of the values of the yellow shaded area is ###, this represents the total annualized LRIC value calculated for the listed services. The green shaded area represents the total cumulative value of the LRIC cost plus markup, therefore subtracting the value in yellow from the value in green (### – ### = ###) produces the required markup for G-Mobile traffic, ### shown in blue above. This is the same value obtained in the MLRIC sheet for G-Mobile traffic markup.

b. The table bellow shows an extract from the MLRIC sheet by setting "Increment ID" as 900-PSTN ACCESS RES, "Entity ID" as 400-RSU line sensitive, "Element ID" as All, "Markup Type" as G-Fixed. Please explain how the markup values for G-Fixed Access are calculated and associated to the 400-Level Network Element? (Please note that paragraph 128 of the Background Document

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describes the process in which these FCCs/Joint Costs are calculated and allocated to 900-Level Products).

900-PSTN ACCESS RES	400-RSU line sensitive	GRC	-###	G-Fixed access	G-BU-FIXED
900-PSTN ACCESS RES	400-RSU line sensitive	Annualised Cost	-###	G-Fixed access	G-BU-FIXED
900-PSTN ACCESS RES	400-RSU line sensitive	Opex	-###	G-Fixed access	G-BU-FIXED
900-PSTN ACCESS RES	400-RSU line sensitive	OVERHEAD OPEX	-###	G-Fixed access	G-BU-FIXED

C&W Response

These values are obtained no different to those explained in interrogs 5.4 and 5.7.iii above. Following the procedures will produce the respective markups being queried.

5.1.8   Appendix IX provided no information about the BU_Results worksheet of the Consolidation Model. Please explain the columns of the BU_Results worksheet, and in particular explain:

   c.   How did the model calculate the LRIC value of each Network Element (columns P to U, lines 5 to 18)?

   d.   How did the model calculate the LRIC value of each Service?

   e.   Are the abovementioned LRIC values with or without mark-up?

C&W Response

Again this sheet is but a reporting sheet showing the results of the various costs calculated elsewhere.

#

INCREMENT_ID	ENTITY_ID	ELEMENT_ID	LRIC_VALUE	
900-DOMESTIC LEASED CIRCUITS RETAIL	400-Access Local Loop	Annualised Cost	###	
900-DOMESTIC LEASED CIRCUITS WHOLESALE	400-Access Local Loop	Annualised Cost	###	
900-NATIONAL PAYPHONE	400-Access Local Loop	Annualised Cost	###	###
900-PSTN ACCESS BUS	400-Access Local Loop	Annualised Cost	###	
900-PSTN ACCESS RES	400-Access Local Loop	Annualised Cost	###	###

#

In this case the columns P to U are only reporting on the LRIC values calculated. For example, the value in Q5 for the network element 400 Access local loop is the sum of the LRIC values obtained from the BU Output sheet of the BU Fixed Model. See the extract above where the sum of the yellow and brown shaded areas total to the value shown in cell Q5.

5.1.9   In the explanation C&W provided for the Total Markup worksheet in pages 16 and 17 of Appendix IX, C&W states that the Total Markup worksheet of the Consolidation Model contains the calculation of Total Markup values, i.e. total values of Joint and Common Costs per Network Element and per Cost Type.

a. Please provide a detailed explanation on how it calculated the total values of Joint and Common Costs per Network Element and per Cost Type. (Please note that paragraph 128 of the Background Document describes the process in which these FCCs/Joint Costs are calculated and allocated to 900-Level Products).

C&W Response

See the responses to part 'c' below for examples of how these costs were obtained in the Total Markup sheet.

b. The table bellow shows lines 67 to 77, columns A and B of the Total Markup worksheet. Please explain where these 400-Level Network Elements came from. Please provide a detailed explanation about them and where they fit into the models (since they are not in the list of network elements of the fixed or mobile models).

400-Cable TV assets	G-TD-ENTITY
400-Contact centre platforms/databases	G-TD-ENTITY
400-Corporate CPE	G-TD-ENTITY
400-Fixed Network Common	G-TD-ENTITY
400-International Voice Switch	G-TD-ENTITY
400-IOF Special Services	G-TD-ENTITY
400-Mobile Network Common	G-TD-ENTITY
400-Packet switching network	G-TD-ENTITY
400-Paging platform	G-TD-ENTITY
400-Residential CPE	G-TD-ENTITY
400-WLL equipment - Not used	G-TD-ENTITY

C&W Response

These are not relevant and hold no bearing on the model calculations or results.

c. Please provide the definitions and describe the terminology it used on line 1 of that worksheet (bellow)

i. FAC

C&W Response

These are the values obtained directly from the FAC Output sheets of the Fixed and Mobile BU models. They represent the fully loaded LRIC values which for each network element captures the pure LRIC, ISFC marked up LRIC, Joint Common costs markup and the Fixed common cost markup. Note that these values do not capture the TD retail costs. (It will be shown below in parts ii and iii that the Fixed common costs attributed to the network elements are ###).

For example, taking the network element '400-ADSL Equipment' in line 4, the annualized cost of ### in column 'D' can be found in the FAC Output sheet of the Fixed BU model. An extract of the FAC Output sheet is shown below where the blue shaded value corresponds to the value in cell D4 of the Total markup sheet.

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Entity	GRC	Annualised Cost	Opex
400-International Tx	###	###	###
400-PSTN Host Switch - call sensitive	###	###	###
400-PSTN Host Switch - duration sensitive	###	###	###
400-RSU traffic sensitive	###	###	###
400-RSU line sensitive	###	###	###
400-RSU-Host Tx	###	###	###
400-Host-Host Tx	###	###	###
400-National submarine Tx	###	###	###
400-PSTN Voicemail	###	###	###
400-IP Equipment	###	###	###
400-ADSL Equipment	###	###	###
400-Payphone Equipment	###	###	###
400-Prepaid PSTN Calling Card Equipment	###	###	###
400-VAS platforms	###	###	###
400-DQ Operator services equipment	###	###	###
400-Contact Centre Platforms	###	###	###
400-Access Local Loop	###	###	###
400-Interconnect billing platform	###	###	###
400-Interconnect Specific Costs	###	###	###
400-Data Network Equipment	###	###	###

#

ii LRIC-G-ALL-PROD

C&W Response

This represents the cumulative LRIC values with BU markup for joint and common costs but not Fixed Common costs. These represent values calculated in the BU models and Consolidation expense factor allocation, in other words they represent all costs allocated to network elements but not retail. For example, the annualized cost for '400-ADSL Equipment' shown in cell H4 with a value of ### can be found in the BU Output sheet of the Fixed BU model. See the extract below.

#

INCREMENT_ID	ENTITY_ID	ELEMENT_ID	LRIC_VALUE
900-ADSL RETAIL	400-ADSL Equipment	Annualised Cost	###
900-ADSL WHOLESALE	400-ADSL Equipment	Annualised Cost	###
G-Fixed access	400-ADSL Equipment	Annualised Cost	###
G-ALL-PROD	400-ADSL Equipment	Annualised Cost	###

#

The value highlighted in blue above represents the cumulative LRIC value of the following:

Pure LRIC value for 900-ADSL RETAIL - (###)

Pure LRIC value of 900-ADSL WHOLESALE - (###)

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ISFC value for G-Fixed access - (###)

Joint Common Cost value for G-All-PROD - (###)

Total cumulative value of – ### as shown in blue above.

iii   BU-F: COMMON-FIXED

C&W Response

The difference between the FAC Output sheet (or part i minus part ii values) of the BU fixed model and the G-All-Prod values of the BU Output sheet produces the BU F Common Fixed costs. In this case those values are all zero, in other words there are no Bottom Up Fixed common Fixed costs. For example:

Subtracting the value (###) obtained in part ii above for '400-ADSL Equipment' from the value (###) obtained in part i above produces the Common Fixed cost which in this case is zero.

iv   BU-M: COMMON-FIXED

C&W Response

Likewise for the Mobile model, the difference between the FAC Output sheet of the BU mobile model and the G-All-Prod values of the BU Output sheet produces the BU mobile Common Fixed costs. In this case those values are all zero; other words there are no Bottom Up mobile Common Fixed costs.

v   LRIC-G and <> G-ALL-PROD

This represents the sum of the ISFC marked up LRIC values or increment joint common costs but not those labeled as G-all-Prod, that is, the joint common costs across all services. For example, the network element 400-Access Local Loop value in cell T88 (###) of the Total Markup sheet is the sum of the increment joint common costs (ISFCs) G-Fixed Access (###) and G-Fixed Traffic (###) produce the value of ###.

See the shaded values from the extract below which were taken from the BU Output sheet of the Fixed BU model.

#

INCREMENT_ID	ENTITY_ID	ELEMENT_ID	LRIC_VALUE
900-DOMESTIC LEASED CIRCUITS RETAIL	400-Access Local Loop	Annualised Cost	###
900-DOMESTIC LEASED CIRCUITS WHOLESALE	400-Access Local Loop	Annualised Cost	###
900-NATIONAL PAYPHONE	400-Access Local Loop	Annualised Cost	###
900-PSTN ACCESS BUS	400-Access Local Loop	Annualised Cost	###
900-PSTN ACCESS RES	400-Access Local Loop	Annualised Cost	###
G-Fixed access	400-Access Local Loop	Annualised Cost	###
G-Fixed traffic	400-Access Local Loop	Annualised Cost	###
G-ALL-PROD	400-Access Local Loop	Annualised Cost	###

#

vi   BU-F: COMMON-VARIABLE

C&W Response

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REDACTED VERSION

This represents the difference between the cumulative G All Prod marked up values calculated from the results of the BU Output sheet in the BU Fixed model and the cumulative ISFC values (G Fixed traffic and G-Fixed access values). See the extract below which shows the same value of ### for the network element 400-Access Local Loop as that in cell X48 of the 'Total Markup' sheet. The value shown below is calculated by subtracting the cumulative G-All-PROD value of ### from the sum of the cumulative G-Fixed Access and G-fixed traffic values (###), this produces the markup value of ### for BU F: COMMON-VARIABLE.

#

#

vii   BU-M: COMMON-VARIABLE

C&W Response

The explanation for BU-M: COMMON-VARIABLE is similar to part vi above, however there are no values classified as BU-M: COMMON-VARIABLE for the mobile network. In other words the BU-M: COMMON-VARIABLE marked up values for mobile are all ###.

viii   G-Fixed Access

C&W Response

These are the cumulative ISFCs or Increment Joint Common costs of the access increment

ix   G-Fixed Traffic

C&W Response

These are cumulative ISFCs or Increment Joint Common costs of the traffic increment

x   G-Mobile Subscriber

C&W Response

These are cumulativet ISFCs or Increment Joint Common costs of the mobile subscriber increment.

xi   G-Mobile Traffic

C&W Response

These are the cumulative ISFCs or Increment Joint Common costs of the mobile traffic increment

d.   Please explain how each value is calculated/ derived (for each 400-Level Network Element and for each Cost Type (GRC, Annualized Cost, Opex, Overhead Opex)).

C&W Response

These values are the same values obtained in the previous sheets already described above. Again this sheet just represents another form of reporting the same values. Therefore all the previous explanations provided as to how the LRIC and common values are calculated are relevant here.

5.1.10 In the explanation C&W provided for the Markup Perc worksheet in pages 15 and 16 of Appendix IX, C&W states that the Markup Perc worksheet of the Consolidation Model contains calculation of the markup percentages, i.e. percentages defining how the total markup (as calculated in the Total Markup worksheet) should be distributed between individual products.

      a. Please provide the definitions and describe the terminology C&W used in lines 1 and 3. Please use the same terminology throughout this document (as the one commonly used in the specialized literature – described above):

           i. Joint Economic Costs

           ii. Allocated Joint EC

           iii. Fixed Common EC with JC and Mobile Common EC with JC

           iv. Common Percentage

           v. Common Fixed Allocated

           vi. Common Variable Allocated

C&W Response

See response to part b below.

      b. Please explain how the calculations on the Markup Perc worksheet were performed, i.e. how C&W derived the markup values/percentages to be distributed among the individual 900-Level Products based on the total markup values allocated to each 400-Level Network Element (Total Markup worksheet).

C&W Response

The terms captured in this sheet may be a bit confusing as they add to the already burdened use of terms defining common costs. Nonetheless, the following gives an explanation to the terms and how the values are calculated:

'Joint Economic Costs' refers to Cell Range D2:G2 - the range calculates the total pure LRIC of the services within each of the four increment groups. These values are not joint cost in the manner define throughout this document, but are instead used to allocate the increment joint costs (ISFCs) calculated in cell range L2:O2. These values are obtained from the 'BU_Results' sheet and stored in column 'C'.

Columns H-K calculates the percentage values of the pure LRIC allocations. For example, cell I19 calculates a value of ###% which derived from E19/E2, the pure LRIC value (G-Fixed Traffic) allocated to service '900-DOMESTIC LEASED CIRCUITS RETAIL' (27,210) divided by the total value pure LRIC value of (###).

'Allocated Joint EC', refers to Cell Range L2:O2 - the range calculates the total increment joint costs (ISFC) of each of the four increment groups based on the values in the Total Mark Up page.

Note: these appear to calculate economic costs by multiplying the GRC by the WACC, but this is a redundant term in the formula which carries a value of zero.

'Fixed Common EC with JC and Mobile EC with JC'

The cells in range L4:O73 apportion the values in range L2:O2 in proportion to the pure LRIC. These are recorded in columns P to R, and a total value calculated in range P2:R2. This may be considered to be DLRIC.

'Common Percentage'

The cells in columns S to U calculate the proportion of total 'DLRIC' that is allocated to each service. This is used to allocate the fixed common cost in the columns headed 'Common Fixed Allocated' and 'Common Variable Allocated'.

5.1.11 In the explanation C&W provided for the FAC_Results worksheet in pages 17 and 18 of Appendix IX, C&W states that the FAC_Results worksheet contains imported values from the bottom-up models showing the full costs of each Network Element per Cost Type (GRC, Annualized Cost, Opex). In C&W's response to ICTA/Telcordia interrogatories, C&W states that the LRIC models use the acronym "FAC" to refer to the "fully-loaded", i.e., fully marked-up, LRIC and this should not be confused with the fully allocated cost model that was the source of the operational expenditure used in the LRIC model.

c. Are these costs in the FAC_Results worksheet, the "fully-loaded", i.e., fully marked-up, LRIC, including the markups for all FCCs/Joint Costs, Network-Wide Common Costs and TD Common (per Network Element)? If so, please explain how the models calculate the markup values per Network Element.

C&W Response

Yes, these values were obtained directly from the BU models (FAC sheet) and they represent the fully loaded BU network capital costs (GRC and Annualised) and fully loaded network opex allocated through the use of the BU expense factors. In this case fully loaded only speaks to costs calculated through the BU models and does not include costs calculated in the TD MS Access model.

5.1.12 In the explanation C&W provided for the Reconciliation worksheet in pages 18 and 19 of Appendix IX, C&W states that the Reconciliation worksheet contains calculated bottom-up LRIC results from the MLRIC worksheet (which contains the calculated LRIC values from the bottom-up models (GRC, Annualized Cost, Opex), the calculated LRIC values from the Expense Factors components of the Consolidation model (Overhead Opex) and the calculated markup values).

a. Are these LRIC values the "fully-loaded", i.e., fully marked-up, LRIC, including the markups for all FCCs/Joint Costs, Network-Wide Common Costs and TD Common (per Product)?

C&W Response

Yes, that is correct. Please note for example that by adding up the values of annualized cost, opex and overhead opex for each "access local loop" row, you get the "fully loaded" total cost that appears in the total cost column for access local loop in the fixed service costs sheet, i.e, cell B12)