

Statement in support of application for merger authorisation

**RE: TELSTRA CORPORATION LIMITED AND TPG TELECOM LIMITED ARRANGEMENT
FOR THE SHARING OF ACTIVE INFRASTRUCTURE AND SPECTRUM IN REGIONAL
AUSTRALIA (APPLICATION)**

Statement on behalf of TPG Telecom Limited

Statement of: Giovanni Paolo Chiarelli

Address: Level 1, 177 Pacific Highway, North Sydney, NSW 2060 Australia

Occupation: Chief Technology Officer, TPG Telecom Limited

Date: 8 November 2022

PUBLIC VERSION

This document contains information confidential to TPG Telecom Limited and its related bodies corporate, which is marked in [REDACTED]

Index of exhibits

Tab No.	Document	Document ID	Publication restriction
Exhibit GC-1			
1.	Confidential [REDACTED]	N/A	Whole
2.	Print-out of NASA webpage regarding low earth orbit	N/A	No
3.	Investor presentation dated August 2022 published by AST SpaceMobile Inc	N/A	No
4.	Announcement dated 13 September 2022 by AST SpaceMobile Inc	N/A	No
5.	Pages from StarLink website	N/A	No
6.	Announcement dated 5 April 2022 by Amazon in relation to Project Kuiper	N/A	No
7.	Announcement dated 2 March 2022 by Telstra	N/A	No
8.	Announcement dated 8 September 2022 by Telstra	N/A	No
9.	Confidential [REDACTED]	[REDACTED]	Whole

A. INTRODUCTION

1. I am the Chief Technology Officer (**CTO**) of TPG Telecom Limited (**TPG**).
2. I am authorised to make this statement on TPG's behalf.
3. I am not authorised, nor do I intend to, waive legal professional privilege on behalf of TPG in relation to any subject referred to in this statement, and nothing in this statement ought to be construed as constituting a waiver of privilege.
4. On 21 February 2022, Telstra Corporation Limited (**Telstra**) and TPG entered into three commercial agreements:
 - a. MOCN Service Agreement dated 17 February 2022;
 - b. Spectrum Authorisation Agreement – MOCN Area dated 17 February 2022; and
 - c. Mobile Site Transition Agreement dated 17 February 2022,(together, the **Agreements**) (**Proposed Transaction**).
5. I have been briefed on, and reviewed specific paragraphs (identified in this statement) of, the confidential version of the application made by Telstra and TPG for merger authorisation under Part VII of the *Competition and Consumer Act 2010* (Cth) (**CCA**), for TPG's grant to Telstra for use of spectrum (under the Spectrum Authorisation), deemed pursuant to section 68A of the *Radiocommunications Act 1992* (Cth) (**Radiocommunications Act**) to be a merger within the meaning of section 50 of the CCA (**Application**).
6. I have also been briefed on, and reviewed specific paragraphs (identified in this statement) of, the Applicants' response to Optus' interested party submission (Tranche 2) (**Applicant Response**), including Confidential Annexure E, which contains a confidential submission made by TPG in relation to its likely counterfactual (**Confidential Submission**).
7. Exhibited to me at the time of signing this statement and marked 'Exhibit GC-1' is a bundle of documents. In this statement I refer to each document by reference to the relevant tab number in that exhibit. The documents in Exhibit GC-1 at Tabs 1 and 9 are confidential to TPG.
8. All capitalised terms in this statement which are not otherwise defined in this statement have the meaning given to them in the Application.
9. As CTO of TPG, after 12 January 2022, I was involved in assessing the benefits of the Proposed Transaction to TPG, and in supporting the recommendation to TPG's board that TPG enter into the Proposed Transaction.
10. Unless stated otherwise, the matters set out in this statement are based on my personal knowledge, including as a result of:
 - a. my knowledge of TPG's business and operations based on my experience as the CTO of TPG, and my access to TPG's records;

- b. my position on TPG's Executive Team; and
- c. my knowledge and experience gained from previous roles held at telecommunication providers internationally before I joined TPG.

B. BACKGROUND

11. I hold a Masters of Engineering (in Electronics Engineering) obtained from the Polytechnic University of Milan, in Italy, in about 1990, and a Masters of Business Administration obtained from SDA Bocconi, Italy's leading international business school, also in Milan, in about 1994.
12. Before commencing work in the telecommunications industry in 1997, I was employed as an IT systems engineer and Project Manager for an Italian bank, Credito Italiano (also known as UniCredit), for almost six years.
13. In 1997 I joined Andersen Consulting as a Manager, and in that role I assisted clients in the telecommunications industry for a little over two years. I have remained working in the industry ever since.
14. From September 1999 to August 2001 I was employed at an Italian telecommunications company, Infostrada S.p.A, initially as an IT Development Director, and then as a Network and Process Support Systems Director.
15. After spending a little under 18 months as a Senior Manager at Accenture (servicing telecommunications clients) I moved back into telecommunications operations in February 2003.
16. From February 2003 to October 2010 I was employed at Telecom Italia, based in either Rome or Milan, performing various IT and network roles, culminating in the role of Chief Information Officer from February 2008 to October 2010. Telecom Italia was at that time the largest Italian telecommunications provider by both subscribers and revenue.
17. From October 2010 until June 2016, I worked in various roles in the Vodafone Group, including:
 - a. as a Programme Delivery Director based in London from October 2010 to June 2012; and
 - b. as Chief Technology Officer for Vodafone's Romanian business, based in Bucharest, from June 2012 to April 2016.
18. For over five years (November 2016 to December 2021) I held the role of Chief Technology and Information Officer at MTN South Africa, which at the time I worked there was the second largest mobile network operator (by subscriber numbers) in South Africa, and a subsidiary of the largest mobile network operator (by subscriber numbers) on the African continent.
19. In January 2022 I commenced my current role as CTO of TPG. In that role I am responsible for strategy, innovation, planning, design, delivery and operations with respect to TPG's mobile and fixed networks, as well as its information technology, digital platforms and information security.
20. I am a member of the TPG Executive Team and report directly to the CEO of TPG, Iñaki Berroeta. I am assisted by a team of six who report directly to me, and a broader team of 1,200 professionals who ultimately report to me.

21. As a result of my experience, I have a detailed understanding of the telecommunications industry, including in relation to network sharing and particularly, as I describe below, participation in MOCNs.

C. BENEFITS OF A MULTI OPERATOR CORE NETWORK

22. While I was CTO for Vodafone Romania, from 2014 I oversaw that entity's implementation (as the second largest MNO in the Romanian market) of a MORAN with Orange Romania (then the largest MNO in that market). That agreement consisted of sharing of passive network infrastructure in urban areas, and a MORAN sharing of active network infrastructure in rural areas.

23. As CTO and CIO at MTN South Africa I had a role in overseeing the management and operation of one MOCN, and a role in the negotiation, and the commencement of the implementation, of a second MOCN, in each of which MTN was the host network:

- a. The first of those MOCNs was agreed between MTN and Cell C (then the third largest MNO) in about 2018, with the implementation extending to about 2021. This MOCN involved:

- i. the sharing of MTN's RAN, initially in non-urban areas, and then later expanded into urban areas (with [REDACTED] MTN mobile sites ultimately included in the MOCN);

ii. [REDACTED]

- iii. use of 2G, 3G and 4G technology;

iv. [REDACTED] and

v. [REDACTED]

- b. The second MOCN was agreed with Telkom South Africa (then the fourth largest MNO) in about 2021 and implemented into 2021-22. This MOCN involved:

- i. the sharing of part of MTN's RAN – namely [REDACTED] of MTN's mobile sites - in particular rural areas. [REDACTED]

ii. [REDACTED]

- iii. use of 2G, 3G and 4G technology;

- iv. Telkom continuing to operate from the small number of pre-existing sites which it had in the areas covered by the MOCN. (Telkom also participates in another MOCN with Vodacom, South Africa's largest mobile company (by number of sites), in other regions); and

v.

24. Some of the most important benefits that I consider are available to TPG in a MOCN which are not and would not be available to it under a roaming arrangement include:

a. A significantly improved customer experience. This results from:

- i. the elimination of the frequent call failures that occur as a customer moves from TPG's network onto the roaming network, and back again. In a MOCN, where the customer's call remains controlled by TPG's core network as they move into the MOCN area, they will experience a smooth handover of the call with a vastly reduced chance of the call dropping out. That is because in a MOCN all of TPG's mobile cells and the MOCN mobile cells see one another as part of the same network. In contrast, in a roaming arrangement, where two core networks are interoperating a greater number of components of the host and roaming networks need to support a single call or data transaction, and it is more prone to fault and the service is less reliable. This is simply a practical result of the different architecture of a call under a roaming arrangement;
- ii. the fact that to the extent a customer does experience and report an issue (for example a call drop or slow data connection) in the MOCN area TPG will have real time visibility of each cell operating in that area, and will be able to diagnose and respond to the customer's problem (for instance telling them whether or not it is a local issue and how long it will take to be resolved). TPG can report to Telstra the cell requiring intervention and require Telstra to resolve it (for the benefit of both Telstra and TPG customers). In contrast, in a roaming arrangement, TPG would have no visibility of the cells in the roaming region, and would be required to raise the problem with the host provider, wait for their response, and then report back to the customer if a response is received. TPG would not be able to identify the particular cells that seemed to be causing the problem, and so the timing for any resolution would usually be much longer; and
- iii. where a customer is making a call over a wifi network, and then moving into the cellular network, the likelihood of the customer's call failing is again vastly reduced if the customer is moving onto a MOCN than moving onto a roaming network, because of the superior ability of the MOCN to manage the complexity of the handover. At present there is no technical standard governing the interpretability of a voice call over wifi network on the roaming network, and for this reason networks are not built to support a smooth transition;

b. even if a roaming network was 5G enabled, at present it would not support 'standalone' 5G, which provides the opportunity to support more advanced 5G use cases than non-standalone 5G (where a 5G RAN is operating with a 4G core network). That is because at present there is no roaming standard for 5G standalone. In contrast, in a MOCN, as TPG's core is already 5G enabled, and the RAN will have 5G equipment, TPG can deliver 5G standalone, and the greater opportunities that provides – such as:

- i. VoNR (i.e. voice over 5G) – which is planned for 2023 and will provide voice services directly over 5G and not require services to fall back to 4G to make or take calls. This will provide a better performing voice service;
 - ii. mMTC (massive Machine Type Communication) – which will develop over time to become an important service providing support for extremely high connection density of online devices in a 5G network; and
 - iii. uRLL (ultra Reliable Low Latency) services – which will provide capability for high performing services in the future by providing extremely low latency connectivity over 5G mobile networks; and
 - c. as discussed below at paragraph 27, in a MOCN TPG will be able to provide products to customers which rely on real time controls of data usage, and will be able to provide real time promotions to customers based on their usage. That is simply not possible under a roaming arrangement because TPG cannot monitor and control the usage in real time in that arrangement.
25. A MOCN arrangement permits each MNO to offer its own current and future differentiated products in a way that is not possible under a roaming arrangement or where wholesale services are provided (such as to an MVNO). In particular, I agree with the following propositions recorded in paragraphs 219 to 222 of the Application:
- a. Under a MOCN arrangement, TPG can control its own product and plan development and offer new plans and products to the market in a manner which will better allow for it to compete through product differentiation than is the case with roaming.
 - b. The reason that a MOCN provides that benefit relative to a roaming arrangement is that:
 - i. Product plans (e.g. plans with different data inclusions) and new products (e.g. voice over 5G) are built and controlled in the mobile core network of a party.
 - ii. The parties' mobile core networks in a MOCN arrangement continue to be controlled by each party independently.
 - iii. Roaming is instead delivered by also using the mobile core network of the *host* in addition to a MNO's own mobile core network. As roaming is delivered using the core network of the roaming provider, the functional capability of a TPG service in the roaming area is limited by the limitations in the roaming provider's core network and the service description set by the roaming provider (including quality levels and prioritisation).
 - iv. The control each party has over its own mobile core network means that in a MOCN arrangement TPG has greater freedom to develop new products and bring these to market quickly – as the mobile core network of Telstra does not need to be configured (nor does TPG need Telstra's consent to develop a new product).
 - v. The building of new products is easier in a MOCN arrangement. For example, the development of low latency services can be achieved in a MOCN arrangement with Telstra through requesting a new MOCN connection (NNI) from Telstra that is closer

to the target customers. This does not require a major re-architecture of the MOCN provider's network (as would be the case in a roaming arrangement) because TPG's network is in full control of the location of the rest of the systems that provide the new low latency service.

26. Under a roaming arrangement, and similarly when operating as an MVNO, the services that can be offered by the party which is accessing the host network are limited to the services which the host provides to its customers, or a subset of those services, and nothing else.
27. Taking into account those opportunities and restrictions, examples of the types of products and services that MNOs can provide to customers under a MOCN, which they are likely to be unable to provide at all, or as easily, under a roaming or wholesale arrangement are:
 - a. caps on data volume and variable throttling of data, where customers pay for a plan under which their download and upload speeds are reduced once they have used a certain level of data in a defined period. At TPG we currently have 87 of these plans, servicing more than 2.8 million customers. For example, our Vodafone \$40 Lite Plan, which currently has over 350,000 customers, allows 40GB of data per month to be consumed at maximum speeds obtainable by the customer on the network, and then throttles speeds (for an unlimited amount of data) for the rest of the month to 2Mbps;
 - b. real time alerts to customers based on the customer's behaviour (of which TPG issues more than 6 million per month). For example, customers may obtain an alert when they reach a certain threshold of their data allowance under their plan; and
 - c. commercial offers of additional services, or different plans, directed to customers based on their activity in the roaming areas (for instance, an offer of a plan by reference to the fact that a customer has just called a particular destination overseas).

In respect of these examples, the services and restrictions cannot be implemented under a roaming arrangement because TPG cannot monitor and control a customer's data usage or call activity in a roaming area as it is happening. TPG would only find out about the data usage or the call activity much later. Under the existing 3G roaming arrangement with Optus the limitation of service to 3G has the practical effect of minimising data usage without reference to the actual amount of data used by the customer in any period.

28. In arrangements that an MNO has with wholesale customers (i.e. MVNOs), it is able to limit the ability of those MVNOs to introduce product offerings and plans by, for instance:
 - a. delaying access to new or emerging technologies – for instance the MNO could manage the network in a way that prevented MVNOs from offering eSIMs to their customers, even if they were offered by the MNO; and
 - b. providing access to 5G services but with limits on the speed available to the MVNOs customers (for example, capping their speed at 250Mbps when the MNO is able to offer superior speeds to its retail customers).
29. I have reviewed sections 6 (paragraphs 90 to 109), 7.6 (paragraphs 155 to 160), and 9.3(E) (paragraphs 217 to 222) of the Application (except information that is confidential to Telstra). I

have also reviewed relevant parts of sections 2.4 (paragraphs 17 to 20) of the Applicant Response. Based on my own experience and knowledge I also agree with what is said in those paragraphs about the manner in which a MOCN operates, and the benefits that TPG can expect to receive from the MOCN with Telstra to be implemented if the Proposed Transaction is authorised.

D. Options following exit from the Proposed Transaction

30. I have reviewed paragraph 194 of the Application. As set out in that paragraph, the Proposed Transaction preserves TPG's ability to exit the Agreements after 10 years (or after any optional extensions exercised by TPG) and provides a transition-out period of up to 36 months at TPG's election. I understand that Telstra and TPG have also offered an undertaking which could potentially lead to the commencement of an exit from the Agreements after 8 years from the date on which the Proposed Transaction is first authorised. As noted in paragraph 194 of the Application, no decisions have been made by TPG as to what it might do in 10 years' time, and the same is true for 8 years' time. To the extent that the Agreements were not extended, or authorised beyond 8 years, I believe that there would, at these later points in time, be a greater number of other commercially feasible options available to TPG in the 17% Regional Coverage Zone than there are now.

Re-establishing TPG's own sites in Regional area

31. If it presents the best commercial option at that time, TPG may decide to re-establish (and even expand) its own network in the 17% Regional Coverage Zone, either as a stand-alone measure, or in combination with other actions of the type discussed below. In practice, that is likely to involve installing 5G and 6G equipment on existing sites where TPG has long leases, entering into new leases and licences for other mobile sites, installing 5G and 6G equipment on them, and decommissioning 4G equipment to the extent that has not already happened. As described in the Application (see for example paragraphs 19, and 303 to 312, which I have reviewed), an element of an MNO's RAN is a series of mobile sites on which are located a combination of:
- a. active network technology, such as radio network controllers and base stations (responsible for the radio link between a mobile user and the fixed part of the network), and
 - b. passive infrastructure, which includes, for instance, masts, antennas, shelter, support cabinets, and utilities.
32. The mobile sites may be located on rooftops, poles or towers, or on or inside buildings. The sites are now owned by third parties, including companies whose core business is the ownership of mobile sites and towers on which MNOs can install their active network technology. The owners and occupiers of those sites grant leases or licences to MNOs which typically entitle them to access the sites, and to install and operate particular equipment on the sites. Many – and perhaps most – of those sites are occupied by more than one MNO.

33. I have caused information to be gathered from TPG's records by my broader team in relation to mobile sites currently used by TPG in the 17% Regional Coverage Zone. A spreadsheet which summarises information contained in TPG's records in relation to those 749 sites, and which has been prepared by staff who ultimately report to me or to TPG's Chief Financial Officer, is at **tab 1** of exhibit GC-1. The information has been extracted from a TPG database known as the RFMSL (Radio Frequency Master Site List) which is a live database which TPG uses to maintain records of the information concerning mobile network sites. Some of the information is data available on the RFNSA website (www.rfnsa.com.au) which plots the location of all mobile towers in Australia, providing a unique numerical identifier (NSA ID), GPS coordinates, sharing carriers, carrier owner and site reference numbers, signal type, and height above sea level. The spreadsheet includes the following information about the 749 sites:

- a. All 749 of those sites are leased or licensed to TPG by third parties, with:

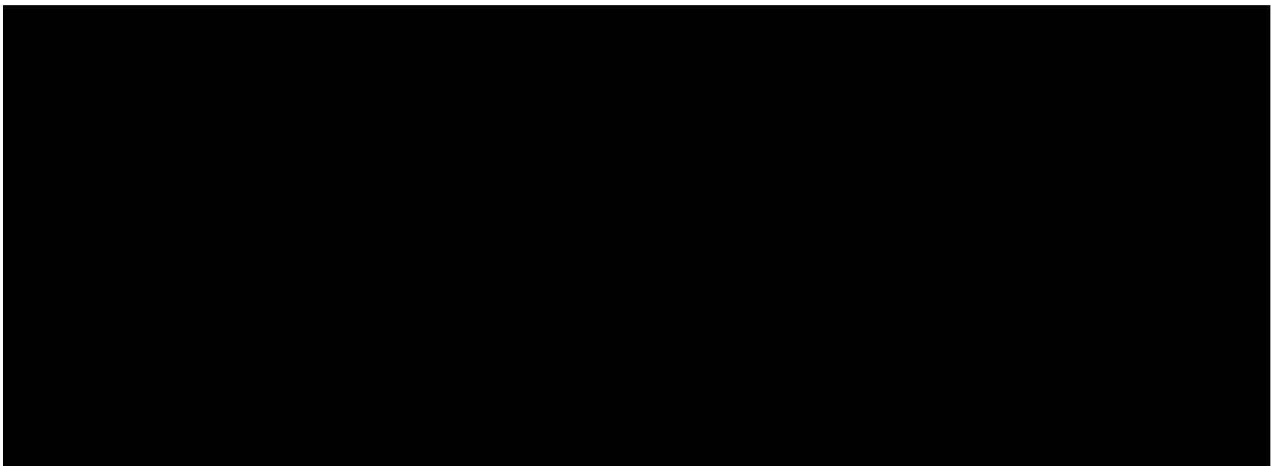
b.

- c. In terms of the location of the sites:

- i. [REDACTED] are sites on which Telstra and/or Optus mobile equipment is co-located;
- ii. [REDACTED] of the shared sites which have vertical arrangements of antennae (for example, towers or monopoles) TPG assumes it holds the top antenna position on [REDACTED] sites, and assumes it has the bottom position on [REDACTED] sites. (These assumptions have been made based on which towers were originally owned by TPG, or built at its request, the assumption being that TPG holds the top position on only those sites);
- iii. [REDACTED] are sites on which neither Telstra nor Optus is co-located but are within 1km of a Telstra and/or Optus mobile site; and
- iv. A further [REDACTED] are sites on which neither Telstra nor Optus is co-located but are more than 1km, but less than 2km, from a Telstra and/or Optus mobile site.

34. The spreadsheet at **tab 1** of exhibit GC-1 records the annual licence fee or rental paid by TPG for each of the 749 sites. It shows that the fee or rental ranges between about \$[REDACTED] per annum for sites not owned by tower companies, to more than \$[REDACTED] per annum for certain BAI Communication sites. For about 500 of the sites the spreadsheet records that the licence fee or rent is in the range of \$[REDACTED] to \$[REDACTED] per annum. In addition, as the spreadsheet records, TPG incurs operational expenditure, including for electricity, transmission, operations and maintenance in respect of most of the sites in the range of about \$[REDACTED] to \$[REDACTED] per annum.
35. If, after exiting from the MOCN, TPG wished to re-establish mobile sites in the 17% Regional Coverage Zone I expect that TPG will have ongoing rights to access and operate equipment on [REDACTED]. I anticipate that it would be relatively easy for TPG to obtain leases or licences to additional existing sites (including those on which Optus and Telstra operate) given that third party tower owners such as Amplitel, Indara, Waveconn and BAI Communications will be motivated to obtain revenue from as many MNOs as possible for each site.
36. If TPG were to re-establish mobile sites in the 17% Regional Coverage Zone after exiting the MOCN, there may be ways of doing that more efficiently than re-establishing all of its existing sites in the 17% Regional Coverage Zone. At that time, TPG might be able to re-establish coverage in the 17% Regional Coverage Zone more efficiently by deploying to sites other than those it currently uses in those areas. TPG would be in a position to assess how best to re-establish sites in the 17% Regional Coverage Zone at a future time and at a time when it anticipates exiting the MOCN. That decision would be based on factors such as location, structural capacity, height, and elements that may be particular to the most effective use of 6G, so as to provide the best coverage.
37. In the course of my current role, and my previous role, I have engaged in regular discussions with representatives of tower-owning entities in Australia and overseas, and have also read their published materials, including their announcements. On the basis of those discussions and announcements, I understand that those entities are increasingly focussed on expanding the services that they offer to MNOs and other potential customers. I understand that they are progressing quickly towards offering services such as active neutral hosting. Active neutral hosting refers to an arrangement where the tower company owns, and provides access to an MNO to use, both active network technology and passive infrastructure on a mobile site, and potentially even spectrum owned by the tower owner. By 2031 (and possibly much sooner) I expect those companies will be offering active neutral hosting on sites in Australia, including in the 17% Regional Coverage Zone. As noted in the Application, the neutral host could be broadcasting spectrum owned by a specific MNO or a different entity (including the neutral host). In other words, the model could be a MORAN or MOCN or a roaming model (though roaming on a network not operated by a retail competitor).
38. As a result, if TPG decides to re-establish its own RAN in the 17% Regional Coverage Zone on third party-owned sites it may choose to do that by installing its own active network technology, or possibly by operating from active technology (and potentially even using spectrum) owned by the site owners.
39. If, instead of the Proposed Transaction, TPG were to upgrade its existing 749 sites in the 17% Regional Coverage Zone to 5G technology it would need to individually attend each of those sites, remove redundant equipment and replace it with 5G equipment that it had purchased.

40. By 2031 - 2032 I expect that the industry will have commenced the process of rolling out 6G mobile technology, including to regional Australia. Accordingly, if TPG were to choose to re-establish mobile sites in the 17% Regional Coverage Zone during the Transition-Out Period many of the costs that it would incur would be the same types of costs that it would have to incur in the next few years if it were to upgrade the equipment on those sites to 5G (which cost will be largely avoided under the Proposed Transaction). In the process of installing 5G technology on mobile sites in its ongoing roll out TPG has ensured that each site is also still able to broadcast 4G and (in the initial stages) 3G services. Similarly, I expect that equipment that will be installed in a 6G roll-out will be capable of supporting 5G and probably 4G services as well, so that it can service customers with devices that are not yet 6G compatible.
41. I also note that under the Site Agreement (clause 4.7), if TPG exits the MOCN Agreement, Telstra is required to assist TPG to obtain access again to any sites that were transferred to Telstra.
42. The chart below, which contains information I report to the Executive Team, records that in the 12 months to 30 September 2022 TPG removed 4G Huawei equipment, and replaced it with 5G equipment, on 1,093 metropolitan sites.



43. Taking all of those matters into account, including in particular the availability of infrastructure from tower owners, if TPG were to start the process for exiting the MOCN Agreement by moving to the Transition-Out Period from 2031 onwards, I estimate that it would take TPG one to two years to re-establish 950 to 1000 mobile sites, with 5G and 6G technology, in the 17% Regional Coverage Zone if it wished to do so. Of course, by then I would expect TPG's customer base nationally, including in the 17% Regional Coverage Zone, to have increased significantly, which would be more likely to justify any incremental expense associated with the re-establishment. If TPG decided that it wanted to double the number of sites in the 17% Regional Coverage Zone to 1,500 (using established sites owned by third parties), I would expect that that could readily be done within a three year period.

LEOSat

44. As noted in paragraph 194(b) of the Application a targeted site build in the 17% Regional Coverage Zone may be supplemented by other services such as low earth orbit satellite (**LEOSat**) services. As described on a webpage from the NASA website, a print out of which is at **tab 2** of exhibit GC-1, low-Earth orbit encompasses Earth-centred orbits with an altitude of 2,000 km or less. For NASA's policies, low-Earth orbit is considered the area in Earth's orbit near enough to Earth for convenient transportation, communication, observation and resupply.
45. While I have not had any direct involvement with LEOsSat services, as a CTO of an MNO I have been generally aware of the increasing potential of these services, and the growing number of offerings. In the preparation of this statement I have caused to be gathered further information about the public plans of LEOsSat services, including by engagement with Luke Ibbetson, who is the Head of Group Research and Development within Vodafone Group, and is a director of AST SpaceMobile Inc (**AST**), a company listed on the NASDAQ. As I explain further below, AST has been designing, and will shortly trial, a space-based cellular broadband network. At **tab 3** of exhibit GC-1 is a copy of an investor presentation published by AST in August 2022, and at **tab 4** is an announcement dated 13 September 2022 published by AST on its website reporting on the launch of the BlueWalker 3 test satellite.
46. As recorded in the investor presentation and announcement referred to in paragraph 45 above, and as I understand to be true from my discussion with Mr Ibbetson:
- a. Existing LEOsSat operators such as StarLink (a company related to SpaceX) use a large number of relatively small LEOsSats to provide high-speed broadband internet connections to rural and remote locations, through a signal delivered to an antenna which the recipient installs in a fixed location. For the standard Starlink version sold to customers in Australia that fixed antenna is at least 50cm high by 30cm wide, and is required to be installed outside where there is no signal interference. Pages from the Starlink website that I have caused to be downloaded are at **tab 5** of exhibit GC-1.
 - b. Amazon, through its subsidiary Kuiper Systems LLC is planning to offer a similar service. A copy of an announcement published by Amazon on 5 April 2022 in relation to this offering is at **tab 6** of exhibit GC-1.
 - c. AST's intention is to develop a network of LEOsSats. The satellites that AST intends to launch are many times larger than other LEOsSats used or proposed by operators such as StarLink and Kuiper Systems. It is intended that AST's satellites will have attached to massive antennas (in the vicinity of 690 square feet or about 64 square metres). Multiple satellites would circle the earth about once every 90 minutes.
 - d. The AST satellites are intended to be able to provide a broadband connection to unmodified mobile devices (such as standard 4G enabled mobile phones).
 - e. A test satellite was launched on 10 September 2022, and is expected to unfold its antenna for testing in November 2022, with testing to be undertaken over a six month period, in co-operation with MNOs on six continents.

- f. AST is also building a further five satellites which it plans to launch in 2023. Ultimately AST's solution is expected to involve about 200 satellites, and it plans for its services to be available commercially from about 2025-2026 (outside of equatorial zones where the services would be available earlier).
47. On 2 March 2022, Telstra announced that it had signed a Memorandum of Understanding with another LEOSat company, Oneweb, to "*explore new solutions for improved digital connectivity across Australia and the Asia Pacific region*", with a particular focus on rural and remote Australia. The announcement recorded that "*OneWeb is making significant progress in building its constellation and currently has 428 satellites in low earth orbit, representing more than two thirds of its planned fleet, delivering connectivity to customers in remote regions of Alaska, Canada, and the North Sea. Launches will continue during 2022 to enable the company to offer commercial connectivity services globally later this year*". A copy of that announcement of 2 March 2022, published by Telstra on its website, is at **tab 7** of exhibit GC-1. Telstra issued a further announcement, a copy of which is at **tab 8** of exhibit GC-1, on 8 September 2022, recording that Telstra and Oneweb were undertaking joint testing of OneWeb's LEOSats in remote conditions in Australia.
48. On the basis of the types of developments described in the preceding paragraphs I believe that by 2031 it is very likely that LEOSat services will provide an option for TPG to provide network connection, without involvement of other MNOs, to SIOs in the 17% Regional Coverage Zone, and in even more remote areas beyond that zone. I expect that LEOSats are most likely to present a potential solution for TPG (and other MNOs) with respect to the least densely populated areas where it is least commercially viable to build and operate mobile sites. Consistently with that LEOSats may also present an opportunity (and conceivably as soon as 2028) for Optus to expand its network coverage, including into areas not currently serviced by Telstra.

E. NON-DISCRIMINATION OBLIGATION

49. As highlighted in the Application, the terms of the MOCN Agreement impose an important non-discrimination obligation on Telstra. I am familiar with the substance of that obligation.
50. I have reviewed sections 6.2(B) (paragraphs 105 to 109) and 7.4 (paragraphs 132 to 141) of the Application. I agree with what is said in those paragraphs about the nature of the non-discrimination obligation (explained in section 7.4 of the Application), and how the traffic will be managed by the RAN on a non-discriminatory basis.
51. I have also reviewed paragraphs 28 to 35 of the Applicant Response, and agree with what is said in those paragraphs about the non-discrimination obligation.
52. Based on my experience with shared networks, I consider that the non-discrimination obligation presents an effective means of ensuring that Telstra provides TPG and its customers with a consistently high quality of service and performance. For the reasons I discuss below, in my experience that obligation is likely to be far more effective than, for example, the inclusion of a Service Level Agreement (**SLA**) under which minimum service levels are mandated.
53. A non-discrimination obligation amounts to a strict "like for like" commitment. So, for example, if Telstra is aiming for and providing 99.8% uptime (i.e. 0.2% outages) for its customers then TPG's customers will benefit from the same experience. I am confident of the quality and performance

that TPG's customers will receive under the MOCN because Telstra will be incentivised to ensure that it continues to be perceived by its own customers as the leading MNO on coverage and quality. I do not believe that it would be likely to provide inferior quality and performance to TPG's customers when the effect of doing so would be that Telstra's own customers will suffer equally.

54. The non-discrimination obligation refers to equivalence of network performance, quality of service, classification of incident severity and priority of services following an incident, and incident management.

[REDACTED]

- a.
- b.
- c.
- d.
- e.
- f.

[REDACTED]

55. Based on my experience, the inclusion of an SLA in the MOCN Agreement would be less likely to be effective in achieving a high level of performance and quality service for TPG's customers than a non-discrimination obligation. That is because the thresholds specified in an SLA are usually set at a quality level which will ensure the host can always meet them, and at a level much lower than what the host would be aiming to achieve for its own customers or which will be incorporated in the performance metrics in the Technical Specifications.

56. For example, under

[REDACTED]

I have caused that data, for the 12 months to 30 September 2022, to be summarised by TPG staff (by month) in the spreadsheet which is at **Tab 9** of Exhibit GC-1. That summary records that on TPG's network in the 12 months ending 30 September 2022 we had about [REDACTED] of availability excluding planned downtime. In practice, [REDACTED]

[REDACTED]

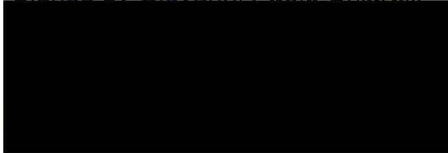
57. One of the reasons that a host network is typically reluctant to agree very high performance thresholds in an SLA under a network sharing arrangement is that, for them to be effective,

equivalent obligations need to be agreed with the host network's suppliers, and particularly their managed service providers. In my experience it is highly unlikely that managed service providers (such as Ericsson and Nokia) would agree to very high performance thresholds, and if they were to do so, I expect it would only be in return for what I would regard to be excessive fees.

58.



Signed by Giovanni Paolo Chiarelli



8 November 2022