MTAS Access Determination: Draft Decision

Submission to the Australian Competition and Consumer Commission

Public version

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Contents

Key points

- **No reduction in the voice MTAS rate is warranted. The current MTAS voice rate of 3.6 cents per minute (cpm) is already below the average benchmark rate of 3.8 cpm (PPP-adjusted). This suggests pricing in the ACCC's previous MTAS FAD is delivering an appropriate outcome.**

- **The process of making adjustments to benchmarks is not consistent with the ACCC's approach in previous FAD processes (e.g., the 2012 DTCS FAD). The proposed use of adjustments for the MTAS FAD could lead to arbitrary outcomes particularly as the proposed adjustments appear to be based on little, if any, evidence. If adjustments are to be made, then the ACCC must carefully consider the full range of factors and avoid simply making adjustments that biased arbitrarily lower the rate (e.g., deciding to use a fixed line cost of capital rather than a cost of capital rate that is reflective of a competitive mobile industry). If the ACCC determines adjustments to benchmark rates are required it must ensure that:**

    - **It does not discourage regional mobile investment and competition by failing to account for Australia's unique geographic and economic factors.**

    - **It provides sufficient opportunity for cost recovery taking into account Australia's high costs of spectrum, backhaul and other input factors vis-à-vis benchmark countries.**

- **The ACCC noted Telstra's retail fixed to mobile (FTM) margins increased to 65% in December 2013 from 36% in December 2004. It has described retail margins as reflecting "the degree of competitive tension in the retail market for fixed-line services". Vodafone is concerned that the ACCC is not proposing to address the lack of FTM pass-through in the MTAS FAD despite the lack of competitive tension in the fixed services market casting serious doubt over whether MTAS rate reductions will promote the long-term interest of end-users (LTIE).[1]**

- **Vodafone does not object to the ACCC's proposed rate of 0.03 cents per text for person-to-person (P2P) SMS termination services. However, for application-to-person (A2P) SMS termination services a more cautious approach to regulation is needed. We recommend introducing A2P termination rate regulation at 4 cents per text to maintain the established A2P market and to avoid unintended consequences such as a proliferation of unwanted text messages to end-users.**

[1] ACCC (2015), *Mobile Terminating Access Service: Final access determination*, Draft decision, May, pp. 32 and 34

1. Executive summary

Vodafone Hutchison Australia Pty Limited (**VHA**) welcomes the opportunity to comment on the Australian Competition and Consumer Commission's (**ACCC**) Draft Decision regarding the Mobile Terminating Access Service (**MTAS**) Final Access Determination (**FAD**). The ACCC's Draft Decision is informed by a report it commissioned from WiK Consult (**WiK**) on the *Benchmarks for the Cost of the Mobile Termination Access Service in Australia*. We comment on both the Draft Decision and on WiK's report in this submission.

A simple fact emerges from the analysis of benchmark of mobile termination rates (**MTR**) across the nine countries selected by WiK – Australia's current MTAS voice rate of 3.6 cents per minute (**cpm**) is already below the average Purchasing Power Parity (**PPP**)-adjusted benchmark rate of 3.8 cpm. This suggests no reduction in the voice MTAS rate is warranted because the ACCC's previous FAD is delivering an appropriate outcome. Unfortunately, via a series of quixotic adjustments, WiK suggests that Australia's MTAS rate should be set 58% below the average benchmark MTR rate (PPP-adjusted) and 24% below the lowest MTR rate (PPP-adjusted) from the benchmark set of the countries.

We seriously question whether Australia has significantly lower MTR costs than Denmark, Mexico, the Netherlands, Norway, Portugal, Romania, Spain, Sweden and the UK. Given the size of Australia's mobile networks and lower population densities the conclusion seems somewhat problematic.

Australia has several unique factors that increase the cost of building a mobile network:

- our land area is 7.6 million square kilometres,[2] four times the size of Mexico (1.9 million square kilometres) the largest of all benchmark countries, and about twice the combined area of all nine countries (3.9 million square kilometres);
- our mobile industry pays some of the highest spectrum prices in the world (see **Figure 1**) ;
- our backhaul costs are likely to be more expensive than the levels observed in countries from the benchmark set. [c-i-c]; and
- our "cost of living" is relatively high in purchasing power parity terms compared to many of the benchmark countries which influences a range of input costs for mobile networks including wages and site leases.

[c-i-c]

[2] World Bank Development Indicators (2014).

The ACCC should be extremely cautious in placing so much weight on the "black box" adjustments proposed in the WiK report. The selection of factors seem arbitrary and little evidence has been provided in support of the adjustments. If adjustments to benchmarks are to be made then the ACCC must focus on determining what factors are the more relevant to change. In the absence of evidence, the ACCC should take a conservative approach to adjustments because the benchmark countries, and their telecommunications markets, are vastly different to the Australian market.

We are concerned that WiK's proposed benchmark adjustments heavily weight and overestimate factors that drive down MTR costs in Australia (e.g., strong demand for mobile data, 4G roll-out and uptake) while ignoring or heavily discounting more obvious factors that drive up our MTR costs (e.g., network coverage). This significantly raises the prospect of a regulatory error occurring if the ACCC opts to place unqualified reliance on WiK's analysis.

The approach of making cost adjustments to benchmark data is fundamentally inconsistent with the approach used by the ACCC for the DTCS FAD in 2012. As a stakeholder with an interest in both the DTCS and the MTAS, the inconsistent theoretical approaches to benchmarking are particularly frustrating to Vodafone. The cost adjustments WiK has proposed for the MTAS benchmarks are based on circumstantial evidence, unsubstantiated theoretical arguments and anecdotes. By contrast, in the 2012 DTCS FAD there was ample, robust evidence demonstrating that benchmarks were not set at efficient levels yet the ACCC took no action to adjust the benchmark results. The inconsistency of these approaches must urgently be addressed by the ACCC or it will undermine the integrity of the DTCS and MTAS FAD processes.

Benchmark adjustments

If the ACCC is intent on making adjustments to MTR benchmarks it must properly account for Australian-specific cost factors. Vodafone recommends the following approach:

- **Currency conversion**: we recommend a currency conversion approach solely based on a spot PPP-adjusted exchange rates due the impact of several structural shifts in Australia's market exchange rates over the past decade. The proposed approach increases the average of the MTR benchmarks by 0.64 cpm compared to the arbitrary use of 10-year average market exchange rates and evenly weighting these with a PPP-adjustment. Our proposed methodology and the reasons for using it are set out in **section 2.2**;

- **Cost of capital**: we recommend a cost of capital approach that is suitable for a competitive mobile services industry and not based on the regulated fixed services industry. We have propose a MNO-specific cost of capital to reflect the industry-specific risks. Our proposed approach will still lead to a negative adjustment on average though it will increase the average MTR benchmark adjustment by 0.14 cpm compared to WiK's assessment. Our methodology is set out in **section 2.3**;

- **Technology mix**: we recommend a more conservative approach to assessing cost changes from differences in the mix of 2G and 3G voice services to reflect the lack of evidence substantiating WiK's analysis of this factor. We could not find supporting evidence for the proposed elasticity

assumptions in the source material cited by WiK. Given this data is, in any case, now outdated and Australia has a vastly different technology mix to any of the benchmark countries, we recommend a more conservative approach to the elasticity assumptions. Our proposed approach will still lead to a substantial negative adjustment on average though it will increase the average MTR benchmark adjustment by 0.07 cpm compared to WiK's assessment and our methodology is set out in **section 2.4**;

- **Network usage**: we recommend a capacity-related cost adjustment that reflects Australia's efficiency gains of 4G, however, under consideration of differing network efficiency factors that apply to data and voice traffic thus balancing relative effects of increased data demand on the basis of network resource utilisation. We propose adjustments to remove 4G data traffic from WiK's analysis, the result still leads to a negative adjustment on average though it will lower the average MTR benchmark adjustment by 0.08 cpm compared to WiK's assessment. Our methodology is set out in **section 2.5**;

- **Network coverage**: It is extraordinary that Australia's geographic area is not reflected in WiK's analysis. This is a material and obvious factor that has not been given due consideration in WiK's assessment. It is not in the LTIE to provide a disincentive to invest in regional and remote Australia. Yet, this is precisely the approach recommended by WiK through its failure to properly reflect the cost implications of Australia's unique geography. It is imperative that the ACCC adjust its MTR assessment to reflect the cost of providing competitive mobile coverage into regional and remote Australia. A failure to properly reflect these costs would send an extremely poor signal for regional investment and competition. We recommend a coverage-based cost adjustment is introduced to reflect the economics of building the number of mobile coverage sites required for Australia's geographic size. The inclusion of this factor introduces an average MTR benchmark adjustment of 0.47 cpm. Our proposed methodology is set out in **section 2.6**;

- **Geographic terrain and backhaul costs**: Given we propose introducing an explicit network coverage factor, a geographic terrain adjustment is not required for coverage sites. We do consider an adjustment is necessary to reflect the impact of Australia's geography on backhaul costs – this pertains to both the terrain itself and the larger distances that are required for backhaul in Australia. We proposed a uniform increase of 3% to MTR costs which, like WiK's assessment, yields a positive adjustment though the average benchmark MTR adjustment is 0.08 cpm higher than WiK's assessment. Our methodology for this factor is set out in **section 2.7**; and

- **Spectrum costs**: the proposed methodology for assessing spectrum costs is flawed and inconsistent with the approach commonly used for network dimensioning. We propose a revised approach based on how different technologies used different spectrum bands and using busy hour information to apportion costs for 3G spectrum. We also propose removing costs associated with spectrum used to deliver 4G services from the analysis. Our proposed approach increases the average MTR benchmark adjustment for spectrum by 0.36 cpm. Our methodology is set out in **section 2.8**.

A summary of the average adjustments is set out in **Table 1**.

Table 1: Comparison of average proposed adjustments to WiK's assessment

Country	Benchmark in AUD (PPP adjusted)	Technology mix adjustment	WACC adjustment	Network usage adjustment	Coverage adjustment	Terrain adjustment	Spectrum adjustment
Proposed - average	3.78	-0.99	-0.02	-0.04	0.47	0.09	0.37
WiK - average	3.14	-1.06	-0.15	-0.11	0.00	0.01	0.02
Delta	0.64	0.07	0.14	0.08	0.47	0.08	0.36

We provide a detailed view of the adjustments across each benchmark country in **Table 2**.

Table 2: Recommendations for a cost-adjustment benchmarking approach

Country	Benchmark in local currency	Benchmark in AUD (PPP adjusted)	Spectrum costs removed	Technology mix adjustment	WACC adjustment	Network usage adjustment	Coverage adjustment	Terrain adjustment	Spectrum adjustment	Cost-adjusted benchmark
Denmark	9.069	**2.052**	-0.137	-0.358	0.148	-0.021	1.978	0.110	0.373	**4.146**
Mexico	1.727	**5.131**	-0.657	-0.939	-0.201	-0.009	0.374	0.111	0.373	**4.183**
Netherlands	1.844	**3.944**	-0.640	-0.968	0.189	-0.108	0.586	0.090	0.373	**3.467**
Norway	15.882	**2.779**	-0.156	-1.074	-0.055	-0.020	0.253	0.052	0.373	**2.151**
Portugal	1.925	**5.660**	-0.095	-1.105	-0.144	-0.046	0.590	0.146	0.373	**5.379**
Romania	1.166	**5.485**	-0.497	-2.811	-0.072	-0.141	0.464	0.073	0.373	**2.874**
Spain	1.417	**3.704**	-0.244	-0.683	-0.082	0.002	-0.060	0.079	0.373	**3.089**
Sweden	12.21	**2.247**	-0.001	-0.799	0.063	0.011	0.014	0.046	0.373	**1.954**
UK	1.129	**3.008**	-0.342	-0.205	0.013	0.005	0.018	0.075	0.373	**2.943**

We have provided a range of summary statistics from this analysis in **Table 3**. The summary illustrates why it is in the LITE to maintain voice MTAS at its current rate of **3.6 cpm**. In the event the ACCC considers a cost-adjusted benchmarking approach more appropriate, we recommend setting a rate between the trimmed mean and the 75th percentile of the cost-adjusted benchmark, after making modifications to WiK's analysis to better reflect Australian-specific conditions. If the ACCC prefers the cost-adjusted benchmarking approach (and intends to use it for the DTCS FAD), the MTAS voice rate should be set between **3.26-4.15** cpm.

Table 3: Summary data for cost-adjustment benchmarking approach

Country	Benchmark in AUD (PPP adjusted)	Cost-adjusted benchmark
Trimmed mean	3.757	3.265
Mean	3.779	3.354
Median	3.704	3.089
75th percentile	5.131	4.146
Standard deviation	1.380	1.078

If a benchmark adjustment process is used by the ACCC, it is in the long-term interests of end-users to set the MTAS rate toward the 75th percentile. The ACCC's lack of compelling evidence that lower MTAS rates have boosted mobile services competition combined with lack of fixed-to-mobile (FTM) pass through

warrant the ACCC taking a prudent approach to the MTAS voice rate to encourage economically efficient use of, and investment in, infrastructure.

Fixed-to-mobile pass-through

In its Draft Decision, the ACCC acknowledged that Telstra's retail FTM call margins had increased to 65% in December 2013 from 36% in December 2004 and that "retail margins may reflect the degree of competitive tension in the retail market for fixed-line services".[3] Higher retail margins are associated with less competitive tension and the steady increase in Telstra's retail FTM pass-through must surely raise questions over whether aggressive reductions in the MTAS voice rate are achieving the statutory criteria. As we demonstrate in **chapter 3**, the ACCC's own analysis suggests the lack of retail FTM pass-through:

- is failing to promote competition in the fixed services market; and
- is not encouraging economically efficient use of, or investment in, infrastructure in the fixed services market.

The ACCC has consistently expressed a high level of concern about the lack of FTM pass-through over the past few years. It is time that the ACCC acted upon this concern. Without pass-through, MTAS reductions will only strengthen Telstra's fixed line monopoly to the detriment of competing MNOs. This damages mobile services competition and does not promote the LTIE.

SMS terms and conditions

Vodafone remains of the view that SMS termination does not warrant declaration. We have reviewed WiK's report on setting SMS termination rates and, while we do not endorse the approach, we do not have extensive comments on the methodology. Under its methodology, the changes we have proposed to the MTAS voice rate are unlikely to yield a different imputed cost for SMS termination rate to the 0.03 cents per text proposed by WiK. Vodafone reiterates that changes to the SMS termination rate will have no overall effect on the standard P2P SMS market. This is because traffic flows largely net out and, because of this, the interconnect price for SMS services is not the main driver of retail SMS pricing. Therefore, the claim that a reduction in the SMS termination rate will deliver large consumer benefits is largely illusory.

As the ACCC is aware, the introduction of SMS termination regulation will cause a step-change in commercial arrangements for A2P SMS interconnection. If steps are taken by the ACCC to make the price of A2P termination rates negligible, there is a risk of setting the marginal cost of A2P text messages below consumers' marginal utility of receiving these types of texts. In other words, the cost of sending a text may not reflect the value to the customer of receiving the text. This is a highly problematic outcome as it means

[3] ACCC (2015), *Mobile Terminating Access Service: Final access determination*, Draft decision, May, pp. 32 and 34

the resulting market equilibrium is not economically efficient and the ACCC's decision will not promote the LTIE.

A negligible SMS termination rate for A2P services could lead to other unintended consequences for consumers, including a potential increase in SMS spam. It is in the LTIE to prevent unsolicited, nuisance SMS. The Spam Act is intended to prevent this however, given the ACCC's proposal for negligible A2P SMS termination rates there is a potential for a step-change in A2P SMS volumes. Therefore, if the ACCC proceeds with its proposed approach for A2P SMS termination rates it must work with the Australian Communications and Media Authority (**ACMA**) to enforce the Spam Act. It should also consider whether measures are required in the FAD non-price terms and conditions to ensure carriers can prevent spam SMS in a timely manner.

We are also of the view that the consequences of a drastic price reduction in A2P SMS interconnect pricing could negatively impact the A2P sector. [c-i-c]. The effect of the change will be to increase the value of economies of scale in the provision of A2P services. As a consequence, A2P providers without scale may face significant challenges as a result of the ACCC's proposed approach. In the long-term, as scale is likely to have substantial implications for A2P business models, the number of players in the A2P market segment is likely to become more concentrated and the ACCC's proposed approach to SMS termination rate regulation will not have the effect of promoting competition.

For these reasons, it is in the LTIE to use price discrimination for SMS termination rates and for the ACCC to take a more gradual approach to the introduction of A2P termination regulation. We recommend that the proposed 0.03 cents per text is maintained for P2P traffic while A2P termination rates are set at 4 cents per text. This approach takes account of the potential mismatch between the cost of sending an A2P text and the value to customers of receiving an A2P text as well as the potential for significant disruption in the A2P segment.

We provide our detailed analysis of SMS interconnection in **chapter 4**.

Duration of the MTAS FAD

Vodafone supports the ACCC's proposed approach for the MTAS FAD term to extend from 1 January 2016 to 30 June 2019.

2. Price terms for mobile voice termination

Australia is not the only country to use benchmarking to set domestic mobile termination rates – Estonia, Latvia, Lithuania and New Zealand also use a benchmarking approach. Of these, only New Zealand appears to have embarked on the unusual step of using elasticity-driven adjustments in an attempt to adapt these models for local conditions.

As the ACCC is aware, WiK advised New Zealand's Commerce Commission during its benchmarking process and WiK has relied heavily on the work it did seven to eight years ago to make adjustments that it says makes the benchmarks more reflective of Australia's circumstances. Just as the ACCC considered whether to use the 2G cost model WiK built for the ACCC in 2007 for the 2015 MTAS FAD, it is pertinent to consider whether benchmark adjustments WiK determined for the New Zealand Commerce Commission in 2008 remain relevant for benchmark adjustments made in 2015.

2.1 Sample set

Vodafone understands that WiK has taken an "opportunity sample" selection of MTR benchmark models. Models are included in the sample if they are from an OECD country and are publicly available. While we do not have any objections to models chosen and do not suggest there is any specific selection bias, the approach can hardly be described as a robust way to determine a benchmark sample. We also note the sample set is small and there are not many obvious similarities (other than being members of the OECD) between the countries selected and Australia.

The countries and some features of the models selected are noted in **Table 4**. WiK did not build any of the models in the sample set. We are not aware if WiK consulted with the model builders to determine whether the models can be adjusted to reflect Australian conditions in the way WiK has proposed.

Table 4: Overview of modelling approach for selected benchmark countries

Country	Cost standard applied by the NRA	Other standard provided in the model	Network technologies	Model builder
Denmark	Pure LRIC	LRAIC+	2G & 3G	Analysys Mason
Mexico	Pure BULRIC	Plus LRAIC	2G & 3G	Analysys Mason
Netherlands	Pure LRIC	Plus BULRAIC	2G & 3G	Analysys Mason
Norway	Pure LRIC	LRIC+	2G & 3G[4]	Analysys Mason
Portugal	Pure LRIC	LRAIC+	2G & 3G	Analysys Mason
Romania	Pure LRIC	LRAIC+	2G & 3G	Tera Consulting
Spain	Pure LRIC	LRIC+	2G & 3G	Spectrum Value Partners
Sweden	LRAIC+	LRAIC+	2G & 3G	Analysys Mason
UK	Pure LRIC	LRIC+	2G, 3G & 4G	Analysys Mason

[4] The Norwegian model includes 4G traffic information however cost estimates are calculated for 2G/3G only.

Only one of the countries, Sweden, implemented the standard being benchmarked by the ACCC. As the cost model standard being used in Australia is not the same as the standards used in other countries, the ACCC should be mindful that elements specific to the standard being used in Australia may have received less regulatory and operator scrutiny than elements of the model associated with the pure long-run incremental cost (**LRIC**) methodology used in many of the benchmark countries.

A selection of our analysis of the benchmark models is included at **Appendix A**.

2.2 Conversion into Australian currency

The currency conversion process used by WiK Consult does not appear to provide a sound basis for estimating the efficient cost of supplying the MTAS. The MTAS is a non-traded service and it is therefore appropriate to use the Purchasing Power Parity (**PPP**) adjusted exchange rate to convert international rates to local currencies. While it may be true that some of the inputs into the provision of the MTAS comprise tradeable and non-tradeable components, this fact does not support the arbitrary approach WiK has taken to identifying and adjusting tradeable inputs nor is it consistent with the cross-sectional benchmarking approach being implemented by the ACCC.

WiK states it has used an evenly-weighted combination the 10-year average market exchange rate of the Australia dollar to the foreign currency and a PPP-adjusted 10-year average exchange rate. WiK asserts a blended rate is appropriate because Mobile Network Operator (**MNO**) costs comprise tradeable and non-tradeable goods. The rationale for an even split between the average market exchange rate and the PPP-adjusted exchange rate represents, according to WiK, "an empirically observed approximate relation the shares of a mobile operator's cost derived from tradable goods and services and from local resources".[5] WiK does not provide any evidence to support this claim. In fact, the only basis for using an even split appears to be that WiK endorsed the New Zealand Commerce Commission's use of this approach in a 2011 Mobile Termination Rate decision. The New Zealand Commerce Commission's use of this methodology appears to date back to a 2007 decision on the unconditioned local loop.[6] We do not consider this a sound basis for implementing an even split for the MTAS some 8 years later. The lack of any evidence supporting the even weighting is deeply concerning but it is not the only problem with the currency conversion methodology.

WiK's analysis of currency uses, as its foundation, a 10-year average for the exchange rate because "the current rate at any given moment of time reflects momentary world economic and financial conditions".

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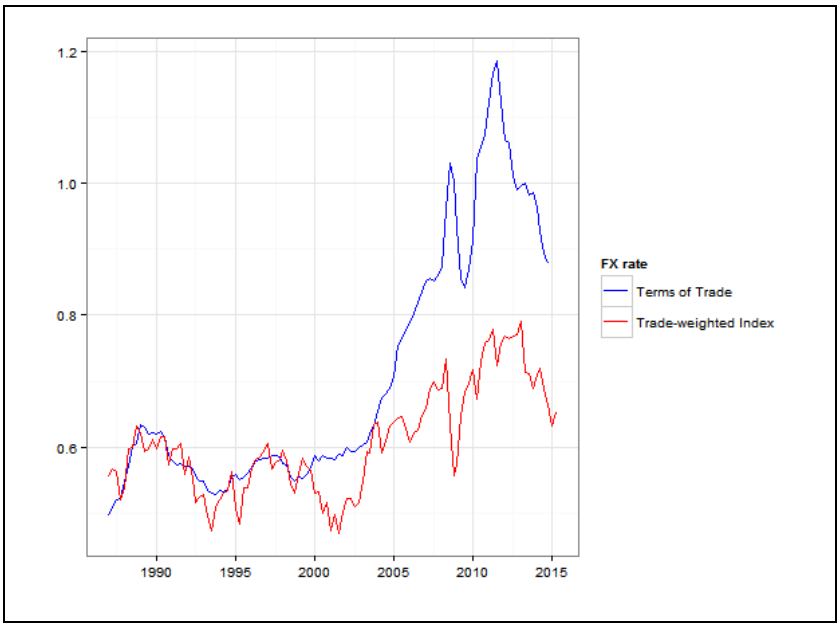
[5] WiK Consult (2015), *Benchmark for the Cost of MTAS in Australia*, Report for the ACCC, p25.
[6] New Zealand Commerce Commission (2007), *Draft Standard Terms Determination for the designated service Telecom's unbundled copper local loop network*, 31 July.

This reasoning appears to suggest there is some intrinsic exchange rate value that can discerned by taking an average over a long period. We agree that exchange rates vary through time. However, movements in the exchange rate reflect a combination of day-to-day fluctuations and the diffusion of structural "shocks" that persist for long periods of time. These latter effects are important to consider in any assessment of the Australian exchange rate over the past ten years. Domestically, the mining boom drove an increase in Australia's terms of trade;[7] internationally, the global financial crisis weakened the European and US economies. These factors, together with many others, have been reflected by an increase in our terms of trade and the trade-weighted exchange rate index in recent years (see **Figure 2**). These trends now appear to have changed and the trade-weighted index has declined since 2013.

Figure 2: Australia's terms of trade and trade-weighted exchange rate index since 1987

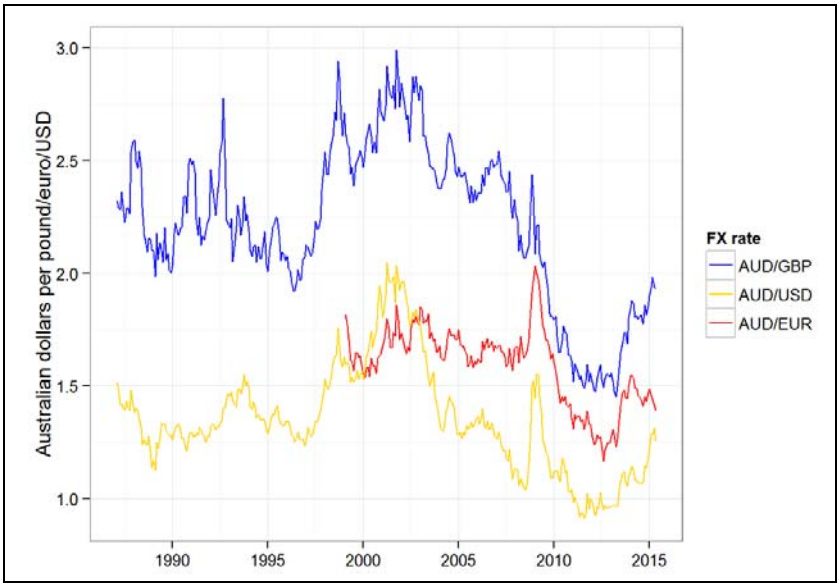


Source: RBA, ABS.

Exchange rate "shocks" are evident in Australia's exchange rates for currencies in the benchmark data set. There is clear pattern of foreign currencies being stronger prior to 2010, with the Australian dollar strengthening since that time though to 2013 before beginning to weaken again (see **Figures 3 and 4**). The movements in the exchange rates from "shocks" are substantial and persistent. This fact means it is not possible to use a simple long-term average market exchange rate to discern an equivalent Australian dollar cost for tradeable inputs.

[7] For a macroeconomic analysis of structural changes in the Australian economy due to the mining boom see:
Downes, P., Hanslow, K. and Tulip, P. (2014), *The effect of the mining boom on the Australian economy*, Reserve Bank of Australia, Research Discussion Paper 2014-08.

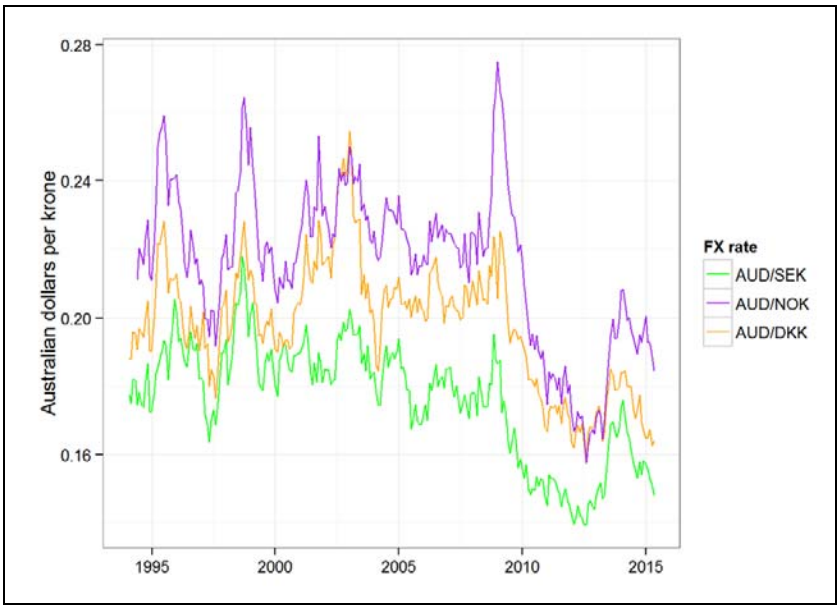
Figure 3: Australian dollars per British pound, Euro and US dollar since 1987



Source: RBA.

A similar pattern exists with the Scandinavian currencies albeit on a different scale for the y-axis. Note the data series for **Figure 4** commences from 1994.

Figure 4: Australian dollars per krone since 1994



Source: Quandl.

The arbitrary, assumption-driven application of market exchange rates is not fit-for-purpose. Cost models are predicated on delivering financial capital maintenance – that is, an operator has the opportunity to recover efficient investments. Yet, the currency conversion methodology proposed by WiK puts this important principle at risk. The desire to adjust tradeable input components at a "market exchange rate" ignores the basic fact that a 10-year average nominal exchange rate does not indicate the applicable

exchange rate used at the time the equipment was purchased. It might be expected that a significant portion of 2G and 3G equipment was acquired prior to 2010. We have demonstrated that exchange rates from this period are structurally different from the market exchange rates observed in recent times. Therefore, the only credible way to apply a "market exchange rate" to tradeable input costs is to observe the actual market exchange rate at the time of the equipment purchase and to make the adjustment at the time of the purchase. This requires a detailed assessment of the cost of inputs themselves, the timing of investments and the applicable market exchange at the time for each model within the benchmark set.

A legitimate alternative is to apply a cross-sectional PPP-adjusted exchange rate. The MTAS is a non-tradeable service and, while it may have tradeable inputs, a cross-sectional PPP-adjusted exchange rate will adequately reflect the cost of acquiring those inputs given the specific circumstances of the benchmark country at the time when the purchase occurred.

Vodafone recommends using a shorter time series for the market exchange rate (1-year average for the 2014 calendar year) and making contemporaneous PPP adjustments. The PPP adjustments applied by WiK were based on 2012 data, we have updated these with 2013 World Bank data (i.e., the latest that was available). We recommend updating this figure with 2014 data if this is available prior to the ACCC finalising its decision. The effect of Vodafone's recommended approach is to lower the market exchange rates and to lower, for some countries, the PPP adjustment factors. We then recommend sole use of the PPP adjusted exchange rate. Our calculations and a comparison with the WiK figures are set out in **Table 5**.

Table 5: Vodafone's recommended adjustment to WiK's Table 4-2

Countries	Benchmark in local currency	Exchange rate (10 – year average)	Exchange rate (2014 average)	PPP AU/local currency (2012)	PPP AU/local currency (2013^)	Benchmark (2014 average)	Benchmark (PPP-adjusted AUD)
Denmark	9.069	*0.209*	0.198	*1.231*	1.143	1.796	**2.052**
Mexico*	1.727	*1.127*	1.114	*2.667*	2.667	1.924	**5.131**
Netherlands	1.844	*1.511*	1.470	*1.455*	1.455	2.711	**3.944**
Norway	15.882	*0.198*	0.175	*1.067*	1.000	2.779	**2.779**
Portugal	1.925	*1.511*	1.470	*2.000*	2.000	2.830	**5.660**
Romania	1.166	*1.511*	1.470	*3.200*	3.200	1.714	**5.485**
Spain	1.417	*1.511*	1.470	*1.778*	1.778	2.083	**3.704**
Sweden	12.210	*0.164*	0.161	*1.231*	1.143	1.966	**2.247**
UK	1.129	*1.895*	1.831	*1.455*	1.455	2.067	**3.008**

Notes: Italics denotes figures provided by WiK, which are included for comparison purposes but not used in the calculation of the benchmarks.
* WiK reported Mexico's local currency as US dollars.
^ Latest data available.
Sources: World Bank (http://data.worldbank.org/indicator/PA.NUS.PPPC.RF), RBA, Quandl.

Australia's current MTAS rate, 3.6 cpm, is below both the average PPP-adjusted benchmark rate of 3.779 cpm and the median PPP-adjusted benchmark rate of 3.704 cpm before any adjustments are made to the benchmarks to reflect Australian-specific factors. This result is hardly surprising the ACCC spent a long time considering the efficient cost of supplying the MTAS when it last made the MTAS FAD, and these results provide supporting evidence for its decision.

2.3 Cost of capital

The application of a fixed services weighted average cost of capital (**WACC**) to MTAS is highly inappropriate. The decision is also in direct contrast to the evidence presented by WiK. [c-i-c]. An appropriate assessment of the cost of capital is an essential requirement under Part XIC of the *Competition and Consumer Act*, where section 152AB(2)(e) states that regard must be given to "encouraging economically efficient investment in the infrastructure" by which the MTAS is supplied.

The weighted average cost of capital used in fixed line services is not a proxy for the investment risks associated with the provision of mobile services. Fixed line services are provided through a regulated monopoly business and regulation virtually guarantees a return on prudent asset investments. Mobile network operators have a riskier investment profile compared to fixed services business due to competition coupled with shorter technology and investment cycles.

[c-i-c]

Our concern over the cost of capital approach is supported by WiK's analysis of the WACC in the benchmark set (see **Table 7**). In all cases, the observed WACC is materially higher than the WACC proposed by the ACCC.

Table 7: WACC in benchmark countries

Country	WACC
Denmark	6.29
Mexico	12.95
Netherlands	6.60
Norway	11.28
Portugal	11.05
Romania	11.10
Spain	10.87
Sweden	7.61
UK	9.04

There is no evidence provided to support the case that Australia has a materially lower WACC than the benchmark countries. Vodafone has supplied evidence that the cost of capital for Australian MNOs is materially higher than suggested by the ACCC. For this reason and in the absence of a detailed assessment by the ACCC of an appropriate WACC for a mobile-only operator, we recommend that a cost of capital rate of [c-i-c] be applied to the benchmark set.

In light of this recommendation, we recommend WiK's Table 4-8 be amended as follows:

Table 8: Vodafone's recommended changes to Table 4-8

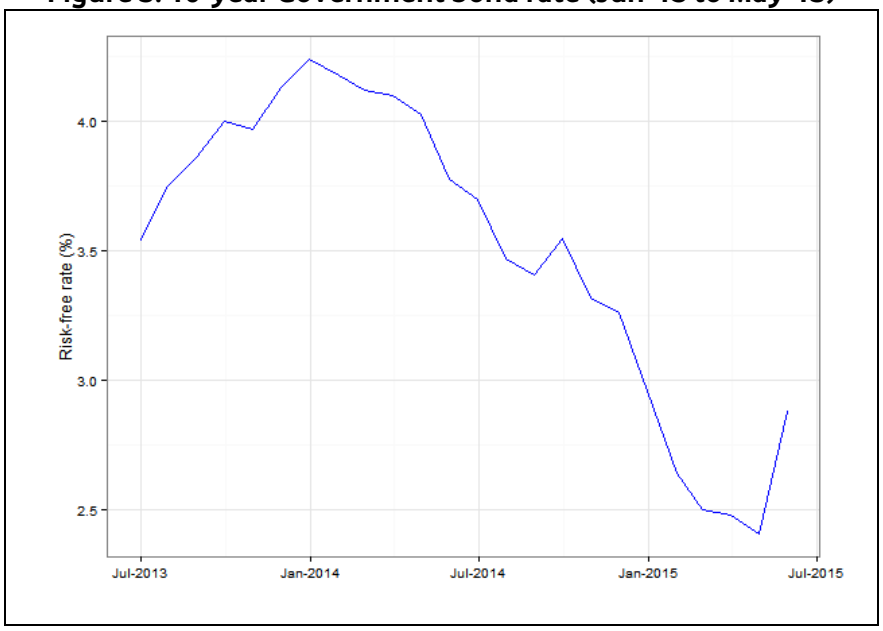
Country	Country WACC	AU WACC	Delta	Elasticity	Change in benchmark
Denmark	6.29	[c-i-c]	[c-i-c]	0.2	0.148
Mexico	12.95	[c-i-c]	[c-i-c]	0.2	-0.201
Netherlands	6.60	[c-i-c]	[c-i-c]	0.2	0.189
Norway	11.28	[c-i-c]	[c-i-c]	0.2	-0.055
Portugal	11.05	[c-i-c]	[c-i-c]	0.2	-0.144
Romania	11.10	[c-i-c]	[c-i-c]	0.2	-0.072
Spain	10.87	[c-i-c]	[c-i-c]	0.2	-0.082
Sweden	7.61	[c-i-c]	[c-i-c]	0.2	0.063
UK	9.04	[c-i-c]	[c-i-c]	0.2	0.013

As an alternative approach to formulating a mobile-specific cost of capital adjustment, the ACCC could focus on differences in the risk-free rate between Australia and the countries in the benchmark set. This approach would allow the ACCC to implicitly determine mobile-specific risk factors (i.e., beta) and debt gearing levels (i.e., debt-to-value ratio), while distinguishing between country-specific inputs such as the risk-free rate.[8] Like foreign exchange markets, the risk-free rate will be heavily influenced by macroeconomic factors rather than idiosyncratic industry factors. All else being equal, differences in the risk-free rate between countries will drive legitimate differences in the cost of capital for MNOs operating in different countries. Other inputs to the WACC are more likely to be associated with idiosyncratic risks associated with that country's mobile industry and it may be useful for the ACCC to identify and isolate these idiosyncratic risks in undertaking a benchmark assessment of the WACC.

We note the risk-free rate commonly used by the ACCC – the 10-year Commonwealth Government bond rate – was at historically low levels earlier this year but that it has started to drift upwards in recent months and was 2.88% at May 2015 (see **Figure 5**). We have not obtained the risk-free rate component of the WACC from each of the benchmark models.

[8] It would also be appropriate to treat the tax rate as a country-specific factor in the WACC (if tax rates have been relevant in the determination of the WACC across the benchmark set).

Figure 5: 10-year Government bond rate (Jun-13 to May-15)



Source: RBA.

2.4 Blending 2G and 3G costs

WIK correctly notes the significant difference between Australia's network usage patterns and those of countries in the benchmark set. Australian MNOs rely on 3G networks to carry voice traffic to a much greater extent than MNOs in countries from the benchmark set. This is a source of cost efficiency for Australian MNOs which, by itself, would lead to a significant downward adjustment in the voice MTAS rate (assuming no other changes are required due to, for instance, differences in the economically useful life of network assets).

While we agree that from a theoretical stance one may assume that a 3G network is more efficient than a 2G network, we do not support WIK's conclusions with respect to necessary adjustments and question the use of elasticity:

- WIK bases their elasticity estimate on a clearly outdated analysis from New Zealand in 2008;
- The assumed elasticity is neither linked to the benchmark countries nor aligned in any way with Australian geographic realities; and
- WIK acknowledges that elasticity will differ significantly between countries. As a consequence, the use a single elasticity rate is unlikely to be appropriate.

WIK completely disregards an important elasticity driver, namely the required coverage network in Australia. Generally it can be assumed that the LRAIC costs are relatively high with low volumes as they are mainly driven by coverage network costs. This means that the elasticity in Australia will differ

significantly from any benchmark country and is certainly more inelastic than the assumed elasticity based on a New Zealand estimate.

Further, WIK does not take into account additional elasticity drivers such as country specific traffic splits and cost paths. We acknowledge that it is difficult to single out these elements. It is for this reason that we believe that any adjustment of the basis of an unjustified elasticity will inevitably over- or under-estimate the results.

We thus believe that a more conservative estimate is needed which considers Australia's relative inelasticity vis-à-vis the WIK estimate. We therefore propose to use a value of -0.3 for 2G and -0.15 for 3G.

Table 9: Vodafone's recommended changes to Table 4-7

Country	2G unit cost (PPP-adjusted)	2G change in traffic share	Change due to 2G share	3G unit cost (PPP-adjusted)	3G change in traffic share	Change due to 3G share	Weighted average change
Denmark	2.741	-81%	0.668	1.527	38%	-0.088	-0.358
Mexico	5.967	-84%	1.507	3.559	52%	-0.276	-0.939
Netherlands	3.976	-89%	1.058	2.546	100%	-0.382	-0.968
Norway	4.539	-85%	1.152	1.398	54%	-0.113	-1.074
Portugal	5.647	-90%	1.527	5.437	141%	-1.150	-1.105
Romania	6.130	-91%	1.677	2.562	194%	-0.745	-2.811
Spain	4.259	-86%	1.095	2.880	62%	-0.268	-0.683
Sweden	3.242	-87%	0.843	1.431	71%	-0.152	-0.799
UK	2.754	-85%	0.699	2.608	54%	-0.212	-0.205

2.5 Network usage

The volume of traffic WiK used to make a capacity-related demand adjustment to reflect economies of scale included Australia's 4G traffic. We understand that 8 of the 9 benchmark models provide MTR estimates on the basis of 2G and 3G related costs.

While Vodafone acknowledges efficiency gains brought about by 4G networks, it is difficult to estimate the impact of 4G on MTR costs without a relevant cost model for Australia. Many European countries and some Australian MNOs are testing Voice over LTE (VoLTE) but the uptake and use of VoLTE remains an open question. While efficiency gains are expected, the proportions of network resource utilisation by data, voice and messaging services may shift. Today it is evident that in order to ensure quality of service VoLTE is likely to use relatively more network resources compared to other data services. It is unclear if and how WIK accounted for this.

Further, 4G has interaction effects with 2G and 3G network costs, which are more difficult to predict. For instance, rapid migration to 4G by consumers dramatically reduces the demand for 2G and 3G network equipment, which could effectively shorten the economic life of related assets meaning that the cost of these assets should be recovered sooner rather than later. This effect would suggest a cost-based price with financial capital maintenance would drive a higher MTAS rate.

Taking this into account, Vodafone recommends disregarding 4G traffic and associated costs in the current determination of the MTAS rate as it is simply not possible for WiK to robustly determine the effect of 4G on network costs.

WiK asserts that Australia's network usage in terms of gigabytes per site is higher compared to the selected benchmark countries. By doing this WiK ignores two important factors. Firstly, gigabytes per site are only an indirect driver for network costs, in fact busy hour traffic demand is the determining factor. Secondly, 8 out of 9 benchmark models only provide cost estimates for 2G and 3G.[9] As a result the depiction of network usage in terms of gigabytes per site is misleading.

Without further explanations of how WIK calculated and extracted the models data points, Vodafone cannot fully reconcile WIK's results. However, based on the evidence presented, we are of the strong view that a more conservative approach of adjusting Australia's average volume of traffic per site is required.

We have used the Australian Communications and Media Authority's Network Capacity Forecasting Model already to assess the difference in busy hour throughput between 3G and 4G data traffic for a typical operator with a 33 per cent market share (see **Table 10**).[10] 3G accounts for the 37% of the busy hour data traffic.

Table 10: ACMA model's forecast busy hour traffic for an operator with 33% market share

Service	Metric	2015
Voice		
2G	Erlangs	[c-i-c]
3G	Erlangs	[c-i-c]
Data		
3G	Mbps	[c-i-c]
4G	Mbps	[c-i-c]
3G share of busy hour data traffic		**37%**

While it is possible to convert the voice traffic to Mbps as well and then comparing these across the benchmark model set, we propose taking the more conservative approach of adjusting WiK's Australia average volume of traffic per site (15,569 GB) to reflect the 3G data traffic share. This yields a result of 5761 GB per site.

[9] The Norwegian model includes 4G traffic information however cost estimates are calculated for 2G/3G only.
[10] We understand the ACMA are due to review this model shortly and the ACCC may wish to consult with the ACMA in case it has advice on any recommended alterations from the publically available version of the model.

In addition to this we tried to replicate WIK's benchmark table 2-1. On the basis of the information in the quoted benchmark models, we were not able to reconcile this with the values presented. Displayed variations between our benchmark and WIK's overview require further explanations on.

The information we were able to extract from the benchmark models suggests WIK underestimated the subscribers by site or used sources that were not available to us.

Table 11: Vodafone's analysis of selected benchmark models

	Denmark	Mexico	Netherlands	Norway	Portugal
Total sites (2015)	1425	4538	2410	4873	3565
Total subscribers of modelled operator (2015)	3,653,542	17,855,484	6,815,376	2,100,944	5,808,260
Subscriber/sites	2564	3935	2828	431	1629
WIK benchmark	*636*	*2683*	*1444*	*430*	
Total data traffic	10,181,719,673	31,860,526,299	7,735,663,715	16,645,958,406	18,366,008,749
Data subscribers	n/a	15,872,300	6,704,123	278,604	1,143,025
Per subscriber volume of traffic (MB)	n/a	2007	1154	59748	16068
Per subscriber volume of traffic (GB)	n/a	2.0	1.2	59.7	16.1
Total data subsrcibers/site	n/a	3498	2782	57	321
Total data volume by site in GB	7145	7021	3210	3416	5152
WIK benchmark	*3596*	*5104*	*1838*	*3429*	*3759*

Source: *Benchmark models, 2015 values*

Taking a conservative approach and considering that we were not able to audit all of WiK's data we suggest to alter the volume traffic per site for the countries considered above. We recommend the following changes to WiK's Table 4-9.

Table 12: Vodafone's recommended changes to Table 4-9

Country	Country traffic/site (GB)	AU traffic/site (GB)	Delta	Elasticity	Change in benchmark
Denmark	3596	5761	60%	-0.02	-0.021
Mexico	5104	5761	13%	-0.02	-0.009
Netherlands	1838	5761	213%	-0.02	-0.108
Norway	3429	5761	68%	-0.02	-0.020
Portugal	3759	5761	53%	-0.02	-0.046
Romania	1323	5761	335%	-0.02	-0.141
Spain	6016	5761	-4%	-0.02	0.002
Sweden	8864	5761	-35%	-0.02	0.011
UK	6440	5761	-11%	-0.02	0.005

2.6 Network coverage

It is not in the long-term interests of end-users to provide a disincentive to invest in regional and remote Australia. Yet, this is precisely the approach recommended by WiK through its failure to properly reflect the cost implications of Australia's unique geography. It is imperative that the ACCC adjust its MTR

assessment to reflect the cost providing competitive mobile coverage into regional and remote Australia. A failure to properly reflect these costs would send an extremely poor signal for regional investment and competition.

Australia's is much larger than any of the benchmark countries selected by WiK. Australia's land mass is approximately, 7.7 million square kilometres. This is more than double the combined land mass of all nine countries in the benchmark set (3.6 million square kilometres). If Mexico is excluded, Australia's land mass is nearly five times larger than the remaining European benchmark set (1.6 million square kilometres). To put, this figure in context Vodafone's network coverage is larger than the geographic area of each European country in the benchmark set and Telstra's stated network coverage is larger than the geographic area of all countries in the benchmark set combined.

Put simply, Australia's mobile networks cover much greater land areas than mobile networks overseas. Rather than analysing the impact of this fact, WiK dismisses it by asserting that Australia has a high degree of urbanisation and a high number of users (and traffic) per site. It then "fishes" for an explanation for Australia's data traffic without any effort to find evidence to corroborate its hypotheses. We do not agree with WiK's assertions. The implication of Australia's high users per site metric is not, as WiK suggests, that population density does not matter. Instead, it could be the case that the cost of deploying sites in Australia is expensive compared to the benchmark countries and so fewer sites are deployed than typically occur in other countries. The high cost of non-tradeable goods such as sites in Australia is evidenced by the PPP adjustment factors that WiK itself uses.

Some evidence on the difference between Australia's area (square kilometres) and the benchmark countries is provided through the reported geotype areas from each of the benchmark models with Australian data taken from the ACMA's Network Capacity Forecasting Model.

Table 13: Geotypes and area (square kilometres)

Country	Dense urban	Urban	Dense suburban	Suburban	Rural	Remote	Transport	TOTAL
Australia	740	4,067	*not used*	22,130	1,423,207	6,237,665	*not used*	**7,687,809**
Denmark	40	349	*not used*	1,428	41,282	*not used*	*not used*	**43,098**
Mexico	*not used*	8,383	*not used*	14,202	1,959,473	*not used*	51,116	**2,033,175**
Netherlands	*not used*	331	*not used*	4,315	30,332	*not used*	*not used*	**34,979**
Norway	*not used*	*not used*	*not used*	*not used*	*not used*	*not used*	*not used*	**24,156**
Portugal	78	5,705	*not used*	30,412	55,829	*not used*	*not used*	**92,024**
Romania	238	378	*not used*	7,850	229,924	*not used*	*not used*	**238,390**
Spain	2,042	7,235	28,790	78,268	388,214	*not used*	*not used*	**504,550**
Sweden	*not used*	2,552	*not used*	117,118	290,607	*not used*	*not used*	**410,278**
UK	328	388	*not used*	11,534	222,192	*not used*	13,000	**250,941**

** Some adjustments were made, e.g., in case of UK four different categories of rural (Rural 1, Rural 2, Rural 3 and Rural 4) were summarized into one category "rural" for the purpose of this table.*

Source: *Benchmark models, 2015 values*

This evidence strongly suggests an appropriate upwards cost adjustment is required to reflect Australia's geographic area and large mobile coverage footprints. Indeed it would be a deeply flawed analysis if such

an adjustment was not made. We recognise Australia's large land mass is sparsely populated and that coverage in remote Australia is not complete. Nonetheless, the actual network footprints are much larger in Australia than the benchmark countries. A failure to take account of geographic coverage requirements for Australia will lead to a lower cost than is efficient and discourage economically efficient investment (particularly in regional and remote Australia).

We recommend making an adjustment to the cost benchmarks to reflect differences in the number of coverage sites between Australia and each of the benchmark countries. We propose a methodology that is similar to the approach WiK used for its other adjustments, where the percentage difference between a generic Australian operators coverage sites is multiplied by an elasticity for coverage sites to determine an adjustment for sites. We have not analysed data on an appropriate elasticity for coverage sites. Instead, we have conservatively adopted an elasticity in between WiK's elasticity for WACC adjustments and its elasticity for network demand, specifically we have chosen a figure that is roughly one-third of the WACC adjustment, with an elasticity of coverage sites set at 0.07. We have used the number of sites in the ACMA's network capacity forecasting model, 7500, to reflect a generic operator.

Our recommended approach to assessing geographic coverage is set out in **Table 14**.

Table 14: Vodafone's recommended approach to a coverage adjustment

Country	Country coverage sites	AU coverage sites	Delta	Elasticity	Change in benchmark
Denmark	422	7500	1677%	0.07	1.978
Mexico	2878	7500	161%	0.07	0.374
Netherlands	1680	7500	346%	0.07	0.586
Norway	2169	7500	246%	0.07	0.253
Portugal	2522	7500	197%	0.07	0.590
Romania	1714	7500	338%	0.07	0.464
Spain	11012*	7500	-32%	0.07	-0.060
Sweden	6626	7500	13%	0.07	0.014
UK	6805	7500	10%	0.07	0.018

* [c-i-c].

2.7 Geographic terrain and backhaul costs

Based on our proposed approach to for coverage-related geographic adjustment, the geographic terrain adjustment proposed by WiK at Table 4-11 is no longer relevant. That said, we consider a geographic-related terrain adjustment as appropriate. The PPP adjustment used for non-Telco specific costs such as wages and other common costs is unlikely to provide an adequate basis for considering the impact of geographic terrain and geographic size on backhaul costs. [c-i-c]

In the absence of any direct information on this issue, we recommend the ACCC take a conservative approach of making a uniform upward adjustment of 3% to reflect Australia's unique cost-driven challenges for inputs such as backhaul.

2.8 Spectrum fees

In short, WiK's analysis of spectrum is inconsistent and illogical. It suggests the cost of spectrum assigned to voice should be a paltry (and patently false) $5.1 million per year. WiK's analysis appears to suggest an efficient operator can support its voice traffic with paired 1.6 MHz of 900 MHz spectrum. Vodafone uses a lot more spectrum to support voice traffic than is suggested by this result. [c-i-c]. Given the input cost for the main spectrum band supporting voice services – the 900 MHz – is $3.1 million *per paired MHz* per year (indexed to inflation) it is clear that WiK has greatly underestimated spectrum costs in their assessment. Because of this WiK's assessment simply does not make sense. This is borne out by the benchmark analysis. The median figure for spectrum fees as a share of benchmark countries' costs is 7%, yet WiK's analysis for Australia suggests spectrum costs should represent just 1% of the average benchmark value!

The main error in WiK's assessment of spectrum is its failure to account for 4G in terms of both spectrum costs and data traffic. The 700, 1800, 2300 and 2500 MHz bands are used to deliver 4G services. Vodafone also uses some of its 800 MHz spectrum to deliver 4G services, after previously using the band to deliver 3G services. We do not consider 4G spectrum costs as relevant to efficient cost recovery of the MTAS for the purpose of the benchmarking exercise. Similarly, 4G data traffic carried over these bands is not relevant to estimating the share of spectrum costs assigned to voice.

The removal of 4G-related spectrum leaves the 800, 900 and 2100 MHz bands as relevant to the ACCC's consideration of voice traffic costs.

WiK's report appears to either not consider or grossly underestimate the renewal cost for the 2100 MHz spectrum. If past ACMA practices are followed, mobile network operators will face a significant upfront cost to renew the 2100 MHz spectrum in 2016. Vodafone estimates the cost to renew all its licences in the 2100 MHz band will be $542 million. We estimate Telstra will face a renewal cost of approximately $408 million for 2100 MHz spectrum and Optus will face a renewal cost of $475 million. The average renewal cost for 2100 MHz spectrum across the three operators is $475 million - $90 million higher than was included in WiK's assessment. The failure to properly account for these costs will discourage the economically efficient investment in infrastructure.

[c-i-c]

Our revised methodology for WiK's Table 4-12 is set out below:

Table 15: Vodafone's recommended adjustment to WiK's Table 4-12

Spectrum band	Amount paid in AUD	Period of assignment (years)	WACC	Annuity formula	Annuity
800 MHz	586,197,040	15	[c-i-c]	[c-i-c]	73,886,028
2100 MHz	475,355,848				59,663,187
900 MHz	*The 900 MHz fees increase with inflation. We have used a growing annuity and an expected inflation rate of 2.5% to determine an implied capitalisation of $247,858,652*				27,201,801
(a)	*Sum of annuities and expenses for 900 MHz band*				160,751,016
(b)	*Opex = 2% of investment in voice-related spectrum including capitalised costs*				26,188,231
(c)	*Subtotal*				186,939,247
(d)	*Common cost = 10% of subtotal*				18,693,925
(e)	*Total*				**205,633,172**

Sources: VHA based on ACMA data.

We consider it methodologically incorrect to apportion spectrum costs based on total throughput. This is not typically how cost models dimension input resources. Rather, traffic should be apportioned on busy hour throughput. A recent example of how this might be done is provided by the Australian Communications and Media Authority's Network Capacity Forecasting Model already performs this task for a typical operator with a 33 per cent market share (see **Table 16**).[11]

Table 16: ACMA model's forecast busy hour traffic for an operator with 33% market share

Service	Metric	2015	2016	2017	2018	2019
Voice						
2G	Erlangs	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
3G	Erlangs	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
Data		[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
3G	Mbps	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
4G	Mbps	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
3G share of busy hour data traffic		**37%**	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]

We propose the cost of spectrum used to deliver 2G services should be fully included in the fees assigned to voice. We have assumed that the cost for the entire 900 MHz spectrum band is used for 2G on the basis that we believe at least one MNO still uses it for this purpose. We acknowledge there is scope for a more aggressive approach of assigning only 2x4 MHz of the 900 MHz band as 2G costs.

As mentioned, the approach to assigning 3G spectrum costs needs to consider service utilisation during the busy hour rather than the total volume of traffic over the year. We propose converting the ACMA model's busy hour 3G data traffic to a comparable metric to the 3G voice traffic. To do this we have

[11] We understand the ACMA are due to review this model shortly and the ACCC may wish to consult with the ACMA in case it has advice on any suggested alterations from the publically available version of the model.

calculated a conversion factor to transform Mbps to Erlangs as set out in **Table 17**. We have validated this approach against the Portuguese model and obtained an average conversion factor of 2.11 for this model.

Table 17: Conversion factor – Erlangs to Mbps

Metric	Units	2016
Voice rate		
- per second	kilobits per second (kbps)	[c-i-c]
- per minute	kilobits per minute (kbpm)	[c-i-c]
Conversion to bytes	Kilobytes (kB)	[c-i-c]
Conversion to Megabytes	Megabytes (MB)	[c-i-c]
Conversion MB to mins (invert)		[c-i-c]
Spectral effect (divide by 6)		[c-i-c]
Conversion factor		[c-i-c]

We have then applied the conversion factor to obtain the results in **Table 18**. We have suggest this comparison provides a useful, conservative approach to calculating the proportion of 3G spectrum costs attributable to voice. We recommend WiK's Table 4-13 be replaced by the following approach to allocating 3G spectrum costs.

Table 18: Vodafone's recommended replacement for WiK's Table 4-13

Service	2015	2016	2017	2018
3G voice capacity (Erlangs)	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
3G data capacity (Erlangs)	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]
3G voice sites as % of total	[c-i-c]	[c-i-c]	[c-i-c]	[c-i-c]

Based on this assessment, we recommend a revision to WiK's Table 4-14 (see **Table 19**).

Table 19: Vodafone's recommended adjustment to WiK's Table 4-14

Object	Unit	Quantity
Total cost of 2G spectrum	AUD	35,374,871
Total cost of 3G spectrum	AUD	170,258,301
Share assigned to 3G voice	%	48.7
Fees assigned to 3G voice	AUD	82,974,924
Total fees assigned to voice		118,349,795
Voice minutes (reported by WiK)	mins	31,737,895,446
Spectrum fee per minute of voice	**AU cents**	**0.373**

In contrast to the WiK approach, our proposed methodology yields an outcome that reflects Australia's high spectrum costs relative to the Scandinavian countries and is consistent with the spectrum costs observed for a significant portion of the benchmark countries (e.g., the United Kingdom, the Netherlands, Romania and Mexico) (see **Table 20**).

Table 20: Imputed spectrum costs per minute of voice

Object	WiK benchmark in AU cents	Benchmark with spectrum fees eliminated	Imputed spectrum fee per minute
Denmark	2.113	1.973	0.140
Mexico	3.569	3.112	0.457
Netherlands	3.420	2.865	0.555
Norway	3.241	3.058	0.183
Portugal	4.362	4.289	0.073
Romania	3.699	3.364	0.335
Spain	2.973	2.777	0.196
Sweden	2.230	2.229	0.001
UK	2.627	2.328	0.299

2.9 Output selection

The benchmarking approach used for the MTAS FAD suffers from a limited and non-representative sample. As previously mentioned, the set of benchmark countries was not chosen on the basis of their similarity to Australia, but rather on the basis that the model was made publically available by the country's regulatory authority. In contrast to the new DTCS FAD being contemplated by the ACCC where there is a large and rich data set and robust statistical analysis is possible, the MTAS FAD proposes to ascribe large weights to relatively few observations.

In these circumstances, the risk of regulatory error in estimating Australia's MTAS costs is high as the outcome does not constitute a model of costs of supplying the MTAS in Australia. The scope for regulatory error is evident from the standard deviation of the benchmark rates, which even on WiK's analysis is 28% of the average benchmark MTR. The standard deviation rises to 33% of the average benchmark MTR using Vodafone's recommended approach.

The ACCC has previously taken a conservative approach to its estimation of costs in Australia. For instance, in the 2011 MTAD FAD the ACCC stated:

> *Given that the ACCC has not formally modelled the TSLRIC+, it believes that a conservative approach should be taken to estimating the efficient cost of providing the MTAS.*[12]

For this reason, we recommend that the ACCC uses its discretion to select a rate between the trimmed mean and the 75th percentile of the benchmark rate.

[12] ACCC (2011), *Inquiry to make a final access determination for the Domestic Mobile Terminating Access Service (MTAS)*, Access Determination Explanatory Statement, 7 December, p7.

3. Fixed-to-mobile pass through

Despite making a series of statements asserting retail FTM pass though of MTAS price reductions has occurred, the ACCC has not offered a transparent, empirical assessment to support this claim. Vodafone would urge the ACCC to undertake such a process. In the absence of a robust assessment of retail FTM pass through, there is little evidence supporting the case that the MTAS FAD has promoted the LTIE. From the evidence that is publically available, it seems clear that most Telstra FTM consumers have not benefited from the significant MTAS price reductions (as illustrated in **Table 21**).

Table 21: Comparison of Telstra's fixed line plans from 2003 and 2015[13]

2003 (MTAS: 21cpm ex GST)	2015 (MTAS: 3.6cpm, ex GST)
Homeline Budget (**$17.50** a month) • Flagfall per call: 33 cents • Price per minute: 37 c/min Two minute call = **$1.07**	**Telstra Voice Budget** (**$23.95**) • Flagfall: 49 cents • Price per minute: 36 c/min Two minute call = **$1.21**
Homeline Complete (**$21.90**) • Flagfall: 33 cents • Price per minute: 37 c/min Two minute call = **$1.07**	**Telstra Home Phone Local** (**$40**) • Flagfall: 49 cents • Price per minute: 30 c/min Two minute call = **$1.09**
Homeline Plus (**$24.90**) • Flagfall per call: 33 cents • Price per minute: 37 c/min Two minute call = **$1.07**	**Telstra Home Phone National** (**$50**) • Flagfall per call: 49 cents • Price per minute: 30 c/min Two minute call = **$1.09**

Further, Telstra's highest priced fixed line pricing plan, Home Phone Pinnacle (the only mass consumer market plan not included in **Table 21**), offers unlimited fixed to mobile calls. However, this plan costs an extraordinary $85 per month! Vodafone would like to understand how the ACCC's assessment of pass through has taken into account the higher subscription charges in this and other plans.

Vodafone notes that the ACCC's Draft Decision acknowledged that Telstra's retail FTM call margins had increased to 65% in December 2013 from 36% in December 2004 and that "retail margins may reflect the degree of competitive tension in the retail market for fixed-line services".[14] The ACCC's suggestion that significant pass-through levels can be consistent with an increasing retail margin is misguided and

[13] Telstra (2003), *A handy guide to home communications* (see Attachment A).
Telstra (2015), 'Home phone plans', https://www.telstra.com.au/home-phone/plans-rates#get, June.
[14] ACCC (2015), *Mobile Terminating Access Service: Final access determination*, Draft decision, May, pp. 32 and 34

suggests greater attention is required by the ACCC on assessing whether the statutory criteria have been met. The ACCC's position was supported by a simple example:

> *The ACCC notes that a complete pass-through of MTAS reductions, other things being equal, can lead to increasing retail margins. To illustrate, consider a simple example of the provision of a service with a unit cost of $100, a unit price of $200 and therefore a retail margin of 50%. If there is a decrease in the unit cost of $10 and this is fully passed through to the unit price, this results in a new unit price of $190. However, even with 100% pass-through in this case, the retail margin has increased from 50% to 53%.*[15]

We note the ACCC's simple example does little more than replicate one of the arguments put forward by Telstra in its supplementary submission to the 2011 MTAS FAD.[16]

However, rather than supporting its position, the ACCC's simple example demonstrates why it should be extremely concerned by the lack retail FTM pass-through issue. The ACCC's simple example mistakenly assumes pricing in a competitive market will substantially exceed the marginal cost of supply – if the unit cost of supply is $100, then a competitive market will not set a unit price of $200. This highlights a key point – like the fixed services market – the simple example is not starting from a position of being in a competitive market. In this context, the example's focus on the margin increase from 50% to 53% following a $10 decrease in unit costs is misplaced. The relevant consideration is whether the decision had the effect of promoting competition or encouraging economically efficient use of, or investment in, infrastructure. We can observe the outcome in the simple example is directly contrary to three matters to which the ACCC must have regard:

- the decline in the unit cost has done nothing to promote competition in the downstream market;
- the lack of change in prices, means the decline in unit costs has done nothing to encourage economically efficient use of infrastructure in the downstream market; and
- there is a potential for an increase in excess returns in the downstream service market, which is contrary to encouraging economically efficient investment in infrastructure.

The lessons from the ACCC's simple example have direct relevance to the ACCC's consideration of the lack of FTM pass-through. As we previously said, the lack of FTM pass-through fundamentally influences the distribution of welfare effects across fixed network operators, MNOs, fixed consumers and mobile consumers. This was cogently expressed in the Analysys Mason report commissioned by the ACCC on the *'Regulatory treatment of fixed-to-mobile passthrough'* (2009) (**Analysys Mason Report**)[17] and the

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[15] ACCC (2015), *Mobile Terminating Access Service: Final access determination*, Draft decision, May, p32.
[16] Telstra Corporation Limited (2011), *Supplementary submission in response to the Commission Discussion Paper on Domestic Mobile Terminating Access Service (MTAS)*, Public version, 19 September.
[17] Analysys Mason, '*Regulatory treatment of fixed-to-mobile passthrough'* 2009

Frontier Economics report commissioned by Vodafone which extended the welfare analysis of past reductions in MTAS undertaken by Analysys Mason (**Frontier Economics Report**).[18]

In the former, the ACCC's own expert stated:

- that the absence of regulation of FTM pass through in selected international benchmarked countries has led to ***quite high and increasing retention margins***[19] in a number of those countries, with the resulting FTM retail margins being comparable to those seen in Australia (emphasis added);

- in comparison to regulating MTAS alone, Analysys Mason's report demonstrated that regulating FTM pass-though and the MTAS together would:

    - increase consumer surplus by $1.2 billion;

    - decrease fixed network operators' producer surplus by $1.1 billion; and

    - increase MNOs' producer surplus by $0.8 billion.

Despite the benefits it previously identified for consumers, the ACCC appears to have made a decision not to regulate FTM pass-through or to provide incentives in the MTAS FAD for FTM pass-through to occur. The ACCC must assess the welfare implications of this decision. The ACCC has not updated its economic assessment of MTAS reductions and the lack of FTM pass-through in the past six years. A thorough welfare analysis is now long overdue if the ACCC is to assure stakeholders and consumers that its proposed MTAS FAD will promote the LTIE.

Ironically, despite its inaction, the ACCC has consistently recognised that pass through is important in promoting the LTIE:

> *"The ACCC acknowledges that the pass-through of MTAS price reductions to end-users is an important consideration in assessing whether the declaration will promote the LTIE ..."* [20]

This was also acknowledged by the ACCC in its pricing determination in 2009, where it stated that:

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[18] Frontier Economics, *'Welfare analysis of implications of reduced mobile termination rates'*, July 2011

[19] FTM retention is the difference between retail FTM call rates and wholesale mobile termination rates. It is composed of the fixed operator's own costs (origination and interconnection network costs, retail costs) and its margin.

[20] ACCC, *'Domestic Mobile Terminating Access Service Declaration Inquiry –ACCC's Final Decision'*, June 2014, paragraph 6.2

> "*the ACCC is disappointed with respect to reductions in retail FTM prices, as it appears no significant reduction in retail FTM prices has emerged despite earlier expectations*."[21]

The ACCC further stated that:

> *"while the ACCC appreciates that there are other costs associated with delivering FTM services and that MTAS cost savings can be passed through via reductions in the bundle of pre-selected fixed line services, the Commission is of the view that the degree of pass through to FTM retail prices remain lower than could be expected given the reductions in MTAS prices."*[22]

It is time for the ACCC's to act on the high level of concern it has consistently expressed concern about the lack of retail FTM pass-through. Aggressive cost-based pricing for voice termination services in the MTAS FAD will not promote the LTIE due to the lack of FTM pass-through. Without pass-through, MTAS reductions will only strengthen Telstra's fixed line monopoly to the detriment of competing MNOs. This damages mobile services competition to the detriment of end-users.

[21] ACCC, *'Domestic Mobile Terminating Access Services Pricing Principles Determination and indicative prices for the period 1 January 2009 to 31 December 2011'*, March 2009, page 22
[22] ACCC, *'Domestic Mobile Terminating Access Services Pricing Principles Determination and indicative prices for the period 1 January 2009 to 31 December 2011'*, March 2009, page 24

4. Terms for SMS termination

The introduction of SMS termination services regulation is a regulatory experiment that has been tried in only a handful of countries around the world. We are not aware of any evidence demonstrating that this has benefited consumers and we cannot find any evidence to this effect in the ACCC's Draft Decision. We are not aware of any other jurisdiction which has extended regulation to include application-to-person (**A2P**) SMS termination services. In New Zealand, SMS termination regulation focused on person-to-person (**P2P**) SMS termination services and A2P services were excluded from regulation. The ACCC must be mindful of the potential for wide-ranging unintended consequences from its pursuit of such a novel and experimental approach to regulation.

The introduction of SMS termination rate regulation will lead to a step-change to SMS interconnection arrangements. However, the impact this will have on the P2P SMS services segment will be negligible due to the symmetry of SMS traffic between major networks. The impact on the A2P SMS services segment will be more pronounced, while the change will directly or indirectly lead to a lower input cost for SMS termination in providing A2P services, the effect of the change will be to increase the value of economies of scale in the provision of A2P services. As a consequence, A2P providers without scale may face significant challenges as a result of the ACCC's proposed approach.

In the short-term, the step-change in A2P SMS termination may not promote the interests of end-users. The ACCC is right to recognise the benefits of lower A2P SMS termination prices. Lower prices could, for instance, make it easier for companies to send information to their customers. On the other hand, a requirement to lower A2P termination prices will make it much easier for unscrupulous operators to send spam SMS to customers. While there are measures in place to address SMS spam via the Spam Act, the ACCC must recognise that the efforts required to enforce the Spam Act have been supported by the MNOs commercial approach to SMS interconnection arrangements. A sudden, radical reduction of the cost of sending A2P messages substantially changes the incentives for originators/aggregators of A2P messages, and is likely to substantially test the mechanisms envisaged by the Spam Act.

Spam SMS is a source of negative utility for consumers and has been a source of customer complaints.

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The potential for a large increase in unwanted A2P messages is not limited to spam. Under the current SMS interconnection arrangements, companies will only send messages to customers if they believe there is economic value in doing so and that economic value is more likely to be commensurate with the utility derived from customers from receiving these types of messages. If steps are taken by the ACCC to make the price of A2P termination rates negligible, there is a risk of setting the price below customers' marginal utility of receiving A2P texts. In other words, the cost of sending a text may not reflect the value to the customer in receiving the text; customers may receive more texts than they consider desirable and yet, depending on the nature of the content, they may not feel able to "unsubscribe". The marginal benefit

of receiving a SMS is lower than the marginal cost of sending the A2P message. For this reason, a more gradual approach to the introduction of A2P termination regulation is desirable.

4.1 Price terms for SMS termination

We have reviewed WiK's report on setting SMS termination rates and, while we do not endorse the approach, we do not have extensive comments on the methodology. Based on WiK's methodology, the changes we have proposed to the MTAS voice rate are unlikely to yield a materially different imputed cost for SMS termination rate to the 0.03 cents per text proposed by WiK.

In this instance, we do not consider the ACCC should rely solely on cost estimates to determine the SMS termination rates that best promote the LTIE. Instead, we propose the ACCC adopt origination-based price discrimination for SMS termination regulation. Specifically, we propose P2P termination rates be set at 0.03 cents per text and A2P termination rates be set at 4 cents per text. Our proposed approach recognises the sound economic reasons for using price discrimination to set SMS termination rates given the nature of the A2P market including:

- the potential mismatch between the cost of sending an A2P text and the value to customers of receiving an A2P text; and
- the potential for significant disruption in the A2P segment.

Like the introduction of MTAS voice regulation more than a decade ago, Vodafone proposes a more gradual approach to the implementation of regulatory changes for A2P termination regulation.

The propose P2P and A2P termination rates should be set for the proposed MTAS FAD term – that is, 1 January 2016 to 30 June 2019. However, we suggest the ACCC may wish to conduct a mid-term review of the A2P segment to determine if it is appropriate to introduce a mid-term reduction toward setting a more cost-oriented rate for A2P SMS services.

4.2 Non-price terms and conditions for SMS termination

Spam SMS

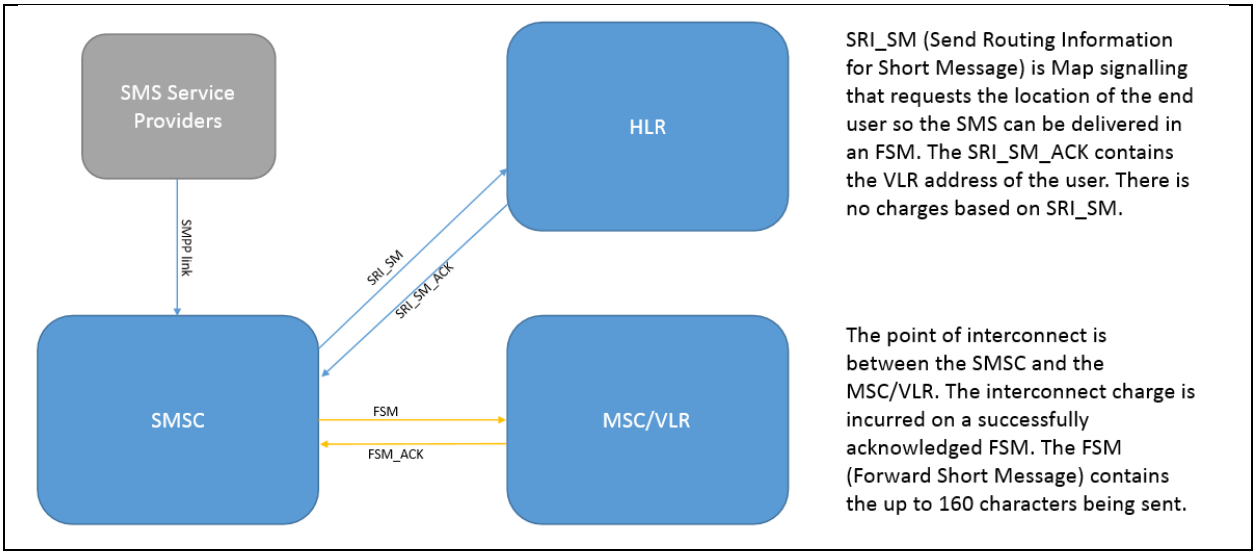
Vodafone recommends non-price terms and conditions include a term to reflect the potential for an increase in SMS traffic. While the *Spam Act 2003* imposes significant penalties for breaches of the Act, it would be beneficial to end-users if MNOs provide additional protection against spam SMS. MNOs should be able to suspend or terminate interconnection services if they have reasonable grounds for suspecting systemic SMS spam being originated from a particular A2P supplier. This measure will benefit end-users from having through proactively blocking SMS spam so that end-users have confidence that the industry treats the issue and resolution of spam SMS as a matter of importance. Enforcement action, such as formal warning, infringement notices, enforceable undertakings and Federal Court action do not provide

immediate relief to consumers and simply reporting SMS spam will not stop the receipt of unwanted SMS messages in the short-term.

The point of interconnection

There has been discussion about the physical point-of-interconnect for SMS termination, particularly in relation to A2P services. We consider the point of interconnection to exist between the originator's short message service centre (**SMSC**) and the terminating network's mobile switching centre (**MSC**). Companies that rely on sending messages through a MNO's SMSC do not directly acquire SMS termination services, they acquire a bundle of services from the MNO (see **Figure 8**). We do not favour technology prescriptive approaches to declaration or FADs however we recognise this definition may be of relevance to the ACCC as it prepares its non-price terms and conditions.

Figure 8: SMS interconnection



A. Analysis of benchmark cost models

Vodafone analysed the cost models cited in WiK's benchmarking report. A selection of our findings are highlighted in the tables below.

Table 22 indicates the analysis of subscribers and sites in five of the selected models.

Table 22: Site and subscriber data from selected models

	Denmark	Mexico	Netherlands	Norway	Portugal
Total coverage sites	422	2978	1680	4275	2522
Total capacity sites	1003	1560	730	598	1043
	Denmark	**Mexico**	**Netherlands**	**Norway**	**Portugal**
Total sites (2015)	1425	4538	2410	4873	3565
Total subscribers of modelled operator (2015)	3,653,542	17,855,484	6,815,376	2,100,944	5,808,260
Subscriber/sites	2564	3935	2828	431	1629
WIK benchmark	*636*	*2683*	*1444*	*430*	
Total data traffic	10,181,719,673	31,860,526,299	7,735,663,715	16,645,958,406	18,366,008,749
Data subscribers	n/a	15,872,300	6,704,123	278,604	1,143,025
Per subscriber volume of traffic (MB)	n/a	2007	1154	59748	16068
Per subscriber volume of traffic (GB)	n/a	2.0	1.2	59.7	16.1
Total data subsrcibers/site	n/a	3498	2782	57	321
Total data volume by site in GB	7145	7021	3210	3416	5152
WIK benchmark	*3596*	*5104*	*1838*	*3429*	*3759*

Source: *Benchmark models, 2015 values*

Table 23 indicates the analysis of the geotype splits in the selected models, with data on area, population and traffic splits.

Table 23: Geotype data – population and area

Area (km²)	**Denmark**	**Mexico**	**Netherlands**	**Portugal**	**Spain**	**Sweden**	**UK**	**AU**
Dense urban	40			78	2042		328	740.4
Urban	349	8383	331	5705	7235	2552.14	3887	4066.6
Suburban	1428	14202	4315	30412	78268	117118.47	11534	22129.7
Rural	41282	1959473	30332	55829	388214	290607.11	222192	1423207.4
Remote / Transport UK							13000	6237665.3
Population (split or %)	**Denmark**	**Mexico**	**Netherlands**	**Portugal**	**Spain**	**Sweden**	**UK**	**AU**
Dense urban							3865639	3180326
Urban		55492777	2,781,744			2778505.528	19232034	8107500
Suburban		31537397	8,376,405			5657586.697	21014202	7683592
Rural		25205515	5,242,397			1164286.776	19994904	3920417
Remote								237466
Total *(where n/a World Bank)*	5,658,057	112235689	16,400,545	10,783,400	*46,617,825*	*9600379*	*64106779*	23129300
Traffic distribution 2G	**Denmark**	**Mexico (n/a)**	**Netherlands**	**Portugal**	**Spain (n/a)**	**Sweden**	**UK**	**AU**
Dense urban	8.0%			14%	split according to		7.02%	23%
Urban	21.0%		32.0%	59%	specific regions	57%	32.37%	37%
Suburban	27.0%		51.0%	24%		30%	15.36%	34%
Rural	43.0%		18.0%	4%		13%	25.66%	17%
Remote/ Rural 2(RO) / Transport UK							19.58%	1%
Traffic distribution 3G	**Denmark**	**Mexico (n/a)**	**Netherlands**	**Portugal**	**Spain (n/a)**	**Sweden**	**UK**	**AU**
Dense urban	8%			15%	split according to		9.96%	23%
Urban	21%		32%	65%	specific regions	50%	45.90%	37%
Suburban	27%		51%	20%		35%	21.78%	34%
Rural	43%		18%	0%		15%	12.51%	17%
Rural 2 / Transport UK							9.85%	1%

Source: *Benchmark models, 2015 values*

Table 24 indicates the analysis of coverage and capacity sites in selected models.

Table 24: Coverage and capacity sites

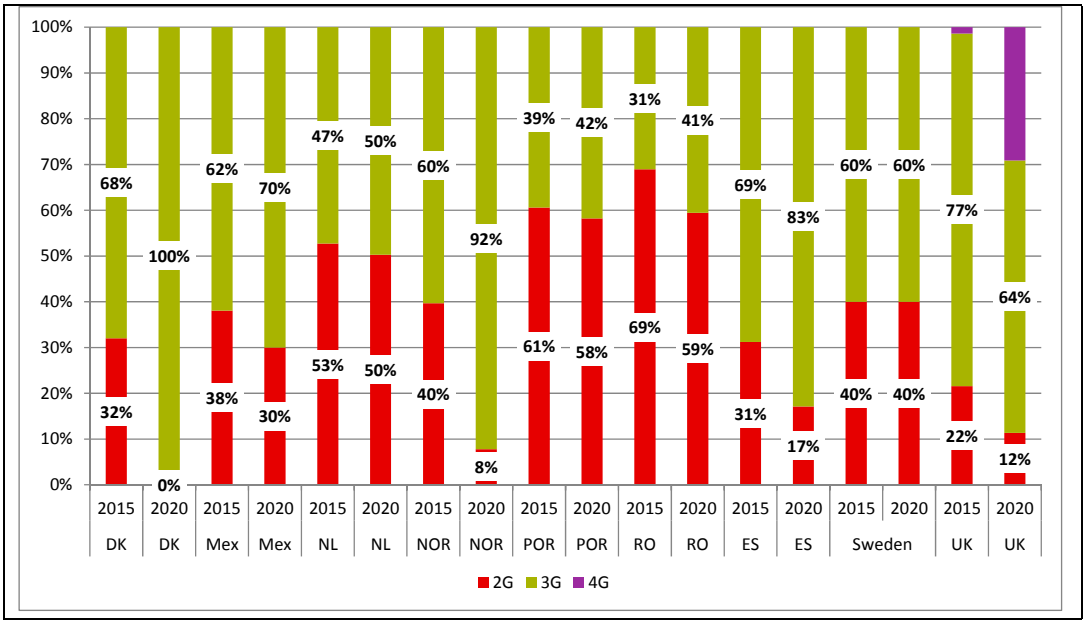
Coverage sites	Denmark	Mexico	Netherlands	Portugal	Romania
Dense urban	30			272	247
Urban	55	918	135.0	539	311
Suburban	85	422	392.0	1138	201
Rural	252	376	903.0	467	143
Rural 2 / Carreteras		1162	250.0	106	812
Micro/interior		100			
Total coverage sites	**422**	**2978**	**1680**	**2522**	**1714**

Additional capacity sites	Denmark	Mexico	Netherlands	Portugal	Romania
Dense urban	80			87	1369
Urban	228	1106	286.0	757	945
Suburban	281	284	376.0	0	778
Rural	414	0	0.0	0	990
Rural 2 / Carreteras		0	68.0	199	2055
Micro/interior		170			
Total capacity sites	**1003**	**1560**	**730**	**1043**	**6137**

Source: *Benchmark models, 2015 values*

Figure 9 indicates the analysis of network traffic in selected models.

Figure 9: Network traffic by technology type



Notes: Calculation based on proportion of total traffic by technology

Source: *Benchmark models, 2015 and 2020 values*