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LIME

Our ref:
31 August 2009

Mr. David Archbold,
Managing Director,
Information and Communication Technology Authority,
3rd Floor Alissta Towers,
P.O. Box 2502GT,
Grand Cayman. KY1-1104

Dear Mr. Archbold,

Re: Interrogatories regarding LIME's FLLRIC Phase 3 submissions

Further to the Authority's 19 August 2009 letter on the above noted subject, Cable and Wireless (Cayman Islands) Limited, trading as LIME ("**LIME**") is pleased to provide the attached redacted interrogatories. The information redacted in these interrogatories consists of information contained in the various confidential submissions previously filed in the CD 2009-1 proceeding.

Please do not hesitate to contact the undersigned if you should have any questions.

Yours faithfully,

'Signed'

Frans Vandendries
VP Legal Regulatory and Corporate Affairs - Central

c.c. CD 2009-1 Interested Parties
Lawrence McNaughton, EVP, Carrier Services, LIME
Anthony Ritch, Country Manager, LIME
Camille Facey, VP Legal Regulatory and Corporate Affairs (Jamaica & OFC), LIME

Encl.

Fixed Module

Cost Assumptions

1. In the Duct Unit Cost section of the 'Cost Assumptions' sheet (cells A16:I78) various jointing box input costs are shown. None of these costs are used in the costing of duct. Explain why jointing boxes are not needed.
2. The 'Cost Assumptions' sheet contains input on the cost of various types of duct and jointing costs that are related to different terrain types. However, only costs for the terrain type 'carriageway (asphalt)' are used. The Authority notes that LIME has provided estimates of the island-wide media mix and an entrant specific media mix which both indicate that unsurfaced ducting would be used to some degree (see rows 135-144 of the 'Cost Assumptions' sheet). Explain why it is appropriate to use only one terrain type for all duct cost inputs.
3. In the Access Cost part of the 'Cost Assumptions' sheet, Aerial Copper wire (e.g. 100 pair, 200 pair, dropwire etc.) costs are shown in rows 87-93. Only equipment and installation costs are transferred to the 'Access Cost' sheet. Costs related to spares, duty and planning are not used. Explain why these costs have not been used.
4. In the Access Cost part of the 'Cost Assumptions' sheet, underground copper wire (e.g. 50 pair, 300 pair, etc.) costs are shown in rows 100-110. Only equipment and installation costs are transferred to the 'Access Cost' sheet. Costs related to spares, duty and planning are not used. Explain why these costs have not been used.
5. In the Access Cost part of the 'Cost Assumptions' sheet, the splicing costs per cable splice are shown in rows 113-117. Only equipment and installation costs related to splicing are transferred to the 'Access Cost' sheet. Costs related to spares, duty and planning are not used. Explain why these costs have not been used.
6. In the Access Cost part of the 'Cost Assumptions' sheet cabinet costs are shown in rows 126-128. None of these costs appear to be used, even though the model contains Cabinets/Copper Cross connection points in the 'Access Dimensions' sheet. Explain why cabinet costs are not used.
7. The Total Pole rental per month in the 'Cost Assumptions' sheet (cell F132) is calculated as the sum of # # and # # which is divided by #
#.

- a. Provide the source of the cost inputs used in this formula.
 - b. The Authority notes that the resultant cost is the total monthly rental cost for all poles in the access network. With the assumed number of poles in the access network this is equivalent to approximately a rental cost of # # cents per pole per month (total pole rental per month of # # divided by the number of poles # # (cell K81 in the 'Access Costs' sheet)). Confirm the accuracy of the pole rental costs used in the model.
8. In the Access Cost part of the 'Cost Assumptions' sheet the costs of various manhole types are shown in rows 165-169. Only equipment and installation costs are transferred to the 'Access Cost' sheet. Costs related to spares, duty and planning do not appear to be used. Explain why these costs have not been used.
 9. In the Transmission Direct Capex Assumptions section of the 'Cost Assumptions' sheet costs of fibre, fibre joints and cable laying including sub-duct- underground are listed in rows 192-205. Only equipment, installation and duty costs are transferred to the 'Core Fibre Calculations' for further consideration in the calculation of costs. Explain why the costs of spares have not been used.
 10. In the 'Cost Assumptions' sheet the 8 and 12 fibre cable costs are not identified as being related to underground and aerial fibre whereas all other fibre cables are identified for either underground or aerial use. See cells A192:A193 compared with other categorizations in cells A194:A196. Confirm that the 8 and 12 fibre cables are used as both underground and aerial cable.
 11. In the 'Cost Assumptions' sheet, the cost of 12 fibre cable (row 193) and 24 fibre aerial cable (row 194) is the same. Confirm the accuracy of this assumption.
 12. Provide an explanation of why cell D198 in the 'Cost Assumptions' sheet that appears to have been intended to provide the cost of spares for 8 fibre optical cable joints are blank.
 13. Provide an explanation of why cells D204 and D205 in the 'Cost Assumptions' sheet that appear to have been intended to provide the cost of spares for the "Cable (24-Fibre) laying cost including sub-duct-underground" item are blank.
 14. The cost of Network Management hardware and software and the Voice Mail platform (in the NGN Direct Capex Assumptions section cells

D238:D240) do not appear to include any costs related to duty. Explain why the Network Management system or Voice Mail platform should be exempt from duty.

15. The purpose of the information in cells I244:I251 in the 'Cost Assumptions' sheet is unclear. Explain the purpose of the data in these cells and how that data is used.
16. In the 'Cost Assumptions' sheet, the cost of CS-2K Compact (2) ETSI Hardware, CS-2K Compact (2) ETSI Software, Gateway Controller, UAS, USP, PP-8600, PP-15K and IMS (in the NGN Direct Capex Assumptions section cells D238:D240) do not include any costs related to spares. Explain why no costs for spares are included in the total costs.
17. In the 'Cost Assumptions' sheet the MSE unit costs in cells G244:G251 reference cell F253. This cell is blank and hence this reference serves no apparent function. Explain why the referenced cell is blank.
18. The cost of payphones in the 'Other Cost Assumptions' section of the 'Cost Assumptions' sheet (cell E281) is provided as a single figure with no reference to installation, spares, duty or planning costs. Provide a detailed explanation and source documentation on how the cost of payphones was developed.
19. In the 'Cost Assumptions' sheet, the DSLAM Equipment Unit Cost, Broadband Access Server, Core Ethernet Switch, Core Juniper Router, Other Servers & Software and Software items in rows 283-289 include the cost of spares, but would not appear to include the cost of planning and duty. Explain why duty costs and planning costs should be excluded.
20. In the 'Cost Assumptions' sheet, Data Network Equipment (cell C292) does not appear to include the cost of spares, planning and duty. Explain why the cost of spares, duty and planning are excluded.
21. In the 'Cost Assumptions' sheet the operating expenditure related to the DQ Platform (cell 296) and Call Centre (cell C298) are the same. Confirm the accuracy of this cost and explain how the cost was developed.

Asset lives

22. In the 'Asset lives' sheet, LIME assumes the asset life of Interconnect Billing is 5 years and VOIP Equipment is 6 years. Provide a detailed justification for each of these asset lives.

Overhead_exp

23. In cell BI3 of the 'Overhead_exp' sheet reference is made to a value in the public version of the mobile model.
 - a. Confirm that this is an accurate reference given the fact that the public version does not contain the same input values as those used in the confidential version.
 - b. Explain the rationale for making the adjustment in cells BI3 and BI6.

Expense Factors

24. In the 'Expense Factor' sheet (cells F8:F27), the formula used does not take into account '400-VOIP Equipment'. This results in an error in the allocation of expenses. The formula used in F8 is '=SUMPRODUCT(\$I\$4:\$AB\$4,\$I8:\$AB8)'. This formula should be amended to '=SUMPRODUCT(\$I\$4:\$AC\$4,\$I8:\$AC8)'. Similar corrections should be made to F9:F26. Confirm the erroneous formula and make the appropriate corrections in the model.
25. In ICT Decision 2008-2 the Authority dealt with the calculation and application of expense factors. In paragraph 230, the Authority noted that, "...by applying expense ratios based on 'current' network expenses (drawn from top-down data) and 'forward-looking investments' (GRC), C&W implicitly assumed that the total "forward-looking" network operating expenses will be the same as its current total operating expenses, and there will be no productivity or efficiency gains from moving to the Modern Equivalent Assets ("MEA") installed by an efficient operator." In paragraph 231, the Authority further noted that, "[o]ne simple way of dealing with this issue is to base the application of expense ratios on 'current investment' (as opposed to 'forward-looking investment') and then to apply these ratios to the forward-looking investment".

In a letter dated 22 August 2008, LIME sought clarification on how the term 'Current Investment' should be interpreted. The Authority responded on 5 September 2008 pointing LIME to footnote 85, paragraph 231 of ICT Decision 2008, where it is stated, "*i.e. using physical quantities and current unit prices for the same or equivalent assets as in the C&W FAC model.*"

In its latest submission of FLLRIC models, while LIME has conducted an asset revaluation, it has not calculated or applied the expense factors as directed. LIME has used the Net Replacement Costs as allocation factors to calculate the expenses for each network element in the FLLRIC model and

done so in such a way that the network expenses in the FLLRIC model are the same as those shown in the 'FAC Input'.

As noted, the Authority directed LIME to "[b]ase it network expense factors on 'current investment' (as 'opposed to forward-looking investment') and 'current expenses'". Provide a revised model that calculates the expense factor ratios as the current expense divided by the revalued Gross Replacement Cost and then apply the resulting ratios to the forward looking investment, i.e. the capital investment that is the result of the FLLRIC modeling exercise. The result should be a model where changes to service volumes resulting in changes to the forward looking investment result in changes to the expenses incurred.

Routing Factors Input

26. In the 'Routing Factors Input' sheet several of the routing factors for the '900-NATIONAL CALL RETAIL' service reference an empty row 66. Confirm that the resultant values of zero are as intended and provide an explanation of why the zero values are appropriate.
27. In the 'Routing Factors Input' sheet the national payphone service has a routing factor of one for the access local loop network element (cell T29). Provide a detailed explanation for why the international payphone service does not include a routing factor for the access local network.

Access Dimensions

28. Row 109 in the 'Access Dimensions' sheet contains the item "Average underground length of transmission between concentrator and distribution point". This item has no value and is not used. Explain the purpose of this item and justify why it is included in the model.
29. Row 110 in the 'Access Dimensions' sheet contains the item "Average aerial length of transmission between cross connect cabinet and furthest distribution point". This would not appear to be used. Explain the purpose of this item and justify why it is included in the model.
30. Row 111 in the 'Access Dimensions' sheet contains the item "Average UG length of transmission between Exchange and the cross connect cabinet". This would not appear to be used. Explain the purpose of this item and justify why it is included in the model.
31. Rows 114 – 117 in the 'Access Dimensions' sheet contain various inputs related to Cabinets/Copper Cross connection points. None of these inputs

would appear to be used. Explain the purpose of these items and justify why they are included in the model.

TX Equipment Dimensions

32. Cell D18 of the 'TX Equipment Dimensions' sheet contains the number of exchange nodes. This information does not appear to be used. Confirm the relevance of this information and amend dimensioning formulas to include it if required.
33. Cells D58:D62 of the 'TX Equipment Dimensions' sheet references the 'MG Dimensions' sheet. This would appear to be an error. Confirm the erroneous nature of this reference and make corrections if appropriate.
34. Explain in detail what is meant by 'Electronics Component' in row 208 of the 'TX Equipment Dimensions' sheet.

Demand Calculations

35. Cell C4 of the 'Demand Calculations' sheet contains a conversion factor for capacity to annual minutes. The formula used in the cell is: " $=1/(BH_pcent/mins_erlang/channels)$ ". Define each of the inputs used in the formula and explain the logic and methodology underlying the formula.
36. In row 138 of the 'Demand Calculations' sheet the following network components are not allocated a driver: 400-VAS platforms, 400-Contact Centre Platforms, 400-Interconnect billing platform and 400-VOIP Equipment. Assign a driver to these components.

Access Calculations

37. The formulas used to calculate the number of cable pairs in row F of the 'Access Calculations' sheet adds 1 (one) to the static volume in the denominator. Provide a detailed rationale for this adjustment.
38. The formula in the 'Access Calculations' sheet used to estimate the pair size after re-adjusting demand (column F) results in a requirement to round down for the largest pairs required, e.g. assuming the largest cable size is 400 pair (cell D92) and demand is for 525 pair (cell F92) the formula forces the cable size to be 400 pair (cell G92) although this is insufficient for the required demand. Explain the adequacy of this approach or suggest an alternative methodology.

39. In the quantity section of the 'Access Calculation' sheet (cells D114:H145) cable lengths by pair size are summarized. Since the cable sizes used in the summary do not match those used in the calculations the summary appears to be erroneous. Provide a detailed justification why this is appropriate or correct the calculation.

MG Calculations

40. In cell F4 of the 'MG Calculations' sheet, LIME provides what is termed an MG fixed cost. This cost item is sourced from the 'Cost Assumptions' sheet and is unitized as a fixed cost per MG. When estimating the fixed cost per MG for each MG (in cells E7:E54), LIME divides the fixed cost per MG (cell F4) with the number of MGs (cell F3). Provide a justification for why this is appropriate or correct the calculation.

International TX Costs

41. Cell C33 in the 'International TX Costs' sheet calculates the operating costs as a percentage of the annualized capital cost. This is contradictory to the approach in cell C9 that uses the capital cost. Assuming it is the capital cost and not the annualized capital cost that is the correct base to use, the annual operating costs of the national submarine link is understated. Confirm the appropriateness of the approach or revise it as required.

Access Cost

42. In the 'Access Cost' sheet the costs of underground cable (cells C7:D16) are sourced from the 'Cost Assumptions' sheet. However, there is a cable size mismatch in the sourcing of cost data from the 'Cost Assumptions' sheet. For example, the cost of a 200 pair cable is costed as a 150 pair cable. Provide a justification for the apparent mismatch or correct the error.
43. In the 'Access Cost' sheet cell H18, the formula used makes an error in the look up of installation costs. The formula used is:
`=IF(ISERROR(VLOOKUP(G18,B7:B24,1,FALSE)),TREND(D$12:D$14,B12:B14,$F18),VLOOKUP(G18,$B$7:$D$24,3,FALSE))`. One way to correct the formula is:
`=IF(ISERROR(VLOOKUP(F18,B7:B24,1,FALSE)),TREND(D$12:D$14,B12:B14,$F18),VLOOKUP(F18,$B$7:$D$24,3,FALSE))`. Provide a detailed justification or a correction.
44. In the 'Access Cost' sheet cell H21, the formula used makes an error in the look up of installation costs. The formula used is:

=IF(ISERROR(VLOOKUP(G21,\$B\$7:\$B\$24,1,FALSE)),TREND(D\$13:D\$15,\$B\$13:\$B\$15,\$F21),VLOOKUP(G21,\$B\$7:\$D\$24,3,FALSE)). One way to correct the formula is:

=IF(ISERROR(VLOOKUP(G22,\$B\$7:\$B\$24,1,FALSE)),TREND(D\$15:D\$16,\$B\$15:\$B\$16,\$F22),VLOOKUP(G22,\$B\$7:\$D\$24,3,FALSE)). Provide a detailed justification or a correction.

45. In the 'Access Cost' sheet, 150 pair aerial cable (cells G35:H35) is less costly than 100 pair cable (cells G34:H34). This result is due to, what appears to be, an error in the formula used to estimate the cost. Provide a detailed justification or a correction.
46. In the 'Access Cost' sheet cell K36, it is indicated that there is 0.9 km of 200 pair aerial cable. However, since no costs are input for 200 pair aerial cable, this cable is effectively excluded from the model. Provide a detailed justification or a correction.
47. In the 'Access Cost' sheet, the cost of an underground drop wire (plus other costs) is calculated in cell I99. The calculation references an empty cell in the 'Cost Assumptions' sheet which appears to have been intended to include the cost of the drop wire. Provide a detailed justification or a correction.
48. In the 'Access Cost' sheet, an average cost of drop wire (plus other costs) is calculated in cell H102 by taking the simple average of the cost of a drop wire installed underground and one installed as an aerial cable. Provide a detailed explanation of why a simple average is appropriate and provide supporting documentation.
49. Row 53 and 54 in the 'Access Cost' sheet are duplicated. This appears to result in an erroneous calculation of the number of joints. Provide a detailed justification or a correction.

Core Fibre Costs

50. When calculating the number of joints for various fibre sizes and types in the 'Core Fibre Costs' sheet (cells E12:K12), LIME uses the length of each type/size and the distance between joints (which is taken from the 'Access Dimensions' sheet: Average separation of fibre splices – underground). The formula divides the number of fibre km with the distance between joints and adds 0.5.
 - a. Explain the addition of 0.5.

- b. Provide a detailed justification of why the distance between joints as indicated for underground cable is appropriate for the use with aerial cable.
51. In the 'Core Fibre Costs' sheet, 6 pair fibre cable and 6 pair jointing is costed as 8 pair cable and jointing (cell I17 references 'Core Fibre Calculations'!I6 and cell I19 references 'Core Fibre Calculations'!I12). Provide the rationale for this assumption.

NGN Costs

52. In row 37 of the 'NGN Costs' sheet the management system cost is allocated pro-rata to the direct cost of MSE and MG (allocated to calls, minutes and lines respectively). Provide the rational for this allocation. In particular comment on the relevance of allocation of management system costs to the access network and the non-allocation of the management system cost to other parts of the core network.
53. The equipment that is costed in the 'NGN Costs' sheet is annualized using an asset life of 96 months (except management system costs), see cell C42. This includes the equipment categories 'Data Network Equipment' and 'Interconnect Billing' although these categories have different asset lives as indicated in the 'Asset lives' sheet. Explain why these cost categories should have the same asset life as NGN equipment or make the appropriate corrections to the model.

Transmission Equipment Costs

54. The formulas used in cells E21:E24 in the 'Transmission Equipment Costs' sheet are inconsistent in that, they for cells E21:E23, refer to the number of cross connects (which would appear to be erroneous) and in cell E24 refer directly to the number of ADMs. Provide the rationale for this approach or correct the formulas used.

Cost Summary & Mapping

55. In row 8 and 14 of the 'Cost Summary & Mapping' sheet a logical test is performed referencing cell \$P\$7 (which is empty). Explain the purpose of this test.
56. Explain the purpose of the formulas in rows 11, 18, 25, 31 and 36 of the 'Cost Summary & Mapping' sheet.

57. In cell D21 in the 'Cost Summary & Mapping' sheet fibre transmission costs (consisting of fibre cable and joints) is divided by 4. In other words, host-host transmission is allocated 25% of the costs. Provide a detailed rationale for this allocation.
58. In cell I27 in the 'Cost Summary & Mapping' manhole costs allocated to the core network is divided by 4. In other words, 'Host-Host' segments are allocated 25% of the costs. Provide a detailed rationale for this allocation.
59. The allocation in the 'Cost Summary & Mapping' sheet of annualized duct cost to 'Host-Host' and 'Host-Remote' (cells F33:G33) is a pro-rata allocation based upon the annualized cost of fibre and joints. The costs assigned to 'Host-Remote' include the pole costs. Explain why the rental costs of poles should be included when estimating an allocation key for splitting the annualized cost of duct into 'Host-Host' and 'Host-Remote'.
60. The allocation of duct costs between access and core network in the 'Cost Summary & Mapping' sheet (cells D33:E33) uses the km of duct in each network to split the costs. Provide a detailed justification for this allocation method and address whether such an approach appropriately reflects the sizes and costs of ducts used for each network.

Fixed Network Costs

61. In row 32 of the 'Fixed Network Costs' sheet, the total excludes the cost category '400-VOIP Equipment'. Provide a detailed justification or correct the formula.

Fixed Service Costs

62. The calculation of total network service cost in row 24 of the 'Fixed Service Costs' sheet excludes the 'VoIP Equipment' component. For example the formula in cell T42

'=SUMPRODUCT(\$C\$11:\$C\$14,T11:T14)*T40+SUMPRODUCT(\$C\$16:\$C\$24,T16:T24)*T38+SUMPRODUCT(\$C\$26:\$C\$30,T26:T30)*T39+SUMPRODUCT(\$C\$32:\$C\$33,T32:T33)*T41'

may need to be amended to

'=SUMPRODUCT(\$C\$11:\$C\$14,T11:T14)*T40+SUMPRODUCT(\$C\$16:\$C\$24,T16:T24)*T38+SUMPRODUCT(\$C\$26:\$C\$30,T26:T30)*T39+SUMPRODUCT(\$C\$32:\$C\$34,T32:T34)*T41'.

Provide a detailed justification for LIME's approach or provide a correction.

Volume Input for TD

63. The 'Volume Input for TD' sheet contains various volume inputs. For example, the values in cells V1:AD37 are volumes that are sourced as (cell AD1): "*C&W Actual 2008 volumes obtained from: CIS System and Carrier Services*". The values in cells L1:T37 are growth factors that are sourced as (T1): "*Growth Assumptions: Based on LIME's 1 year market Projections*". The values in cells B1:H37 are calculated volumes based in input volumes and growth factors.
 - a. Identify which year the resultant demand in set cells B1:H37 is intended to refer to.
 - b. Provide a detailed description of how the fixed network module accounts for foreseeable future growth beyond the base year to which it relates.

Mobile Model (2G)

Cost Assumptions

64. Explain the purpose and rational for the option of including "Traffic Increment Includes Equipment?" in cell F12 of the 'Cost Assumptions' sheet.
65. Import duty is not applied to the cost of the Voicemail Platform in cell Q32 of the 'Cost Assumptions' sheet. Explain why duty should not be included for the Voicemail Platform equipment.
66. In cells C65:F76 of the 'Cost Assumptions' sheet a table is shown with network element allocations to three categories: Call Attempts, Minutes and Subscribers. This can be compared to the categorization used in the 'Mobile Network Costs' sheet, where LIME uses four different categories: Duration Sensitive, Call Sensitive, Subscriber Sensitive, Bandwidth Sensitive. It can also be compared to the allocation of costs in the 'Network Costs' sheet LIME use the following categorization (row 62): Minutes Related, Calls Related, Subscriber Related and Other. The use of different allocation categorizations that in some cases also are used inconsistently (for example in the 'Cost Assumptions' sheet the network element SGSN is allocated 100% to minutes, in 'Network Costs' sheet it is allocated to the category 'Other' while in the 'Mobile Network Costs' sheet it is allocated to the category 'Bandwidth Sensitive') is not in line with good modeling practice. In addition the Authority notes that the network element allocation for cell sites is 0% in all categories. This information is not used in the allocation in subsequent parts of the mobile module (see for example the 'Mobile Network Costs' sheet), rather LIME has allocated cell site costs as a duration related cost. To the extent that LIME includes the cell site network element in the allocation table calculations in other parts of the module should make use of the table. LIME is requested to revise the allocation approach used making it consistent across the module's sheets.
67. Cell J173 of the 'Cost Assumptions' sheet calculates the total cost of Tributary Cards for interconnect using the following formula:

$$(G173+H173+F173)*(1+I173)$$
G173 is the cost of equipment including spares. H173 is the contribution to duty and F173 is the cost of spares. Accordingly, it appears that the formula double counts the cost of spares. Provide the rationale for LIME's approach or provide a revision to correct the formula.
68. Cell I173 of the 'Cost Assumptions' sheet references the empty cell B11. Provide a justification for that item. By way of comparison the Authority

notes that the 3G module contains a planning factor of 20% for Tributary Cards for interconnect.

69. The annual depreciation charge for SMS and the prepay platform are input in cells D157 and D162 of the 'Cost Assumptions' sheet. No intermediate inputs are provided. Update the module to include all intermediary inputs, i.e. the equipment purchase price, spares, import duty, installation labour and planning and use appropriate asset lives and the WACC already in the module to annualize these costs. In addition provide detailed documentation for the inputs used.

Demand Assumptions

70. The 'Ratio of total/successful calls' in cell C54 of the 'Demand Assumptions' sheet is not used anywhere in the module. Provide a detailed explanation for why it is not used and remove it or revise the module to take it into account.

Technical Assumptions

71. In the 'Technical Assumptions' sheet LIME has revised the maximum cell radius for dense, medium and rural areas (cells D24:D26).
 - a. Provide a detailed explanation and supporting documentation for the revision of the maximum cell radius.
 - b. In addition provide a detailed explanation of how the current model with 42 sites can be considered optimal when the previously submitted model only had 17 which, everything else being equal, would be less costly.

Expense Factors

72. Interrogatory no. 25 provides a detailed discussion of the application of expense factors. Provide a revised model that calculates the expense factor ratios as the current expense divided by the revalued Gross Replacement Cost and then apply the resulting ratios to the forward looking investment, i.e. the capital investment that is the result of the FLLRIC modeling exercise.

Erlang B

73. The Erlang B table in the 'Erlang B' sheet appears to be incorrect. There is a consistent discrepancy from the standard Erlang B calculations (see e.g. <http://www.erlang.com/calculator/erlb/>) for the 5% GoS (B.05) table. For 1% GoS (B.01) table, as the offered load increases, the discrepancy from the standard Erlang B calculation grows. Explain the reason for the discrepancy.

Services

74. In the 'Services' sheet LIME include the following services: Mobile Data, Mobile International Incoming, Mobile International Outgoing, Mobile On Net Call, Mobile Subscriber, Mobile To Fixed, Mobile To Mobile, Mobile Voicemail Retail, SMS, Mobile Termination, Inbound Roaming, SMS Termination. According to its website, LIME also provide MMS service (as indicated by the Plans & Rates available on the LIME Cayman Island website: http://www.time4lime.com/country_home.jsp?countryName=Cayman%20Islands&index=5). Explain why MMS is not included.

Demand Calculations

75. In the 'Demand Calculations' sheet cell C41 is a pasted value. According to the accompanying explanatory text "The cell represents the proportion of minutes which are not available for conversation. The cell is a static value, copied from the adjacent cell to the right when the 'Update FAC' button is pressed on the Contents Sheet". The adjacent cell to the right has a different value. Inspection of the Visual Basic code shows that the 'update_fac()' macro performs the following (among other things):

```
Sheets("Demand Calculations").Select
    Range("D41").Select
    Selection.Copy
    Range("C41").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone,
SkipBlanks _
    :=False, Transpose:=False
```

Indicate whether an update of cell C41 is needed and make appropriate corrections to the module to ensure future updates are possible.

Transmission Links

76. Explain the purpose of the input cell B33 'Shared Towers' in the 'Transmissions Links' sheet.
77. Explain the purpose of the input cell B34 'Repeater distance' in the 'Transmissions Links' sheet.
78. Provide the derivation of and supporting documentation for, the cost of a 'Mini Link MLE 6 GHz Radio System' in cell B42 in the 'Transmissions Links' sheet.
79. In the costing of a 'Mini Link MLE 6 GHz Radio System' in the 'Transmissions Links' sheet no account is taken of spares. Provide the rationale for that assumption or amend the calculations to include spares.
80. In the 'Transmissions Links' sheet it is assumed that an STM-1 is needed for national submarine transmission. The cost of this link is based on the cost per STM-1 km from an IRU (shown in the fixed module). For mobile traffic it is assumed that the capacity of off-island BTS - BSC Links is 32 E1s. With 32 E1's = 64 Mbps and STM-1 = 155 Mps, the mobile network is assumed to require $64/155 = 41\%$ of national submarine capacity (see cell B57). The fixed network is allocated the remaining 59% of the capacity. Explain the rationale for this allocation approach considering that the fixed network may require less than (155-64) 91 Mbps capacity.

Switching Calculations

81. In the 'Switching Calculations' sheet it is assumed that the number of voice subscribers is the same as the number of data and SMS subscribers (cell C4=C5). Explain the reasonableness of this assumption given that not all subscribers will have (or will select) the option to use GPRS.

Network Costs

82. In the 'Network Costs' sheet, site sharing is taken into account by deducting a shared cost amount (cell I102). The shared amount is calculated in the 'Cost Assumptions' sheet, as an average of several monthly site costs multiplied by a period of 12 months. Accordingly, the value in cell I102 is the average annual cost of site rental per site (for the sites over which the average monthly cost is calculated). In the 'Network Costs' sheet this annual rental cost per site is deducted from the total annual site cost for all sites in the modeled network. In essence, LIME deducts the annual cost of one site from the annual site cost of all sites in the network to yield an

estimate of total annual site costs after sharing. Provide a detailed rationale for this approach.

83. When calculating the cost of site rental (before site sharing) in the 'Network Costs' sheet, 14 sites are deducted (cells H98:H100) from the total required sites of 42. This deduction is based on calculations performed in the 'Cost Assumptions' sheet where LIME calculates the number of co-located sites. Explain why a mobile operator at sites where co-location is possible would incur zero costs.
84. In the 'Network Costs' sheet cells F56:Q56 are pasted values. Inspection of the Visual Basic code shows that the 'update_fac()' macro performs the following (among other things):

```
Sheets("Network Costs").Select
Range("F55:q55").Select
Application.CutCopyMode = False
Selection.Copy
Range("F56:q56").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone,
SkipBlanks _
:=False, Transpose:=False
```

In other words, the calculated values in cells F55:Q55 are copied and pasted into cells F56:Q56. Explain why this portion of the macro is needed and amend the model accordingly if it is not required.

85. The calculations in rows 71 to 75 in the 'Network Costs' sheet would not appear to be required. Explain the need for the calculations or revise the model accordingly.
86. Cells G105, G110 and G115 of the 'Network Costs' sheet shows FAC operating costs for SMS platform, Prepay platform and roaming, respectively. Explain the relevance of these cells.

Mobile Service Costs

87. The fixed module includes an interconnect billing platform cost. No such cost would appear to be included in the mobile module. Explain how costs related to interconnect billing are taken into account in the 2G mobile module.

3G Mobile Module

Cost Assumptions

88. Explain the purpose and rationale for the option of including "Traffic Increment Includes Equipment?" in cell F12 of the 'Cost Assumptions' sheet.
89. Explain the use of volume and wholesale discounts (cell K54 and K55 of the 'Cost Assumptions' sheet) to estimate the leased line costs, when no discounts are used in the 2G module.
90. In the costing of a 'Mini Link MLE 6 GHz Radio System' in the 'Cost Assumptions' sheet no account is taken of spares (row 69). Explain why no account is taken of spares or amend the calculations to include spares.
91. In cells C82:F103 of the 'Cost Assumptions' sheet a table is shown with network element allocations to three categories: Call Attempts, Minutes and Subscribers. This can be compared to the categorization used in the 'Mobile Network Costs' sheet, where LIME uses four different categories: Duration Sensitive, Call Sensitive, Subscriber Sensitive, Bandwidth Sensitive. It can also be compared to the allocation of costs in the 'Network Costs' sheet LIME use the following categorization (row 75): Minutes Related, Calls Related, Subscriber Related and Other. The use of different allocation categorizations that in some cases also are used inconsistently is not in line with good modeling practice. In addition the Authority notes that the network element allocation for cell sites is 0% in all categories. This information is not used in the allocation in subsequent parts of the mobile module (see for example the 'Mobile Network Costs' sheet), rather LIME has allocated cell site costs as a duration related cost. To the extent that LIME includes the cell site network element in the allocation table calculations in other parts of the module should make use of the table. LIME is requested to revise the allocation approach used making it consistent across the module's sheets.
92. In row 101 of the 'Cost Assumptions' sheet it is indicated that the network element allocation for cell sites is 0% in all categories. Based on the implicit allocation in subsequent parts of the mobile module LIME should indicate that the allocation is 100% duration related. Update the module to reflect this.
93. In the Network Component Allocation table, shown in the 'Cost Assumptions' sheet, only the network element 'HLR / VLR / AUC' contains

an allocation to call attempts. Explain why all other network elements have an allocation of zero to call attempts.

94. In the 'Cost Assumptions' sheet an assumption of # # % spares is used for 'site cost for omni cell' and 'site cost for sectorised cell' (see cells D111:D112). As source is indicated the 2G cost module. However, inspection of the 2G cost module suggest a spare parameter of # # % (see cell D93 in the 'Cost Assumptions' sheet of the 2G module). Provide a detailed explanation for this difference or align the assumptions in the two modules.
95. The annual depreciation charge for SMS and the prepay platform are input in cells D194 and D199 of the 'Cost Assumptions' sheet. No intermediate inputs are provided. Update the module to include all intermediary inputs, i.e. the equipment purchase price, spares, import duty, installation labour and planning and use appropriate asset lives and the WACC already in the module to annualize these costs. In addition provide detailed documentation for the inputs used.

Demand Assumptions

96. The 'Ratio of total/successful calls' in cell C54 of the 'Demand Assumptions' sheet is not used anywhere in the module. Provide a detailed explanation for why it is not used and remove it or revise the module to take it into account.

Technical Assumptions

97. In the 'Technical Assumptions' sheet, the Max 3G cell radius does not match the average distance in Appendix I, Part I and some average distances are larger than 2 times the maximum value given as the assumption. Confirm whether Appendix 1, Part 1 refers to the 2G, the 3G, or both models. If it refers to the 3G module please explain these differences. If not, please provide similarly detailed data for the 3G module.

Expense Factors

98. Interrogatory no. 25 provides a detailed discussion of the application of expense factors. Provide a revised model that calculates the expense factor ratios as the current expense divided by the revalued Gross Replacement Cost and then apply the resulting ratios to the forward looking investment, i.e. the capital investment that is the result of the FLLRIC modeling exercise.

Routing Factors Input

99. No documentation has been provided to justify the routing factors shown in the 'Routing Factors Input' sheet. Provide documentation similar to that provided for the fixed and 2G modules in Appendix VIII.
100. In the 'Routing Factors Input' sheet the network element '400-3G: Data Tx' has no routing factors. Confirm the accuracy of this assumption and in particular, explain how the mobile data service makes no use of this network element.
101. In the 'Routing Factors Input' sheet the network element '400-3G: HLR/VLR/AUC - subscriber sensitive' is in addition to the service '900-MOBILE SUBSCRIBER' used by the following services: 900-SMS, 900-MMS and 900-VIDEO CALLING. This is contrary to the equivalent network element in the 2G module which is only used by the '900-MOBILE SUBSCRIBER' service. Explain the usage of the network element '400-3G: HLR/VLR/AUC - subscriber sensitive'.

Erlang B

102. The Erlang B table in the 'Erlang B' sheet appears to be incorrect. There is a consistent discrepancy from the standard Erlang B calculations (see e.g. <http://www.erlang.com/calculator/erlb/>) for the 5% GoS (B.05) table. For 1% GoS (B.01) table, as the offered load increases, the discrepancy from the standard Erlang B calculation grows. Explain the reason for the discrepancy.

Demand Calculations

103. In the 'Demand Calculations' sheet cell C42 is a pasted value. According to the accompanying explanatory text "The cell represents the proportion of minutes which are not available for conversation. The cell is a static value, copied from the adjacent cell to the right when the 'Update FAC' button is pressed on the Contents Sheet". The adjacent cell to the right is of a different value. Inspection of the Visual Basic code shows that the 'update_fac()' macro performs the following (among other things):

```
Sheets("Demand Calculations").Select
    Range("D42").Select
    Selection.Copy
```

```
Range("C42").Select
Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone,
SkipBlanks _
:=False, Transpose:=False
```

Indicate whether an update of C42 is needed and make appropriate corrections to the module to ensure future updates are possible.

Transmission Links

104. Explain the purpose of the input cell B33 'Shared Towers' in the 'Transmission Links' sheet.
105. Explain the purpose of the input cell B34 'Repeater distance' in the 'Transmission Links' sheet.
106. When costing Self-Supplied Wireless Links in the 'Transmission Links' sheet, LIME would appear to assume the minimum capacity is 2xE1 at each point. Confirm that this capacity is sufficient to meet the transmissions requirements of the 3G network considering the average E1s per site is 5 (cell 37).
107. In the 'Transmission Links' sheet it is assumed that an STM-1 is needed for national submarine transmission. The cost of this link is based on the cost per STM-1 km from IRU (shown in the fixed module). For mobile traffic it is assumed that the capacity of off-island BTS - BSC Links is 32 E1s. With 40 E1's = 80 Mbps and STM-1 = 155 Mps, the mobile network is assumed to require $80/155 = 52\%$ of national submarine capacity (see cell B76). The fixed network is allocated the remaining 48% of the capacity. Explain the rationale for this allocation approach considering that the fixed network may require more or less Mbps capacity.

Traffic

108. In the 'Traffic' sheet LIME provide a mix of subscriber data usage (%) in cells C20:C28. Provide a detailed explanation of how the mix was developed and provide supporting documentation for the assumed mix.
109. In the 'Traffic' sheet LIME provides the average user throughput requirement per session (kbps) for different service types in cells G20:G28. Provide a detailed explanation of how these throughputs were developed and provide supporting documentation for the assumed user throughput.

Network Costs

110. When calculating the cost of site rental (before site sharing) in the 'Network Costs' sheet, 14 sites are deducted (cells H115:H1117) from the total required sites of 53. This deduction is based on calculations performed in the 'Cost Assumptions' sheet where LIME calculates the number of co-located sites. Explain why a mobile operator at sites where co-location is possible would incur zero costs.

111. In the 'Network Costs' sheet cells F69:V69 are pasted values. Inspection of the Visual Basic code shows that the 'update_fac()' macro performs the following (among other things):

```
Sheets("Network Costs").Select
    Range("F68:v68").Select
    Application.CutCopyMode = False
    Selection.Copy
    Range("F69:v69").Select
    Selection.PasteSpecial Paste:=xlPasteValues, Operation:=xlNone,
    SkipBlanks _
        :=False, Transpose:=False
```

In other words, the calculated values in cells F68:V68 are copied and pasted into cells F69:Q69. Explain why this portion of the macro is needed and amend the model accordingly if it is not required.

112. The calculations in rows 84 to 88 in the 'Network Costs' sheet would not appear to be required. Explain the need for the calculations or revise the model accordingly.

113. Cells G122, G127 and G132 of the 'Network Costs' sheet shows FAC operating costs for SMS platform, Prepay platform and roaming, respectively. Explain the relevance of these cells.

Mobile Service Costs

114. The fixed module includes an interconnect billing platform cost. No such cost would appear to be included in the mobile module. Explain how costs related to interconnect billing are taken into account in the 3G mobile module.

Appendices

Appendix I

115. In LIME's response in Attachment A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02 (8 April 2009), number 2 LIME indicated that Appendix I captures spreadsheet technical information on existing cellsite radial distances plus Google earth maps showing coverage areas. No Google Earth maps were provided to the Authority. Provide the maps.

Appendix II

116. Appendix II – Basics of Radio Planning, Design and Optimization, describes LIME's network design methodology and how a wireless network should be equipped to optimize the Dropped Call Rate (DCR) and other related items. Page 11 of the document lists several Key Performance Indicators (KPIs) that a wireless network should be measured on. Included among these indicators is the DCR. DCR would not appear to be used and the Authority could not find any of the other suggested KPI's in the cost modules. Accordingly, it is unclear how the modules deal with meeting the KPIs. Explain and document the use of KPI's in the the 2G or 3G modules.

Appendix III

117. In the Appendix III Part II, LIME calculates a weighted index in the 'Weighted Indices' sheet as the sum of: # % of the index value in January in year T, # % of the index value in year T, and # % of the index value in January in year T+1. Provide a rational for this weighting approach.
118. In Appendix III Part I, sheet 'Indexed Cay assets over 3yrs', the indexed asset values are allocated to network components. To do this, LIME uses various allocation keys (percentages) found in the 'Assumptions and Drivers' sheet.
- a. What is source of the percentages in cells AC6:DW2995 and how where they calculated?
 - b. What is the logic behind the grouping of minor cost categories?

- c. A simple average of allocation percentages is calculated. Provide a rational for this approach.

119. In Appendix III, sheet 'Indexed Cay assets over 3yrs' LIME lists "Electro Mechanical Switching" as one of the asset categories included in the value recalculation. Identify what electro mechanical technology would be used in any forward looking telecommunication network cost model.

Appendix IV

120. In Appendix IV, the FAC/ABC output file 'FAC-TD Values 07-04-09 conf_v1' LIME has used the separate fixed and mobile WACC values instead of using the WACC of 9.5% in both the fixed and mobile modules as directed by the Authority paragraph 213 of Decision 2008.2. Revise the calculations.

Appendix VIII

121. In Appendix VIII LIME applies a routing factor # # for services that use the element # # with the exception of the # # which is # #. In LIME's justification of the routing factor of # # it notes (cell D84 in the 'Mobile RFs' sheet) that #

#.

Given the subscriber weighted approach to calculating the routing factor of # # and the quote above, explain the choice of # # as an appropriate routing factor for # # use of the # #.

Appendix XI

122. Provide detailed documentation that shows which information is used from the Appendix XI worksheet and where it is applied in the FLLRIC model.

Appendix X

123. In Appendix X, the methodology to estimate the number of spares in the 'Material Reqmnt' sheet relies on the appropriateness of averaging over several categories of equipment. No documentation is provided justify the absolute number of equipment items needed as spares. In some cases the amount of spares exceed the installed base (cell Q53 and Q54), in other case there are no spares. Provide a detailed explanation and rationale for each of the estimates provided.

Appendix XIII

124. Explain how Cayman IRU costs as quoted in Appendix XII translate into costs shown in the 'International TX Costs' in the fixed network cost module.

Appendix XIII

125. Appendix XIII contains various utilization details for different parts of LIME's fixed and mobile network. Explain in detail how this information has been used in the FLLRIC model and if any adjustments have been made to reflect efficiency.

Appendix XIV

126. Appendix XIV contains LIME's 2 year forecast over 2008 demand obtained from Outside Plant Engineering and Planning Department. The overall provisioning allowance for lines is calculated to be # #%. The provisioning allowance in the fixed model is # #%. Provide a detailed rational for the use of # #% considering that market conditions suggest # #%.

Appendix XVII

127. The Transmission network document, Appendix XVII, shows the forward-looking NGN network diagram of LIME's core network infrastructure including the transmission rings.
- a. Provide the utilization assumptions for the network depicted.
 - b. Identify how growth assumptions affect the design and equipment requirements.
 - c. Document how voice traffic shifting to data applications, and fixed line subscribers shifting to wireless only, were considered in sizing the network as depicted.

The MTR Cost Study

128. Confirm the base year to which the model relates and whether growth has been built into the inputs shown in the 'Volume input for TD' sheet cells V1:AA18 and provide detailed documentation for the forecasts and growth assumptions used.
129. The MTR Cost study indicates volumes are derived by firstly determining total market demand by grossing up LIME's demand volume based on existing market share, then dividing by three (representing three operators equal market share). Explain in detail:
 - a. Why no adjustments are made to the following services: 900-MOBILE DATA, 900-MOBILE VOICEMAIL RETAIL, 900-SMS, 900-MMS, 900-VIDEO CALLING, 900-MMS TERMINATION, 900-VIDEO CALL TERMINATION and 900-INBOUND DATA ROAMING.
 - b. The basis for the assumption that LIME's total market share will decrease to one-third of the market.
130. In the MTR Cost study the 900-INBOUND VOICE ROAMING is subject to an increase of 4% compared to the hypothetical volumes. Provide a detailed justification for the increase in this inbound voice roaming.
131. In the MTR Cost study LIME assumes that the introduction of 3G services would not affect the size of the market demand, nor would a third operator entering a 3G market competitively induce more demand than is already being experienced in a two operator 2G market. In LIME's letter dated May 21 2009 it noted that (p.2): *"[T]he overall market would not grow, beyond the growth assumptions already built into the 2G and 3G Models. Given the saturation of the existing market, it is unlikely that the presence of a third strong operator would result in any significant growth in subscribers or in minutes of use."*
 - a. Explain where the growth assumptions already built into the 2G and 3G models are documented and shown in each model.
 - b. Explain whether a substitution effect of landline customers moving to wireless only has been taken in account and if not why this is a reasonable assumption.
 - c. Explain how the benchmarks used to generate the demand for the following services: 900-MMS, 900-VIDEO CALLING, 900-MMS TERMINATION, 900-VIDEO CALL TERMINATION have been derived and where the resultant demand places the 3G operator in its growth cycle.

132. In the MTR Study, LIME defines a "sustainable operator".
- a. Explain this definition demonstrating the assertion that Cayman Islands could only support three mobile operators.
 - b. If only two mobile carriers could sustainably operate, explain how the demand forecast used in the cost model would be affected.
 - c. Indicate with supporting rationale whether the total demand would be higher or lower if three mobile operators were present and whether the potential substitution of subscribers to wireless from wireline would be higher or lower if three mobile operators were present.
133. In LIME's letter dated May 21 2009 it noted that "[T]he revised input volumes are then carried through the model to result in a revised "MTR" figure at cell E51 of the "Mobile Service Costs" tab." The Authority interprets this to mean that the only input volume changes made to the 3G cost model for the purpose of determining a MTR are found in the 'Volume input for TD' tab of the cost module. Is this a correct interpretation? If not, provide a detailed explanation of any other input volume changes.
134. LIME makes no mention of the potential substitution effects of fixed subscribers moving to a 3G only service. Identify any assumptions of fixed line subscribers moving completely to 3G wireless service for voice and how any such assumption has been reflected in the cost model.

Cost Recovery

135. In letter dated 20 March 2009 LIME submitted an application for the recovery of the costs of developing the 3G model LIME indicated that it solicited bids from external consultants for the necessary work and selected the lowest bid. Provide the following information:
 - a. A description of, and supporting documentation for, the process used by LIME to identify potential bidders.
 - b. A copy of the information that was sent to potential bidders.
 - c. A list of parties to whom the request for bids was sent.
 - d. A list of the parties who made bids and copies of those bids.
 - e. The criteria and documentation used by LIME in its evaluation of the bids.
136. Explain why LIME did not make use of internal (in-house) resources for the 3G model building, considering that in 2008 LIME was engaged in the roll out of a 3G network in Jamaica.
137. Explain whether and why, in LIME's opinion, the costs of developing the 3G model are "start up costs" under paragraph 51 of Annex 5 of LIME's ICT licence.
138. Identify if LIME will make any further applications for the cost recovery of any FLLRIC model costs other than the US \$127,000 identified in its 20 March 2009 letter.

Other

139. LIME's response (Attachment A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02 of 8 April 2009) to the Authority's direction in paragraph 236 in ICT Decision 2008-2: *"Split the cost centre/activity combination (in the ABC model) if relevant into what can be capitalised labour expenses (associated with the design, engineering, installation, creation of the network and commissioning) and non-capitalised labour expenses for the mobile network operating expenses 100- Provide Mobile Cellsites". Alternatively, C&W must explain why spitting the costs would not be appropriate.*", indicates that capital labour has already been removed from the expenses and that this has been done in the ABC/FAC model, sheet 'Summary' column G of the 'Model' file. Provide a precise cell reference for the deduction.
140. In LIME's response (Attachment A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02 of 8 April 2009) to the Authority's direction in paragraph 119 in ICT Decision 2008-2: *"Develop and document a clear and consistent definition of the factors used to develop actual, network and dimensioned demand. In particular, those associated with the provisioning allowance used for demand driven by lines should be addressed"*, two terms are used: 'stopped' and 'allocated' lines. Define these terms.
141. LIME's response (Attachment A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02 of 8 April 2009) to the Authority's direction in paragraph 119 in ICT Decision 2008-2: *"Provide justification for both explicit and implicit utilization in the different parts of the network"*, makes reference to Appendix XIV, which shows in cell AJ160 for the access loop an average utilization of # #%. Explain how # #% is implemented in the fixed module and provide a detailed justification of how this factor is representative of an efficient operator.
142. LIME's response (Attachment A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02 of 8 April 2009) to the Authority's direction in paragraph 266 in ICT Decision 2008-2: *"Justify the optimality of all the inputs used in the access network part of the fixed network module. The Authority emphasises that the access network should reflect forward-looking principles and a simple replication and revaluation of C&W's existing access network cannot be regarded as a cost efficient solution without proper documentation. Justification should also be given for the assumed planning horizon"*, references the use of a GIS tool for the design and roll out its access network. LIME contends that its network can be considered optimal. Appendix IX provides a detailed presentation highlighting the

functions and benefits of LIME's GIS system. This Powerpoint presentation provides an overview of the GIS tool, but does not in the Authority's view help in understanding how the model was populated. Further, it is not possible for the Authority to verify the numbers used in the model. Provide detailed documentation to justify the optimality and efficiency of the inputs used to design the access network.

143. In LIME's response (Attachment A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02 of 8 April 2009) to the Authority's direction in paragraph 236 in ICT Decision 2008-2: *"Explain the relevance of the fixed network specific costs '100-R&M Exchange Equipment – Ericsson Switch" considering that an NGN is being modeled"*, LIME notes that expense item has been renamed to '100-R&M Exchange Equipment - Switch Maintenance', a more generic term and indicates that it believes the expense item to be relevant under forward looking assumptions. LIME also note that the level of support may vary from that of the past and an efficiency adjustment can be applied against the expense in column 'C' of the 'FAC Input' sheet. Identify the efficiency adjustment that should be applied to the expense category and provide a detailed justification for the magnitude of that factor.
144. In LIME's response to the Authority's direction in paragraph 236 in ICT Decision 2008-2: *"Explain the relevance of the fixed network specific costs '100-R&M Exchange Equipment – Ericsson Switch" considering that an NGN is being modeled"*, LIME notes that expense item has been renamed to '100-R&M Exchange Equipment - Switch Maintenance', a more generic term and indicates that it believes the expense item to be relevant under forward looking assumptions. LIME also note that the level of support may vary from that of the past and an efficiency adjustment can be applied against the expense in column 'C' of the 'FAC Input' sheet. Identify the efficiency adjustment that should be applied to the expense category and provide a detailed justification for the magnitude of that factor.
145. In ICTA Decision 2008-02 (paragraph 301) LIME was required to indicate whether one or two USP's are needed in the fixed network module. In LIME's response in Attachment A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02 (8 April 2009), number 69 it asserted that only a single USP is needed. Provide documentation to support LIME's assertion of a single USP.
146. ICTA Decision 2008-02 (paragraph 253) LIME was required to provide documentation for those parameters that require several steps to be performed when updating. In LIME's response in Attachment A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02 (8 April 2009), number 73 it asserted that documentation has been provided. The

Authority has not been able to identify any such documentation. Provide a specific reference to the document detailing the steps to be performed when updating the cost models.

147. In LIME's response (Attachment A, Revisions to FLLRIC Model Ordered by the Authority in ICT Decision 2008-02 of 8 April 2009) to the Authority's direction in paragraph 346 in ICT Decision 2008-2: *"Split the cost of VLR and HLR and allocate the costs based on primary cost driver of each. If C&W believes it is appropriate to regard HLR and VLR costs together, detailed documentation must be provided to the Authority showing that this is an appropriate treatment of these costs"*, it notes that this statement reflects a fundamental misunderstanding of the functions of VLR and HLR and reference. LIME submits that both the HLR and VLR primary functions are subscriber based and points the Authority to Appendix VI, Nokia Electronics Documentation, which provides a description of both components. Upon review of the documentation provided by LIME the Authority remains unconvinced that is appropriate to combine the VLR and HLR. The VLR and HLR perform different functions and use of VLR and HLR can vary from call to call. For example, when the mobile moves from one cell site to another served by the same MSC (intra-MSC Handover) within the duration of a call, extra VLR processing is required. Provide detailed additional documentation to justify combining the HLR and VLR or alternatively revise the model to capture the cost of the VLR and HLR separately.
148. In ICTA Decision 2008-02 (paragraph 361) LIME was required to provide information supporting its use of spares in the mobile network module. The documentation provided in Appendix X does not contain information supporting the use of spares in the mobile network model. File (09_04_08 Appendix X Part I - Spares Nokia - CONFIDENTIAL.pdf) contains lists of software and circuit pack prices for various equipment. File (09_04_08 Appendix X Part II - Spares - CONFIDENTIAL.xls) contains calculations showing the derivation of the percent used to calculate the spares cost when multiplied by total cost for various network elements in the fixed model. However neither of the files marked Appendix X show the derivation of the spare percentages used in the mobile model on sheet: "Cost Assumptions" Cells: D84 through D93. Provide documentation to support the spares used in the mobile module.
149. In all the cost modules (fixed, 2G, 3G) submitted to the Authority there are inconsistent or invalid named ranges, i.e. references with "#ref" errors or reference other workbooks with invalid paths. Provide an update of name ranges in the cost modules and make appropriate adjustments to the modules to eliminate any inconsistent or invalid references.