Submission to the Australian Competition and Consumer Commission

Broadband performance monitoring and reporting in the Australian context

27 September 2013

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1   Executive Summary

Introductory comments

Telstra welcomes the opportunity to make this submission in response to the ACCC's 14 August consultation paper "Broadband performance monitoring and reporting in the Australian context."[1]

Telstra concurs with the ACCC's view that there will be a growing demand for high quality broadband services in the future and the need for transparency about service offerings so that customers can make informed choices when contracting for broadband services.

However, Telstra strongly believes that the ACCC should defer making any decision on implementing a specific broadband performance and monitoring program until further work on the rationale for such a program can be undertaken in consultation with industry.

Across the industry, Internet Service Providers (ISPs) are investing in their networks to deliver products and services that meet customer expectations and doing so in an environment where consumer protections already exist. Telstra continues to make substantial investments in its broadband networks, in response to the growing demand from customers for enhanced broadband services and with the aim of improving the overall customer experience. Telstra does so to win and retain customers in a highly competitive environment and meet company-wide performance targets for customer satisfaction.

Given broadband is a well functioning market where significant consumer protections are already in place, Telstra considers that further attention needs to be given to defining the problem to be solved (if there is one) and the options available to address any such problem. Telstra also has reservations about the value and reliability of the specific probe-based program being considered. Telstra is also of the view that it would be premature to make a decision prior to the Commonwealth Government finalising its plans for the National Broadband Network (NBN), as these are likely to have implications for the design of any ongoing performance and monitoring program.

Telstra notes this is likely to be a complex and costly program. Without taking time to give adequate consideration to the public policy rationale for and design of the program, there is a high risk of it not meeting stakeholder expectations and having to be substantially modified or even written off prematurely.

Key points

- Telstra is concerned that the current proposal to deploy a probe-based measurement methodology is being promoted before a problem to be solved is properly understood, and without consideration being given to the full range of potential options available to solve any such problem. This approach is inconsistent with the guidelines for policy development that have been published by The Office of Best Practice Regulation.

- The claimed benefits of the probe-based program for customers are questionable, noting that it will be difficult for customers to make meaningful comparisons of ISP offerings due to the limited number of providers involved and the small size of the sample sets. Further, reporting that is solely based on access network performance will not represent the real world experience of many consumers, noting that their overall performance experience will also be determined by other factors such as the performance of local network environment in their premises, the interconnecting telecommunications networks, and the remote server environment.

- The claimed benefits to ISPs from making the additional information available are also questionable. Broadband is a highly contestable product and ISPs are already incentivised to have systems and arrangements in place for measuring the performance of their networks. It is also unlikely that the

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[1] Published at http://transition.accc.gov.au/content/index.phtml/itemId/1122243

program being proposed by the ACCC would lead to any changes in investments by ISPs because the data gathered by ISPs is current and encompasses their entire networks, whereas the information published by the ACCC will be more limited in nature and out of date by the time it is published. Telstra also notes that plans to limit the program to major ISPs will limit any benefits to those ISPs and could be regarded as discriminating against smaller ISPs.

- It would be unwise to finalise the design of the program given the government has stated it will be making changes to the NBN, because there is a high risk that such a program would end up having to be substantially modified to take account of any changes in policy. Telstra believes that if such a program is justified, then it should be developed after the government finalises the arrangements for the implementation of its NBN policy.

- Telstra expects that substantial costs will be involved in acquiring and deploying probes into individual consumer premises, along with implementing the associated monitoring and reporting systems. Consequently, Telstra believes that, before making a commitment to this expenditure, it is important that the purpose of the program, along with its costs and benefits, are clearly understood.

- Telstra believes that the ACCC should be cautious about assuming that programs from other jurisdictions can be translated to Australia and achieve similar outcomes. Differences in the government policy objectives, regulatory frameworks and the shape and size of the markets need to be taken into account. It is also unclear to Telstra that the programs implemented overseas have been the *cause* of any observed improvements in broadband services.

- It is difficult to answer the ACCC's specific questions about the probe-based methodology without a clear understanding of the problem that the ACCC is seeking to address or the alternative options that have been considered. However, Telstra does have a number of concerns about the reliability and accuracy of the proposed methodology. Telstra believes that, in order to address these concerns and for the results to be meaningful to consumers, the methodology would have to be deployed on a large scale (probably larger than that contemplated by the ACCC) and may be prohibitively expensive. Telstra notes that "off-the-shelf" reporting services, such as Ookla's Speedtest.net service, may prove to be more cost effective and reliable than a customised probe-based methodology with limited sample sizes.

- In order to address the above issues, Telstra believes that the ACCC should defer making a decision on the proposed probe-based broadband performance monitoring and reporting program and undertake further research - in consultation with industry, consumer and government stakeholders - to identify the policy problem that needs to be addressed and explore the range of options that can be considered in response to any problem that might be identified. There is a high risk that the program will not meet the expectations of government, consumer and industry if this additional work is not undertaken.

Section 2 of this paper explains Telstra's general views on the proposed approach. Section 3 sets out Telstra's initial response to the specific matters and questions posed by the ACCC in its consultation paper.

2   General comments

2.1. Summary

As explained in the remainder of this section, Telstra has concerns about the broadband performance monitoring and reporting program proposed by the ACCC in the consultation paper. These concerns include what appears to be a lack of a clear public policy rationale for the proposed solution, along with questions about the value of the program including the claimed benefits for consumers and ISPs. In particular, Telstra is concerned that the questions posed by the ACCC appear to presuppose that a problem exists that needs to be addressed by the proposed monitoring and reporting program. However, this problem is not clearly articulated, nor is any evidence presented to support its existence.

Telstra believes that the ACCC should defer making a decision about implementing this program so that the policy rationale can be properly developed and the best solution identified, in consultation with industry. Telstra also believes it would be unwise to finalise and implement a program of this type until after the architecture of the new National Broadband Network has been developed.

2.2. Developing a sound public policy rationale

Telstra recommends that the ACCC should approach this issue in a manner that is consistent with the process set out in the *"Best Practice Regulation Handbook"*[2] published by The Office of Best Practice Regulation. Specifically, Telstra believes that further attention should be given to the development of a sound public policy rationale before seeking to consult on the implementation of a specific solution.

At the present time, Telstra is concerned that the ACCC has provided little information about the public policy thinking behind the proposal. The problem is not clearly defined and it appears that little consideration has been given to the various policy options that might be available to address an identified problem, if one is found to exist. As a result, Telstra is concerned that the specific broadband performance monitoring and reporting program being proposed could lead to a sub-optimal outcome for industry – in terms of costs – and for consumers, who may place reliance on the information reported when choosing an ISP.

Best practice regulation making

The *Best Practice Regulation Handbook* provides guidance on the development of evidence based policy making. Although the introduction of a broadband performance monitoring and reporting regime may not represent a formal regulation it involves similar considerations and impacts, and Telstra therefore considers that it should be subject to a similar policy making process. Sections 1.13 and 1.14 of this handbook state:

"1.13 The problem to be addressed and the related policy objective should be identified as first steps in the policy development process. A range of options for achieving the objective should be considered (as well as no action or the status quo option); and an analysis of the likely economic, social and environmental consequences.

1.14 Effective consultation ensures that both the regulator and the regulated have a good understanding of the problem, alternative options to address it, potential administrative and compliance mechanisms, and associated benefits, costs and risks."

As explained below, Telstra considers that the ACCC needs to undertake further work to adequately address these requirements.

The problem needs to be defined

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[2] Available at http://www.finance.gov.au/obpr/proposal/handbook/docs/Best-Practice-Regulation-Handbook.pdf

Telstra observes that the consultation paper provides no information about the problem that the ACCC is attempting to solve. Section 1.2 in the paper makes references to some benefits for consumers, internet service providers (**ISPs**) and testing companies, but fails to provide any evidence that such benefits are necessary or that the existing framework is incapable of delivering them. In order to define the problem, Telstra believes that the ACCC needs to conduct further research into the nature and magnitude of any detriment being experienced by consumers and other stakeholders, including the consequences of not taking any action.

The options need to be analysed

The paper omits to provide any consideration of alternative options for delivering the broadband performance monitoring and reporting requirements. Section 4.1 makes a brief reference to several ways of testing broadband performance - including probe-based, laboratory and software-based testing – but does not provide any serious analysis of these options or their relative merits. Instead, this section of the paper simply states that *"The ACCC considers that a probe based testing methodology would be the most appropriate in the Australian context"* without further explanation.

Telstra believes that a range of alternative options should be explored, but only after the problem has been defined. This exploration should include a comparative analysis of the costs and benefits of each option, including the option of not taking any action. Further, any consideration of alternative options should also include "off-the-shelf" ones, such as Ookla's Speedtest.net service[3], as these may prove to be more cost effective and reliable than customised options with limited sample sizes.

Further consultation required

In line with the advice in the *Best Practice Regulation Handbook*, Telstra believes that the ACCC needs to undertake further consultation with industry on the above matters before identifying a preferred approach and considering the detail of how to implement it.

2.3. Benefits to customers are questionable

Section 1.2.1 of the consultation paper expresses the view that more information about service quality could be made available to consumers of fixed-line broadband services. Telstra notes that any perceived shortage of information available to consumers can – at least in part – be attributed to ISPs taking a cautious approach in response to the ACCC's guidance about making speed claims in its *Information & Industry Guidance Paper: Broadband Internet Speed Claims and the Trade Practices Act 1974*.

More importantly, it is not clear to Telstra how consumers will benefit from information that is derived from a small sample of probes only covering the major ISPs. Such information would not assist consumers to make decisions which properly consider the full range of ISP offerings and could be seen to be discriminating against ISPs that are not included in the testing regime.

The usefulness of the reports as an authoritative reference on broadband performance is also likely to be limited by the sample size. The sample sizes being contemplated are likely to be too small for consumers to have any confidence about drawing any meaningful conclusions, especially when comparing ISPs in a local geographic area. In order to avoid any misrepresentation, the ACCC would need to caveat the information and educate consumers about the inherent uncertainty in the data and the statistical significance of any comparative results.

Further, information solely focused on access network performance will not represent the real world experience of many consumers, noting that their overall performance experience will also be determined by the performance of their local network environment, the interconnecting national and international transmission networks, the remote access network and the remote server environment. Again, to avoid any misrepresentation, the ACCC would need to explain to consumers that the broadband performance

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[3] Refer to http://www.ookla.com/netmetrics

reporting only considers one of many factors impacting real world performance and which need to be taken account of in any comparative analysis.

Telstra also doubts the usefulness of reporting technical parameters like jitter and latency, noting that while these may be meaningful to a few consumers, such as serious members of the on-line gaming community, their significance is unlikely to be understood by the majority of consumers.

Telstra also notes there is a risk that any reports published by the ACCC are likely to be based upon information that is already out of date and hence would be of little value to consumers. This risk is acknowledged by the ACCC, which states that:

"The ACCC has a preference for a reporting framework which allows it to provide a medium to high level of detailed commentary such as those provided in the bi-annual Ofcom and annual FCC reports....The ACCC also recognises that there is a trade-off between the currency of the data that can be reported on and the level of detail that can go into any reported analysis. Consequently, consumers may be accessing out-of-date information when performance results are not reported in real time."[4]

Telstra believes that in determining the frequency with which the ACCC may publish any information that it collects it should take full account of the *purpose* of providing that information, which is driven by the problem that the ACCC is trying to address. For example, if the purpose of the performance monitoring and reporting program was to provide a survey of how broadband speeds have changed, then an annual report may be appropriate. On the other hand, if the ACCC intends to publish comparative data – perhaps by ISP, technology and geography – then more frequent reporting would likely be required, otherwise the ACCC would run the risk of misleading consumers by publishing outdated information.

2.4. Benefits to industry are questionable

Telstra notes the ACCC's view that giving ISPs access to information on the real world performance of their services and their competitors' services will enable them to better differentiate their services, as well as assisting to identify any performance issues. Telstra believes that these benefits to ISPs are questionable, because ISPs are already incentivised to have systems and arrangements in place for measuring the performance of their networks. The broadband market in Australia is competitive and ISPs that do not invest in their networks and provide the expected levels of performance to their customers will lose market share. Telstra itself continually monitors the performance of its broadband networks and uses the information gathered from that monitoring process to target its investments appropriately. Customers benefit from that investment through the service improvements that result. It is unlikely that the program being proposed by the ACCC would lead to any changes in investments by ISPs because the data gathered by ISPs is current and encompasses their entire networks, whereas the information published by the ACCC will be more limited in nature and out of date by the time it is published.

Further, if the number of probes is limited to only cover the major ISPs then any benefits would be limited to these ISPs and would not be available to other smaller ISPs.

2.5. Value of the program is questionable

Although the consultation paper does not provide any information about the likely cost of the proposed scheme, Telstra expects that the cost of acquiring and deploying probes into individual consumer premises, along with the associated monitoring and reporting systems, will be substantial. Telstra questions whether this cost is a good use of scarce tax payer funds, especially considering the current uncertainty about the benefits of the scheme.

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[4] ACCC, p23.

2.6. International experience

Section 3 of the consultation paper makes reference to broadband performance and reporting programs in the UK, US, Singapore and New Zealand. The ACCC has recently provided Communications Alliance with further information about the programs run by OFCOM in the UK and the FCC in the US.

After reviewing this information Telstra notes that both of the recent OFCOM[5] and FCC[6] reports (published in 2013) make reference to the restricted utility of the data due to statistical uncertainty created by the limited sample sizes. The OFCOM report only covers specific ISP broadband service packages for which there were sufficient panellists to allow meaningful statistical analysis. This meant that OFCOM only reported on the larger ISP packages with more than 250,000 customers. The FCC report states that the data in its report is *"only analysed at the national level, and is not collected in a way that permits meaningful conclusions about broadband performance at the local level."*[7] These comments reinforce Telstra's view that adopting a similar methodology in Australia is unlikely to assist consumers to make meaningful choices between individual ISPs at a local level.

Telstra notes that the ACCC only refers to broadband performance and reporting programs in four countries. No mention is made of such programs being implemented in other countries which have some of the fastest and highest performance broadband networks – e.g., Japan and Korea. So, based on the international evidence provided by the ACCC, and without undertaking further research, it seems that this type of program is not necessary for a country to deliver high performance broadband services.

Telstra also believes that the ACCC should be cautious about assuming that programs from other jurisdictions can be translated to Australia and achieve similar outcomes. Differences in the government policy objectives, regulatory frameworks and the shape and size of the markets all need to be taken into account. Further, Telstra cautions the ACCC against assuming that the programs that have been implemented overseas have been the *cause* of any observed improvements in broadband services. As noted in Section 2.4, Australian ISPs are already monitoring and investing in their broadband networks and have been doing so for a number of years *without* any program such as that being proposed by the ACCC. The drivers of that investment and the consequent improvement in broadband performance include:

- Improvements in technology – for example, newer generation DSLAMs such as ISAMs are capable of providing higher speed ADSL2+ services to end users, rather than ADSL services and they have the benefit of having backhaul that is easier to upgrade, hence they are less susceptible to congestion problems. Both ISPs and their end users benefit from this more efficient technology.

- Competition – the broadband market in Australia is competitive, particularly in metropolitan areas, and ISPs that do not invest to meet that competition by providing customers with the broadband experience that they expect will lose market share.

2.7. NBN considerations

Telstra considers that it would be unwise to proceed with implementing a potentially costly broadband performance monitoring and reporting program given the government has stated they will be making changes to the NBN policy. There is a high risk that such a program would end up having to be substantially modified to take account of these changes. Any trend data is also unlikely to be meaningful during the period of rapid change as the industry transitions to the modified NBN policy. Telstra believes that if such a program is justified, then it should be developed after the government finalises the arrangements for the implementation of its NBN policy.

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[5] The 2013 OFCOM report is available at http://stakeholders.ofcom.org.uk/binaries/research/broadband-research/may2013/Fixed_bb_speeds_May_2013.pdf
[6] The 2013 FCC report is available at http://www.fcc.gov/measuring-broadband-america/2013/February
[7] Ibid, Refer to the section "Background on the production of the Report"

3 Responses to the ACCC's questions

This section sets out Telstra's responses to the specific questions posed by the ACCC in the consultation paper. For most of these questions it has not been possible to give definitive answers due to the lack of clarity about the underlying policy rationale for considering this methodology, as explained in section 2 of this submission.

Q1. Do you agree that a probe-based testing methodology would be the most reliable and accurate approach for the Australian context?

Telstra does not believe it is possible to properly address this question until further work is undertaken to define the problem and research the potential options that can be considered to address any such problem. However, as explained below, Telstra does have a number of concerns about the use of a probe-based testing methodology.

Measuring performance information that is representative of a link or a collection of links (or an offering by a service provider) using probe-based testing poses a number of issues, including the following:

• The performance of a shared link is statistical over time and any one measurement does not accurately describe its performance. This means that many measurements must be taken.

• The performance can also vary from link to link, so the measurement of one link does not give accurate insight into the performance of other links, implying that many probes must be used.

• The different access speed tiers will each exhibit different performance characteristics, so each tier must be separately tested.

• The large number of probes and measurements required can load the network and negatively impact its performance.

• The probes must be professionally installed to ensure reliable data is gathered that is not dependent on factors associated with the user environment.

• If a limited number of links are monitored then service providers may target these links to bias the reporting.

• The volunteer testers may not represent an unbiased set of users of internet services.

Telstra believes that the ACCC would need to deploy a large scale and expensive probe network in order to address the above issues.

Q2. If you consider an alternative approach preferable, what approach do you prefer and why?

Again, it is not possible to address this question until further work is undertaken to define the problem and research the potential options that can be considered to address any such problem. However, as discussed in section 2.2, Telstra notes that "off-the-shelf" reporting services, such as Ookla's Speedtest.net service, may prove to be more cost effective and reliable than a customised probe-based methodology with limited sample sizes.

Q3. What services should be included in the ACCC's proposed performance monitoring and reporting program? In particular: a) Do you agree that the ACCC should monitor ADSL, HFC and NBN-based broadband services? b) Do you agree that the ACCC should monitor small business broadband services? c) Are there any other services which you consider should be included in the proposed program? In your response, please outline reasons.

It is premature to answer this question prior to having a better understanding of the problem that the ACCC is trying to resolve and its objectives for implementing the program. If the problem involves specific technologies then it would be appropriate to focus the program on these technologies. If the problem involves consumers and small businesses then it would be appropriate to focus on these segments of the market. Telstra also believes it would be most appropriate to answer this question after government decisions are made about the application of the various technology options in the future NBN architecture.

Q4. How should the ACCC determine which regions to monitor as part of any program? In particular: a) How many Australian cities do you consider should be monitored as part of the proposed program? How could these be determined by the ACCC? b) Would you consider State or Territory regions which encompass rural and regional areas outside of each major city would be sufficient to provide information to consumers living in these areas on the performance of broadband services? For example, a Victorian rural/regional delineation which encompasses services outside of metropolitan Melbourne?

Again, it is premature to answer this question prior to having a better understanding of the problem that the ACCC is trying to resolve and its objectives for implementing the program. If the problem to be addressed is more acute in certain geographic areas then it may be appropriate to prioritise the program accordingly.

Q5. How should the ACCC determine which ISPs to monitor for ADSL and NBN-based services? For example: a) Should the ACCC monitor the largest ISPs by total market share in the Australian fixed-line broadband market? b) Should the ACCC monitor the largest ISPs by market share for each technology? c) Should the ACCC monitor the largest ISPs by market share for each region?

It depends on what the ACCC is trying to achieve with this methodology. If an objective is to assist consumers to make informed choices about purchasing a service from any of the ISPs then only focusing on larger ISPs would be inappropriate.

Q6. If you consider that another approach to determining which ISPs to monitor is preferable, what is it and why do you prefer that approach?

Telstra believes that this matter should be addressed after further work is undertaken to research and define the problem that is to be addressed by a monitoring and reporting program.

Q7. Should the ACCC monitor all providers of HFC in Australia, or limit testing to the two major networks operated by Telstra and Optus?

This depends on whether the problem to be solved is related to any or all of the HFC networks. Without this understanding it is not possible to nominate the scope of testing on HFC networks.

Q8. Do you agree the ACCC should test both ADSL 1 and ADSL2+ services?

This depends on whether the problem to be solved is related to specific DSL services or all DSL services. Telstra also wonders why VDSL services are not considered.

Q9. Should the ACCC test specific speed tiers for HFC and NBN-based services or should it test services falling within particular speed ranges? Please explain if and why you prefer a particular approach.

In order to be meaningful in assisting consumers to make choices, the reporting should be aligned with all of the advertised speed tiers.

Q10. What is the minimum number of probes which would be required to provide robust results on the broadband performance likely to be experienced by consumers acquiring a particular ISP package or offering in a particular region (i.e. per sample set)?

There is no absolute answer to the minimum number of probes required to provide robust (statistically significant) results. The minimum number of probes is dependent upon statistical test that is being carried out, and is a trade-off between an acceptable level of accuracy and budget. The minimum number of probes required to ensure robust and accurate results from a sample can be represented with the following formula:

$$n = \frac{\sigma \left(z_{\alpha/2} \right)^2}{\left(MOE \right)^2}$$

Where :

   $n =$ sample size;

   $z_{\alpha/2} =$ confidence level, 99%, 95%, 90% etc;

   $MOE =$ acceptable margin of error;

   $\sigma =$ sample standard deviation.

Note that this formula can determine the overall sample size required for relatively simple applications. For more complex statistical comparisons, for example comparing specific ISPs' performance using specific access technologies in specific areas, this formula would be applied to the relevant subsets of the overall sample. The overall sample size would be a factor of this formula.

Confidence Level	99.0%	97.5%	95.0%	92.5%	90%
MOE	Sample size required # obs				
1%	27,060	19,208	13,528	10,362	8,212
2%	6,765	4,802	3,382	2,591	2,053
3%	3,007	2,135	1,504	1,152	913
4%	1,692	1,201	846	648	514
5%	1,083	769	542	415	329
6%	752	534	376	288	229
7%	553	392	277	212	168
8%	423	301	212	162	129
9%	335	238	168	128	102
10%	271	193	136	104	83
11%	224	159	112	86	68
12%	188	134	94	72	58
13%	161	114	81	62	49
14%	139	98	70	53	42
15%	121	86	61	47	37
Standard deviation	0.5				

Table 1: Minimum sizes for subsets of the overall sample

Statistically three factors determine the minimum number of probes:

1. **Margin Of Error** (**MOE**) – percentage chosen by the researcher and interpreted as the amount of random sampling error that is present in a survey.

2. **Confidence level** – percentage chosen by the researcher that refers to the degree of certainty one has that the "results found are truly the results." The rule of thumb for a confidence level is 95% (or 1.64).[8]

3. **Sample standard deviation** – set equal to 0.5 when no sample exists a priori.

By choosing values, minimum sample sizes can be determined, as illustrated in Table 1 above.

Q11. Which of the variables (ISP, geographic region, speed tier or size of each 'sample set') is most important and why?

In the absence of a better understanding about the problem that the ACCC is trying to resolve and its objectives, Telstra considers all of these variables to have similar importance. The value of the reporting would be significantly undermined if any one of these variables was excluded or given less emphasis. For example:

- The ISP is important for allowing consumers to make an informed choice about which ISP to choose.

- The geographic region is important for ensuring that geographic factors such as backhaul capacity can be taken into account.

- The speed tier is important for allowing consumers to make meaningful comparisons between service offerings.

- The size of the sample set is important for providing confidence about the data and making accurate comparisons between samples sets.

Q12. What information regarding download and upload data transfer rates (or 'speeds') would be most useful for ISPs and for consumers? In particular: a) Do you agree that the ACCC should monitor both peak and off-peak data transfer rates? b) What is the daily peak or 'busy' period for demand on broadband bandwidth in Australia? c) To what extent are 'burst' speeds available for consumers in Australia and should they be accounted for in the ACCC's proposed testing program?

As noted in Section 2.4, the information would likely be of limited value to ISPs because they already monitor the performance of their networks and target investments to provide benefits to their end users. Further, Telstra reiterates that any information published by the ACCC will likely be out of date by the time it is published, hence at best it will be of little value to consumers and at worst, could be misleading.

Nevertheless, Telstra notes that peak and off-peak transfer rates can vary considerably. In the Wholesale ADSL Final Access Determination inquiry process, Telstra presented evidence about the occurrence of daily peaks in demand for broadband bandwidth in Australia, which are largely driven by the increasing demand for real time entertainment. Those peaks are illustrated in Figure 1 below.

Although this data dates from February 2012, the patterns of usage that can be observed are not expected to have changed significantly, however, it should be noted that the absolute amount of peak traffic has grown significantly since this time.

Burst speed is an inappropriate term. Internet traffic is variable on all time scales and measuring short burst speed only adds to variance in the measures. The most appropriate and consistent measure is busy hour average download speed, which might be estimated from the network utilisation (best approach) or by measuring and appropriately averaging a number of short downloads of data.

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[8] The confidence level is interpreted as meaning that 95 out of 100 times, sample research results found are accurate within the accepted MOE.

Figure 1: BigPond daily usage patterns [Confidential]

Q13. What additional quality of service parameters should the ACCC monitor so as to obtain rich and meaningful information regarding the performance of broadband services in Australia? In your response, please state each factor which you consider should be tested and why.

Telstra considers that the parameters that the ACCC may wish to monitor will be driven by the *purpose* of the program. Further, the ACCC should consider the target audience of the proposed program, e.g., is the information provided aimed at households that may only use the internet for email and browsing, or is it aimed at online gamers, who may have an interest in additional quality of service metrics?

Further, the parameters that the ACCC may wish to monitor could be driven by the approach that it takes to the monitoring, i.e. a probe-based approach versus an alternative approach.

Q14. What do you consider is the best approach to reporting on broadband performance in Australia? In particular: a) How often should the ACCC report on the results of its broadband performance testing? b) Do you agree that the ACCC should provide detailed observations, commentary or analysis on the results of testing?

(a) As explained in section 2.3, annual reporting may be adequate for general trend analysis but more frequent reporting is likely to be required if consumers are to make choices on current data.

(b) Commentary on the results of the testing will be important for making the information accessible to the general public. The commentary should focus on the problem (or problems) that the monitoring and reporting programme is seeking to address. Further, it will be important that such commentary is informed by advice from experts who are familiar with the technologies involved, the operational environment and the vagaries of this type of statistical reporting.

Q15. To what extent would industry (e.g. ISPs) value access to the raw data collected by any testing program and want to have access to it?

The raw data is likely to be of limited value to ISPs, apart from allowing them to verify the accuracy of the data capture, its statistical significance, and its interpretation.