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Chorus UCLL and UBA models briefing

4 December 2014 • James Allen

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UCLL model

- Overall approach: use techniques of bottom up LRIC modelling, but based on an adjusted version of the existing set of assets
- Adjustments applied are for:
  - Increased use of aerial
  - Optimisation of route length
  - Use of network sharing
  - Lower expected peak demand for copper pairs
- Scope of model: access network; excludes transaction costs

Operator parameters

- Type of operator: hypothetical
- Network footprint: Current national network coverage offering NC-UCLL and SLU to existing premises covered
- Scale: demand similar to Chorus

Technology

- Technology – copper to the home
  - those existing customers served with wireless links are not relevant to NC-UCLL costs
  - Cabinets are used where cabinets are currently used
- Scorched node: Chorus MDFs and cabinets are retained
- Geo-typing – national model
  - asset counts gathered and unit costs applied at the level of the eleven service company areas (CSA), as the costs vary across these areas due to various cost drivers (e.g. regional variations in labour rates)

Services

- Products modelled: services using the copper access network including SLU, NC-UCLL, UCLFS, HSNS, etc) – but not UFB
- The model uses “technical services": non-overlapping services that map to specific network assets
  - This may include for example route, cabling, joints, duct, manholes and poles that are in a particular part of the network.
- Future demand volumes: held constant for modelling, taking account of the Commission's position (although we believe that it would be correct to allow for a decline due to non-Chorus UFB)

Implementation

- Tool – Excel; one workbook; no macros
- Model is in real terms
  - Key results are provided in nominal terms
- Time period
  - Multi-year model
  - Depreciation method chosen only requires a single year calculation;
  - Determining a unit cost that is constant in nominal terms for 5 years requires 5 years to be calculated

Increment and common cost markups

- Increment – all modelled services on access network
- Mark-ups for common costs are available, but not used
  - (business overhead costs are included within the incremental cost, allocated via an EPMU)

Total costs

- Asset counts come from NetMap, a Chorus GIS
  - As noted above we have adjusted these in a number of ways (e.g. more aerial)
- Unit costs – based on costs faced by Chorus for modern asset type
  - Trenching costs based on costs recently incurred and planned for the UFB deployment, with predicted costs for areas where Chorus has not deployed UFB taking into account the impact of cost drivers such as density, terrain and traffic.
- Opex approach – based on Chorus operating costs with bottom up modelling of selected cost categories including property and electricity costs

Allocation approach

- Services sharing trench/duct/cable/UUB are allocated costs based on the number of subscribers
- Opex is grouped into various categories, each treated distinctly
  - some allocated based on drivers; some EPMU

Annualisation

- Modified Tilted Annuity is used
  - Flat demand makes this equivalent to tilted annuity
- Tilt for each asset from asset price trend
- WACC – 8.1% post-tax nominal
- Lifetimes from Chorus fixed asset register (FAR)

- Asset annual unit costs -> technical service annual unit costs -> service annual unit costs + markup =TSLRIC

Versions

- Confidential version
- Restricted version
  - certain information has been overwritten
- Public version
  - much information has been overwritten

- All versions function in the same way – only the data differs
- Some outputs in the full model differ slightly as a result of the anonymisation of data (which includes some rounding)

Result

Service	Unit cost (NZD/ month)
NC-UCLL	74.10
SLU	81.43
UCLFS	84.87

- The replacement cost of the modelled network (excluding costs reported in the UBA model) is NZD 14 B in 2013 real terms

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UBA model

- Overall approach:
  - use bottom up approach for electronics;
  - use existing locations and existing passive assets for connections between: cabinet / exchange, and exchange / Ethernet Aggregation Switch sites
- Adjustments are made for optimisation of route length
- Scope of model: network between the DSLAM and the first switch; excludes transaction costs

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Operator parameters

- Type of operator: hypothetical
- Network footprint: Current Chorus DSL network coverage offering UBA to existing premises covered
- Scale: demand similar to Chorus UBA

Technology

- Technology – DSL on copper
- Scorched node:
  - Cabinet DSLAMs are deployed where they are currently located
  - DSLAMs also deployed at customer sites and exchanges, as per current locations
  - Chorus MDF and EAS locations also retained
- Geo-typing
  - Divides DSLAM locations into: MDFs, cabinets, user sites
  - Each has 5 different "geotypes" (different sizes)
  - EAS locations are modelled individually

Services

- Products modelled: all services using the Chorus network between the DSLAM and the switch including UBA, HSNS etc
- The model uses “technical services": non-overlapping services that map to specific network assets
- Future demand volume: forecast demand growth for subscribers and traffic

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Implementation

- Tool – Excel; one workbook; no macros
- Model is in real terms
  - Key results are provided in nominal terms
- Time period
  - Multi-year model
  - depreciation method chosen only requires a single year calculation;
  - determining a unit cost that is constant in nominal terms for 5 years requires 5 years to be calculated

Increment and common cost markups

- Increment – all services offered on Chorus network between the DSLAM and first switch
- Mark-ups for common costs are available, but not used
  - (business overhead costs are included within the incremental cost, allocated via an EPMU)

Total costs

- Asset counts come from
  - Bottom up calculation for electronics
  - Existing feeder routes to cabinets (from UCLL model)
  - Existing inter-exchange links (from Chorus data)
- Unit costs – based on costs faced by Chorus for modern asset type
  - Modern equivalent asset chosen for each type of electronics
  - Trenching costs based on costs recently incurred and planned for the UFB deployment, with predicted costs for areas where Chorus has not deployed UFB taking into account the impact of cost drivers such as density, terrain and traffic management costs.
- Opex approach – based on Chorus operating costs with bottom up modelling of selected cost categories including property and electricity costs

Allocation approach

- Access network: services sharing trench/duct/cable/UUB are allocated costs based on the number of subscribers
- Core network: costs divided between UBA and other core network services (such as HSNS) on the basis of traffic
- Opex is grouped into various categories, each treated distinctly
  - some allocated based on drivers; some EPMU

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Annualisation

- Modified Tilted Annuity is used (UBA demand is forecast to change over time)
- Tilt for each asset from asset price trend and demand
- WACC – 8.1% post-tax nominal
- Lifetimes from Chorus fixed asset register (FAR)

- Asset annual unit costs -> technical service annual unit costs -> service annual unit costs + markup =TSLRIC

Versions

- Confidential version
- Restricted version – certain information has been overwritten
- Public version – much information has been overwritten

- All versions function in the same way – only the data differs

Result

Service	Unit cost (NZD/ month)
EUBA0	16.57

- The replacement cost of the modelled network is NZD 2 B in 2013 real terms

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