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Proposed acquisition of 2degrees tower assets by Connexa

Chapman Tripp

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1. Introduction and Summary

1. Against the backdrop of a global trend for mobile network operators (MNOs) to divest their tower assets, Spark and Vodafone have both spun out their tower assets into, respectively, Connexa and FortySouth. Firms that own and manage tower assets are known as 'towercos'.

2. The towercos in New Zealand are essentially asset managers - they will own and operate towers and therefore be responsible for: maintaining the towers, finding sites/negotiating leases with land/building owners and engaging with contractors to build the towers. It is important to note that, as we understand, the towercos will not actually build the towers themselves – this is done by contractors and the actual construction work is not particularly complex.

3. We can, in some sense, think of towercos as distributors. The upstream input that towercos distribute to MNOs are the locations where active infrastructure can be placed by MNOs for a new site. MNOs are therefore able to bypass this 'distribution' step and negotiate directly with land and building owners to place that infrastructure.

4. Connexa is now majority owned by the Ontario Teachers' Pension Plan Board (OTPP), with Spark continuing to hold a minority shareholding of 30%.[1] Connexa is proposing to acquire certain passive infrastructure assets of 2degrees. While we do not have certainty over what 2degrees will do with their tower assets in the counterfactual, they face the same financial incentives to spin off their tower assets as Spark and Vodafone did. Even if they retain their towers, faced with two independent towercos that are incentivised to increase co-location, 2degrees will likely be incentivised to share their own assets more than they might have been in the past when all three MNOs were vertically integrated. Doing otherwise may place them at a disadvantage compared to Spark and Vodafone, who are being serviced by towercos that are pursuing co-location opportunities.

5. We have been engaged by Chapman Tripp, counsel for OTPP, to assess the competitive effects of the proposed acquisition of the 2degrees tower assets by Connexa (we refer to the combined entity as 'MergeCo' in this report). At the outset, we note that this is a slightly odd exercise, in that we are assessing competition in a market that in some sense does not exist yet: the proposed transaction is occurring in parallel with the transactions that are creating independent towercos, so there is no history or data that can be relied upon for how independent towercos in New Zealand compete.

6. We see the following broad potential theories of harm that one might consider in relation to the proposed transaction:

    a. **Unilateral conduct in relation to existing sites:** For the existing network footprint, there will be some limited geographic areas where the proposed transaction results in an effective "2-to-1" merger for parties seeking incremental coverage/capacity;

    b. **Unilateral conduct regarding new sites:** The proposed transaction reduces competition to build new sites by removing a competitor for the construction of new sites for parties seeking incremental coverage/capacity;

    c. **Unilateral conduct regarding national coverage:** The proposed transaction means that a new downstream entrant (either a new MNO or new non-MNO) faces a "3-to-2" merger regarding providers of a national coverage footprint;

    d. Theories of harm related to Spark's shareholding in MergeCo:

[1] As part of the proposed transaction, we note that Spark's shareholding would be diluted.

i. **Coordinated behaviour in downstream markets:** Spark might gain access to competitively sensitive information in relation to 2degrees' site locations and technology choices, which results in a softening of competition along these dimensions;

ii. **Foreclosure of 2degrees:** Spark is able to influence MergeCo's pricing and service levels in relation to 2degrees in a way that hinders 2degrees' ability to compete downstream; and

e. **Coordinated behaviour between towercos:** A reduction in the number of firms providing tower services makes coordination between the remaining towercos easier.

7. The tower service is an input into the retail mobile business of the MNOs. The starting point of our analysis is therefore to consider the **significance of the tower input for downstream competition**. Our findings in this regard are:

   a. Towers are part of the 'passive' infrastructure of the mobile network. Innovation in service and quality are driven primarily by software and the 'active' equipment deployed, neither of which are impacted by merging two towercos.

   b. Access to passive infrastructure may have mattered historically when there were large geographic coverage disparities between the MNOs. These disparities have generally been eliminated as the MNOs (2degrees in particular) have rolled out or expanded their own networks. MNO competition is therefore now on the basis of capacity, plans, content and service rather than coverage.

   c. From a cost perspective, the tower input is a small proportion of the cost base of MNOs. Therefore, a change in the competitive dynamics of the tower market will not have a large bearing on the cost structure of the retail mobile business.

8. We next consider the potential **impact of Spark's minority shareholding in Connexa**, which will become a key supplier to 2degrees as part of the transaction:

   a. While there are information protection protocols in place, it seems unlikely in any event that the information that Spark could get from its shareholdings in the MergeCo would be of much competitive significance. Tower locations are registered in the publicly searchable Radio Spectrum Management (RSM) database and vendor selection for active equipment appears to generally be public knowledge (and could be ascertained by physically looking at towers).

   b. A strategy to attempt to foreclose 2degrees by raising prices/reducing quality would be unlikely to be in Spark's interests as:

      i. As a general point, 2degrees would not enter into this transaction if they were concerned that they could subsequently be foreclosed, and they have the bargaining power to make sure this is not the case;

      ii. The majority of 2degrees' future site needs are protected through the contract it has negotiated through the sales process;

      iii. Price could only be raised for the 50% of uncommitted volumes which 2degrees needs to give to MergeCo, for which it does not have pricing protection. This volume is unlikely to be material enough to influence downstream competition (and, as already noted, the tower input is not competitively significant for downstream competition); and

      iv. 2degrees will have the option to self-supply and FortySouth has an incentive to win 2degrees' business (particularly in the form of co-location).

9. We next consider the impact on **competition to obtain access to the existing tower footprint** (known as "co-location"), for parties seeking *incremental* coverage. In this regard, our findings are that:

a. Switching costs for a party that already has equipment on a tower are material, and thus competition is likely to be limited within the life of the equipment/tower.

b. The Vodafone towerco (FortySouth) is likely to be an aggressive competitor where it has a tower within range, as towers are a fixed/sunk cost and co-location is therefore attractive if towers have spare capacity.

c. Non-MNO access seekers tend to self-supply rather than use mobile towers as they generally have different requirements for their towers. They are generally organisations with relatively small equipment, so can co-locate on towers without any requirement to modify the structure or construct much smaller and less expensive towers.

d. The MNOs have largely built their own networks, partly due to the ability to cheaply build light-pole towers (for which they pay no ground rent), and thus demand for additional co-location to provide *coverage* (as opposed to *capacity* for which there may be demand) within the existing footprint is likely to be limited.

e. In situations where the proposed acquisition might be argued to create a localised monopoly, MNOs are likely to have significant countervailing power over the towercos due to their ability to:

   i. Self-supply, and in particular build light-pole towers. Light-pole towers provide MNO access seekers with a low-cost alternative to fill in their network. This provides a potential bypass option, which caps the price; and

   ii. Threaten to take their uncommitted volumes (which represent a material volume of potential incremental business) elsewhere if a towerco attempts to raise price.

f. In the overlap analysis, we find 68 overlaps where Connexa and 2degrees have a macro site in range of each other and FortySouth does not have a nearby tower. This number is 78 if we use Statistics NZ's categorisation of areas as rural/urban instead of Connexa/2degrees categorisations, which sometimes conflict.

   i. Using [
      ], these numbers drop to 25 and 28 respectively if pairs where Vodafone is expected to have limited demand for new sites are ruled out.

   ii. Using estimates of the structural capacity of Spark and 2degrees towers, the initial overlapping site pair numbers drop from 68 to 21, and if we use the site pairs after screening for Vodafone expected demand first, the site pairs drop from 25 to eight.

   iii. Using estimates of the spare space on Spark tower assets, suggests that 13 of the 68 initial overlapping site pair numbers would have enough space for another MNO to co-locate.

10. Exponential growth in the demand for data also means that there is going to be material growth in the demand for new towers as MNOs densify their networks. It is also therefore relevant to consider **competition to build new towers** for parties seeking *incremental* coverage**.** In this regard we find:

    a. The commercial incentives for MNOs when setting up their individual towercos have resulted in a situation where the MNOs have largely contracted out of having competition for their new tower builds. Specifically, they have committed a large volume of their expected requirements to their respective towercos (known as the 'build to suit' (BTS) commitment).

    b. These commitments have a carve out of contestable volumes ('uncommitted volumes'). The carve out means both that there is a volume of the towers that is exposed to competition, but also, MNOs have means of maintaining competitive tension on their towercos.

c. FortySouth will be incentivised to compete aggressively for new builds and to attract Spark/2degrees to co-locate on its new towers, given the profitability of co-location and low barriers to entry/expansion and self-supply;

d. Barriers to entry/expansion and self-supply by the MNOs are low because:

i. Towercos are asset managers, not asset builders and the building of towers is done by contractors that can be utilised by anyone;

ii. Towers are not complex structures to build;

iii. Economies of scale are not likely to be a barrier to entry. Primarily they relate to overheads in asset management and having multiple tenants on an individual site, neither of which provide a material cost advantage when constructing an incremental new tower;

iv. The incremental costs of self-supply by MNOs will be low, given they are retaining an asset management capability in relation to their active infrastructure and fixed network assets; and

v. Given the above, small towercos can be equally well placed to deliver towers for MNOs as large towercos. In this regard we understand there are a number of small tower owners in New Zealand and that American Towers, one of the largest towercos globally, is looking to enter the New Zealand market. The experience in the United States also shows that small towercos are viable, with there being 28 towercos with less than 100 towers.

11. The previous theories of harm address situations where MNOs or non-MNOs are seeking *incremental* coverage. Regarding the theory of harm that a new downstream entrant (i.e., a new MNO or non-MNO) would face a reduction in **competition to provide national coverage:**

a. For a new entrant MNO, we find that:

i. As with the preceding theories of harm, the remaining two national towercos will compete aggressively to provide co-location where they have spare capacity;

ii. A new entrant MNO seeking national coverage would be in a very strong bargaining position given the large volumes it would be seeking to place. As already noted, MNOs have countervailing powers due to the ability to threaten to move their uncommitted volumes – a new MNO's entire volume would be "uncommitted" and therefore it would likely have greater bargaining power than existing MNOs have;

iii. A new entrant MNO would also have the option to self-supply towers. While not in the same position as an existing MNO that has recently been self-supplying, as noted already, building towers is not complicated and it seems unlikely that a new entrant MNO would not be a party with no experience in mobile telecommunications, or able to obtain that expertise; and

iv. A new entrant MNO could also seek active sharing agreements with the existing MNOs as an alternative to acquiring passive infrastructure from the towercos and installing their own active equipment. This would provide an indirect constraint on towerco pricing and also bargaining power to the new MNO.

v. The MergeCo may be a stronger competitor than either Connexa or 2degrees would have been, by nature of both parties having a smaller tower footprint than the FortySouth portfolio. In an auction type procurement context, this could actually result in a better outcome for the new entrant MNO by improving the competitive strength of Connexa.

b. It is also possible that a new entrant non-MNO would seek national coverage. In this regard our findings are essentially the same as for an existing non-MNO seeking incremental coverage. I.e., non-MNOs appear to primarily self-supply/place their equipment on structures that are not mobile towers, since mobile towers are generally over engineered for their

purposes. That being said, if a new non-MNO did need a national footprint on mobile towers, the presence of two national towercos would still likely provide sufficient competition. This is because the towercos would likely have "spare" capacity to host the non-MNOs, as hosting a non-MNO would be unlikely to compromise a given tower's ability to host MNO equipment.

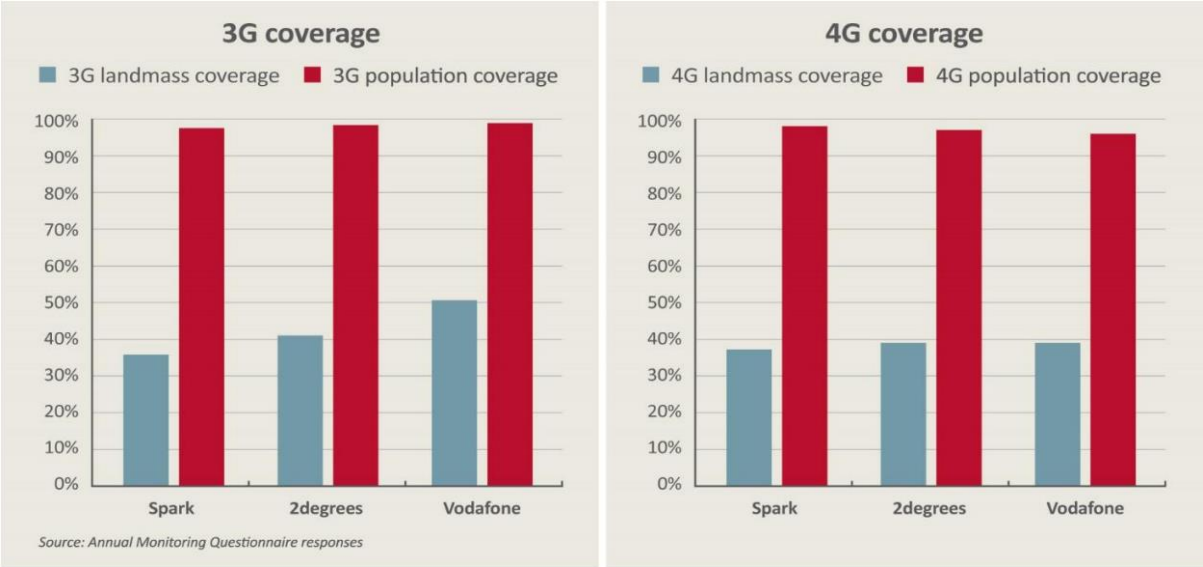
12. Regarding the theory of harm that reducing the number of towercos from 3 to 2 would make **coordination amongst towercos** easier, we consider this is unlikely due to:
    a. Limited barriers to entry.
    b. Existing smaller players and limited barriers to expansion. In particular, American Towers stated in its OIO application to buy Clearspan that it wants to invest in the New Zealand telecommunications sector, and therefore in our view has the potential to be a disruptive entrant.
    c. A move to small cells may make competition easier in the future since it will involve less tower construction.
    d. MNOs have countervailing power:
        i. They can take their uncommitted volumes to other towercos, including to underwrite entry; and
        ii. They can self-supply and bypass the towerco.
    e. The profitability of hosting co-location means there is a high incentive to deviate.
13. Finally, to the extent there are opportunities for co-location as part of future rollouts, it is likely that **the proposed transaction will result in increased co-location.** In particular, the BTS commitments of Spark and 2degrees can be optimised and co-located, whereas in the absence of the proposed transaction the BTS commitments would result in standalone tower builds.
14. In the remainder of this report we:
    a. Set out on some background on the economics of mobile networks and retail competition between MNOs (section 2);
    b. Set out relevant background and context for the provision of tower services in New Zealand (section 3);
    c. Assess the competitive significance of the tower input on downstream competition (section 4);
    d. Assess whether Spark's shareholding in Connexa is likely to lead to coordinated effects in downstream markets or strategic foreclosure of 2degrees (section 5);
    e. Assess the impact of the proposed acquisition on competition for access to *existing* towers for parties seeking *incremental* coverage (section 6);
    f. Assess the impact of the proposed acquisition on competition for building *new* towers for parties seeking *incremental* coverage (section 7);
    g. Assess the impact of the proposed acquisition on competition to provide *national* coverage to new downstream entrants (section 8);
    h. Assess the likelihood of the proposed transaction making coordination amongst towercos easier (section 9); and
    i. Set out the pro-competitive impacts of the increased co-location that is enabled by the proposed acquisition (section 10).

2. Economics of mobile networks

2.1. Coverage and capacity

15. The key determinants of the quality of a mobile network are its coverage and capacity.[2] Coverage was previously an aspect that MNOs competed on, but today it is less of an issue, with each MNO claiming similar geographic coverage (Spark: 97.5%[3], Vodafone NZ: 98%[4], 2degrees 98.5%[5]). The NZCC also found in its mobile market study that the three MNOs have similar geographic coverage, as shown in Figure 2.1 below.[6] Similarly, Figure 2.2 shows that historically there were disparities in coverage, but coverage has converged at high levels in recent years, and when 4G was rolled out, it reached high coverage levels very rapidly.

Figure 2.1: Total national 3G and 4G coverage (2018)



Source: NZCC, Mobile Market Study: Findings, September 2019, Figure 20.

[2] There are of course other dimensions of network quality, such as latency.

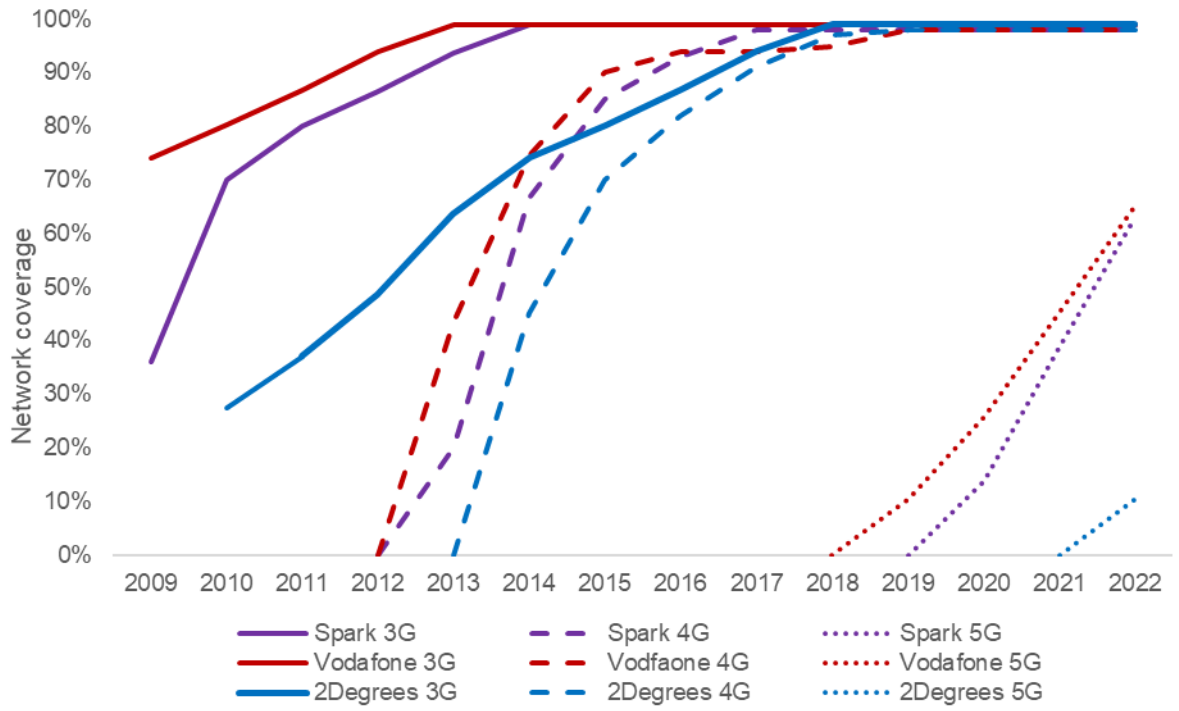
[3] Spark, "Network coverage and compatibility", www.spark.co.nz/shop/mobile/network, accessed 22/11/2022.

[4] Vodafone, "Mobile coverage – maps", www.vodafone.co.nz/network/coverage, accessed 22/11/2022.

[5] 2degrees, "Coverage", www.2degrees.nz/coverage, accessed 22/11/2022.

[6] NZCC, *Mobile Market Study*. Findings report, 26 September 2019. Figure 20 p. 103.

Figure 2.2: 3G/4G/5G coverage (by population) by operator



Source: NERA analysis of GSMA Intelligence data.

16. In particular, this figure above shows that 4G coverage increased quickly after its launch relative to 3G. This reflects the fact that once the MNOs had a physical network footprint, rolling out 4G coverage largely just involved upgrading the equipment on existing sites. A similar trend is seen with the launch of 5G, and operators should be able to achieve broad coverage using their existing physical footprint with the available mid band spectrum.[7]

17. Regarding capacity, there are three ways to increase the capacity of a mobile network:

    a. **More sites (which can also increase coverage)**: For a given demand for traffic by customers, increasing the number of 'base stations' decreases the number of customers using a given base station, thus reducing congestion at that base station. To use a traffic analogy, building more cell towers is similar to building additional roads of the same size to enable more traffic to flow;

    b. **More spectrum:** For a given base station and technology, the amount of traffic that can be carried is limited by the available spectrum. Therefore, increasing the amount of spectrum available to the MNO increases the capacity of a given base station. Continuing the traffic analogy, more spectrum is similar to widening an existing highway to add extra lanes; and

    c. **More efficient use of spectrum:** Increased spectral efficiency refers to equipment being able to use a given amount of spectrum more efficiently by using another, higher performance modulation technology. Using the traffic analogy, a straight and flat road can carry more traffic at a higher speed than a winding road that travels over hills.

18. The first point illustrates a point regarding the substitutability of large 'macro' and other (small macro and roadside/light-pole) sites. Large macro sites are large structures that place the antennas much higher in the air and thus provide broad coverage. Small macros and road-

[7] Clark, D., "Kiwis to benefit from accelerated 5G roll-out", Press release, 20 October 2022, www.beehive.govt.nz/release/kiwis-benefit-accelerated-5g-roll-out

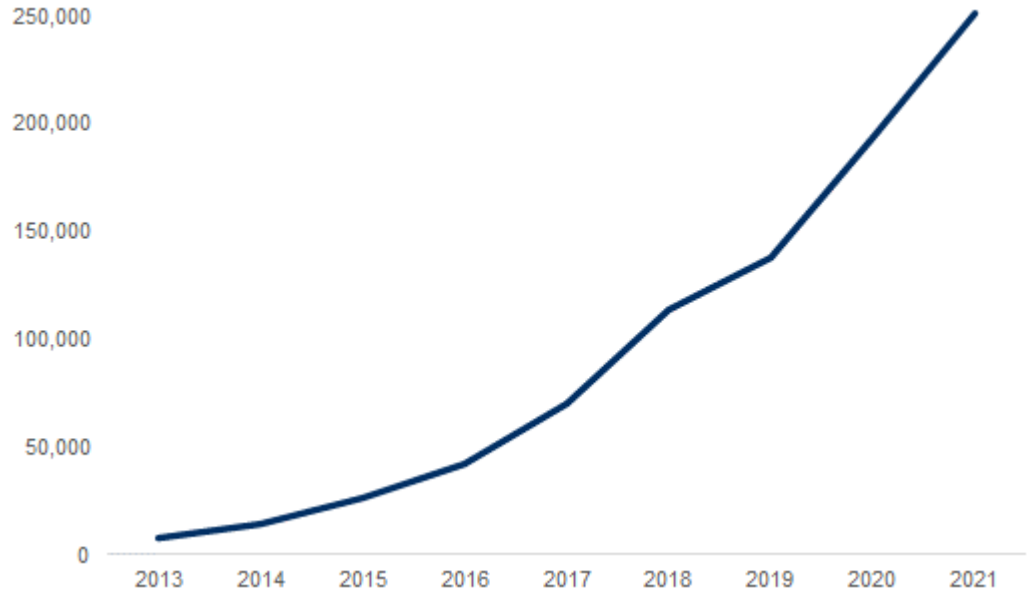
side/light-pole sites are smaller structures that places the antenna closer to the ground and thus does not propagate the signal as far. Therefore, one can cover the same geographic area as a macro tower using a number of smaller sites. However, doing this would provide more capacity then just having a single macro tower.

19. Thus, there are trade-offs between the two options for achieving coverage, and therefore smaller sites can be both a substitute and a complement to large macro sites. For example, one could build a network where coverage is achieved by building a large number of smaller sites (as we discuss in section 3.1, [
]). Alternatively, one could build a network where coverage is achieved using macro sites and micro sites are used to 'infill' the network and increase capacity. The choice is of course not binary and network deployments will make use of both types of deployment in different circumstances.

2.2. Demand drivers

20. In terms of capacity needs, data usage over the mobile networks has increased exponentially over the last 10 years, as shown in Figure 2.3 below. Globally the growth in mobile data usage can be attributed to improved device capabilities; an increase in data intensive content (primarily driven by increased viewing of video content); and growth in data consumption due to continued improvements in the performance of mobile networks.[8]

Figure 2.3: Total data traffic over Spark, Vodafone and 2degrees networks (TB)



Source: NZCC Telecommunications industry questionnaire results (prepaid, on-account, and business mobile data traffic)

21. We understand that this increased usage is expected to continue, and this translates to a large increase in the demand for new tower sites.[9] For example, over the next the 10 years, as part of setting up towercos the MNOs have contracted with their towercos for a total of 1,511[10] new sites (though with the co-location that will occur with the proposed transaction, this only results in

[8] Ericsson, *Mobility Report*, November 2022, pg. 22, 24.

[9] NZCC, *Mobile Market Study – Findings*, September 2019. Para 3.66.

[10] 671 Spark sites + 450 2degrees sites + 390 Vodafone sites = 1,511

[ ][11] new physical sites), and are forecasting a further estimated [ ][12] uncommitted sites, giving a total forecast growth of [ ] sites.[13] The current number of sites is estimated to be [ ][14], and thus the tower market is expected to grow by [ ][15] over the next 10 years. More broadly, as shown in Figure 2.4 below, OTPP/Connexa are forecasting that demand for sites will continue to grow far into the future, as successive technology waves result in MNOs requiring additional sites.

[

]

22. A particular feature of the New Zealand market, that is contributing to this growth, is New Zealand's high share of fixed wireless broadband connections (commonly referred to as fixed wireless access (FWA)). FWA is where a customer uses the mobile network to provide their 'fixed' broadband connection. Data usage over an FWA connection is therefore much higher than a mobile connection. Penetration of FWA has grown rapidly over the last decade, as shown in Figure 2.4 below.

[11] 671 Spark sites + [ ] 2degrees committed BTS sites + 390 Vodafone sites = [ ] physical sites

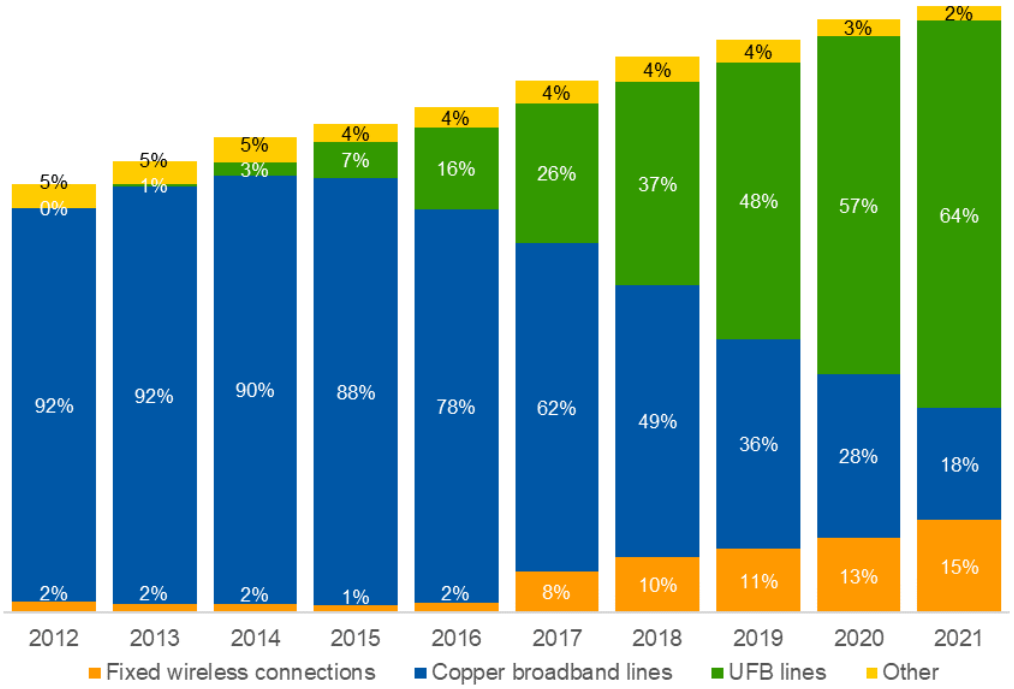
[12] [ ] Spark sites + [ ] 2degrees sites + [ ] Vodafone sites = [ ]

[13] I.e. 1,511 new sites + [ ] uncommitted sites = [ ] sites. See Table 3.3 for a breakdown of each MNO's commitments.

[14] 1,243 Spark sites + [ ] + 1,484 Vodafone sites = [ ]. See Table 3.1 for a breakdown of sites.

[15] [ ] / [ ] sites = [ ]

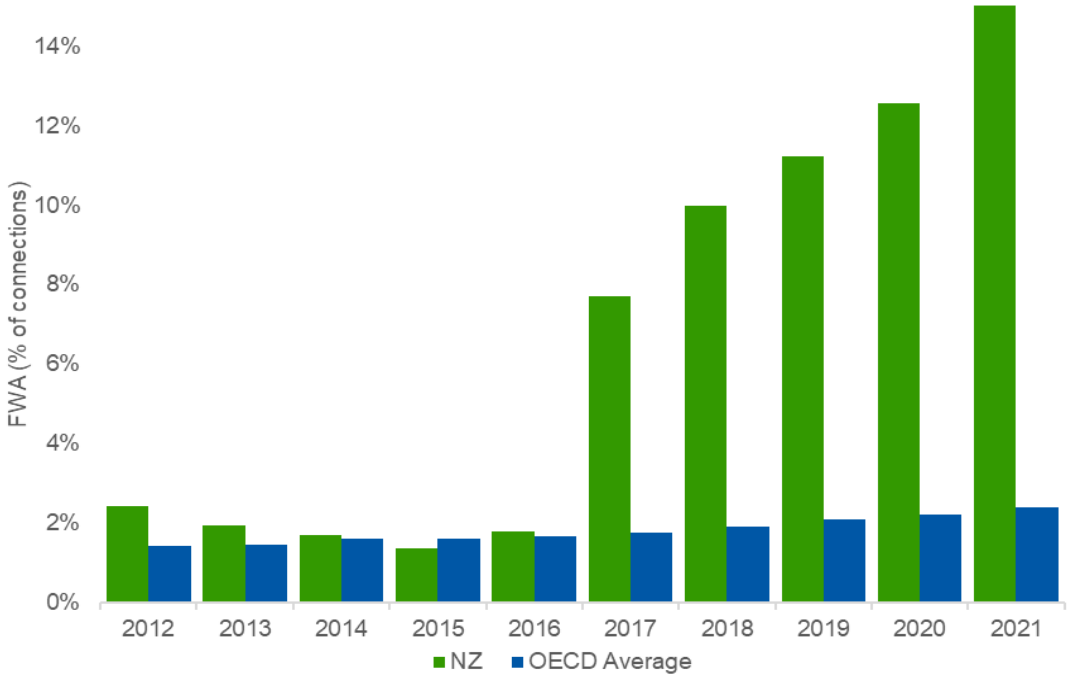
Figure 2.4: FWA penetration has grown rapidly over the last decade



Source: NERA analysis of NZCC Telecommunications Industry Questionnaire Results

23. Similarly, Figure 2.5 shows New Zealand has very high penetration of FWA by international standards.

Figure 2.5: New Zealand has very high penetration of FWA relative to OECD countries



Source: NERA analysis of NZCC and OECD Broadband statistics: Progression in fixed broadband subscriptions by technology data.
Note: There is a slight mismatch of the time periods with the NZ data (which uses financial years) and the OECD data (which uses calendar years), however this does not have a material impact on the analysis.

2.3. Implications of 5G

24. The large investment required by the MNOs to make 5G available and the more general increase in costs to satisfy the increasing demand for data by consumers has put pressure on the MNOs' current business model. Globally, this is driving a trend for MNOs to consolidate (merge) or collaborate (share network infrastructure) to achieve investment efficiencies.[16] Aside from consolidation or collaboration of MNOs, a recent global trend to free up cash to fund investments is for MNOs to sell their passive assets such as the tower segment of their business to third parties (we discuss this more in section 3.2).

25. In terms of the types of sites, 5G and in particular mmWave deployments for FWA are likely to mean that network topology is going to be more orientated towards small cells.[17] Given the potential to deliver significant capacity uplifts, particularly in busy urban environments, densifying by using mmWave spectrum on small cells could help meet the expected increase in future demand.[18] Growth in small cells over the traditional macro sites is expected in the future because access to new locations for macro sites can be challenging, particularly in dense urban areas.[19]

26. This is not to say that there will be no need for macro cells, which provide much better coverage. Macro sites provide both coverage and capacity and will have a continued role to complement the infill capacity provided by small cells and meeting non-FWA use cases. As noted above, MNOs should be able roll out 5G coverage relatively easily (in practical, not financial terms) on their existing physical network footprint using mid band spectrum.[20]

27. For FWA type use cases, that will use mmWave spectrum and have different network topology, the "coverage" conversation is more nuanced, in that in some sense the MNOs will be building a new network. A potential implication of a move to small cells for this roll out is that, by their nature (often a 'box on the side of a building'), the sites cannot readily be shared (or do not need to be shared, since many more urban structures can be used to host active equipment and an individual building can host multiple sets of equipment). This may mean that co-location, at least with respect to new investment in these types of sites, will be less of a factor in the future as dedicated towers do not need to be constructed to host active equipment.

28. In addition, small cells will not require the construction of a tower, which is the traditional towerco skill set. A move to small cells may therefore increase the competition that towercos face, or at least make them more easily bypassed by MNOs who can deal directly with building owners.

[16] W. Taylor, and A. Cervera-Jackson, "Competition implications of the transition to 5G". *Competition Law International* Vol 16. No.2, 2021.

[17] Ofcom, *Mobile networks and spectrum Meeting future demands for mobile data*. Discussion paper, February 2022, para. 1.4.

[18] A small cell network consists of a series of small low-powered antennas -sometimes called nodes- that provide coverage and capacity comparable to a macro site.

[19] Ofcom, *Mobile networks and spectrum Meeting future demands for mobile data*. Discussion paper, February 2022, para 5.28.

[20] Clark, D., "Kiwis to benefit from accelerated 5G roll-out", Press release, 20 October 2022, www.beehive.govt.nz/release/kiwis-benefit-accelerated-5g-roll-out

3. Relevant features of tower services in NZ

3.1. MNOs have built their own networks and sharing is not currently a material feature of the market

29. As section 2 above indicates, coverage was historically a competitive factor. Therefore, it is unsurprising that vertically integrated MNOs have historically built their own networks rather than co-locate. This is demonstrated by Table 3.1 below, which shows that the majority of each MNO's tower portfolio is a single tenancy tower and thus the average tenancy ratios are close to one, particularly in the case of Spark and 2degrees. Vodafone have more shared towers and therefore a higher tenancy ratio, which we understand is primarily 2degrees co-locating on Vodafone towers.[21]

Table 3.1: Existing tower portfolios have limited co-location

Tower portfolio	Total sites	Sites with co-lo	Share of sites with co-lo
Spark	1,243[22]	[ ][23]	[ ]
2degrees	[ ][24]	[ ]	[ ]
Vodafone	1,484[25]	[ ][26]	[ ]

Source: Spark and 2degrees site and co-location database. Vodafone: sites with based public announcements, co-location based on Spark and 2degrees co-location on Vodafone towers.

30. Lack of sharing has not however hindered rollout. This in part is driven by the ability of MNOs to cheaply construct light-pole towers. MNOs have a right under the Telecommunications Act to construct light-pole towers, which is essentially replacing a light-pole with a similarly sized cell tower that has a streetlight built into it. This is a low-cost method of constructing towers both because MNOs do not have to pay any ground rent[27] and because it is administratively simple, in that limited/no effort is required regarding identifying sites, negotiating with landowners and managing leases. We understand existing light pole towers can only accommodate one MNO tenant.

31. This is demonstrated in Figure 3.1 below which shows that almost [ ] of 2degrees' towers are light-poles, in contrast to Spark, for which only [ ] of towers are light-poles.

[21] We understand that while Spark co-locates on a number of Vodafone sites, this is primarily on Vodafone's RBI 1 sites which were funded by the government to support all three MNOs.

[22] Noting that this is slightly different to the total number of Connexa sites in the overlap analysis, due to the dataset being constructed prior to the completion of the sale of Spark's assets to Connexa.

[23] [ ]. Noting that this value is a count of co-location tenancies rather than unique sites and may overcount the number of co-location sites where there are multiple tenants on a site.

[24] [ ]

[25] Vodafone, "Vodafone to sell its passive mobile tower assets to InfraRed Capital Partners and Northleaf Capital Partners alongside Infratil reinvestment", Vodafone press release, 18 July 2022, https://news.vodafone.co.nz/towerco

[26] Noting that this may overestimate Vodafone sites with co-location as Spark and 2degrees may co-locate on the same Vodafone sites.

[27] Section 153(1), Telecommunications Act 2001.

Figure 3.1: New Zealand tower portfolios – 2degrees and Spark size mix

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Source: Site location data provided by Connexa and 2degrees
Source: Site location data provided by Spark and 2degrees

Table 3.2: New Zealand tower portfolios – 2degrees and Spark size mix

	Light-pole	Macro	Rooftop	Total sites
Spark	[ ]	[ ]	[ ]	1,243[28]
2degrees	[ ]	[ ]	[ ]	[ ][29]

Source: Site location data provided by Spark and 2degrees

3.2. Commercialisation of tower assets is a feature of both the factual and the counterfactual

32. For the last couple of years, there has been a global trend of MNOs carving out their passive infrastructure into dedicated towercos. For example, in Australia both Optus[30], Telstra[31] and Vodafone/TPG[32] have recently sold down shares in their towercos. Globally, TowerXchange

[28] Noting that this is slightly different to the total number of Connexa sites in Table 3.1, due to the dataset being constructed prior to the completion of the sale of Spark's assets to Connexa.

[29] [ ]

[30] Optus, *Optus announces sale of towers to AustralianSuper for AU$1.9 billion*. Optus media release, 1 October 2021, www.optus.com.au/about/media-centre/media-releases/2021/10/optus-announces-sale-of-towers-to-australiansuper

[31] Telstra, *Telstra finalises $2.8 billion InfraCo Towers sale*. Telstra media release, 1 September 2021, www.telstra.com.au/aboutus/media/media-releases/telstra-finalises-infraco-towers-sale

[32] TPG Telecom, *TPG Telecom sells Tower Assets to OMERS*. TPG press release, 9 May 2022, https://wcsecure.weblink.com.au/pdf/TPG/02519441.pdf

estimates that 73.9% of the world's mobile sites are now hosted by towercos.[33] In the UK, the share of towers controlled by independent towercos has grown significantly from 13% in 2014 to 35% in 2021, with an acceleration in the last 2 years.[34] While Europe is experiencing rapid growth of independent towercos, the share of towers held by independent towercos still lags behind other regions such as that of India, and Central and Latin America's of over 50% and the US, which has 90%.[35]

33. There are a number of potential reasons for this trend, with the key factors being: the creation of a focused, specialised operator that can deliver better service levels, lower cost of capital given the highly contracted nature of the cashflows,[36] MNOs wanting to free up capital to fund 4G and 5G roll outs[37,38] and towercos trading at higher multiples than MNOs.[39]

34. A significant source of value created from an independent towerco is that they are better able to pursue commercial deals with other MNOs and foster infrastructure sharing, also known as co-location. Increased co-location results in assets being more utilised (benefitting the towerco) and reduces the cost per user, since the significant fixed cost per tower can now be shared among multiple MNOs (benefitting the MNOs).[40] Global evidence suggests that towercos achieve high tenancy ratios, as shown in [below.

[33] TowerXchange, "Towerco League Table", www.towerxchange.com/Towerco-Table, accessed 28/11/2022.

[34] CMA, *Anticipated acquisition by Cellnex UK Limited of the passive infrastructure assets of CK Hutchison Network Europe Investments S.A.R.L.* Final Report 2022, pg.70, para 5.832.

[35] EY Parthenon, *The economic contribution of the European tower sector*. Report for the European Wireless Infrastructure Association, 2020, pg. 14.

[36] We discuss the volume commitments being made by the MNOs to the towercos in section 3.4.

[37] BCG, *Tower Companies Explore New Avenues for Growth*, Telecommunications Industry Publication, January 2022.

[38] As another example, Cellnex acquired the Polish MNO Polkomtel's infrastructure division Polkomtel Infrastruktura (approximately 7,000 tower sites) in 2021 to allow for faster and more cost-efficient deployment of connectivity services and more 5G sites. See Competition & Markets Authority, *Anticipated acquisition by Cellnex UK Limited of the passive infrastructure assets of CK Hutchison Networks Europe Investments S.A.R.L*. Final Report 2020, pg. 69, para 5.80.

[39] A notable case study is American Tower Corporation's acquisition of Telefonica subsidiary Telexius' tower division (approximately 30,722 tower sites) in Europe and Latin America to create value and reduce debt. American Tower Corporation stated that the transaction represented an EBITDA multiple of less than 26 times. American Tower, *American Tower Announces Telxius Towers Transaction*. American Tower media release, 13 January 2021, americantower.gcs-web.com/news-releases/news-release-details/american-tower-announces-telxius-towers-transaction.

[40] EY Parthenon, *The economic contribution of the European tower sector*. A report for the European Wireless Infrastructure Association, 2020, pg. 22.

[

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Note: we understand that the calculation for Spark should actually be [ ] as the data used to the perform this calculation was missing [ ]

35. In New Zealand, Spark and Vodafone have both spun off their tower assets into independent towercos, with the Spark assets now being held by Connexa[41] (owned 30% by Spark and 70% by OTPP) and the Vodafone assets being held by FortySouth (owned by Northleaf Capital Partners, Infrared Capital Partners, and Infratil). As part of this sales process, the MNOs have committed a large proportion of their future tower needs to the towerco. Doing so maximises the value of the deal given the multiples that towercos trade at relative to MNOs. Given the trends already mentioned, it seems that a likely[42] counterfactual is that 2degrees would also spin off its tower assets, though at this stage this is an assumption. An alternative is that 2degrees retains ownership of its towers as vertically integrated tower owner and MNO.

36. The proposed transaction, therefore, involves comparing a likely counterfactual of three independent towercos (or two independent towercos and one vertical integrated MNO/towerco) with a factual of two independent towercos. In a counterfactual scenario where 2degrees retains ownership of its towers, it would seem likely that it would be incentivised to manage its towers in a commercial manner, similar to if it spun them off into an independent towerco. This is because to not do so would place it a disadvantage relative to Spark and Vodafone, who are being serviced by independent towercos which will be seeking to drive co-location efficiencies.

37. Therefore, disintegration and commercialisation of the tower assets is a feature of both the factual and the counterfactual. This means that any effects that arise purely as a result of the assets being commercialised (i.e., explicit access prices being charged) are a result of the change in economic incentives due to vertical disintegration, not the proposed acquisition. As we have noted

[41] Spark, "Spark announces sale of 70% of TowerCo business for $900 million". Spark media release, 12 July 2022, www.sparknz.co.nz/news/Spark-announces-sale-of-TowerCo.html

[42] We mean this in the specific context of Commerce Act jurisprudence in New Zealand. In other words, we are not suggesting that this is the "most likely" scenario.

elsewhere in this report, an interesting feature of assessing this transaction is that the independent towerco market is in its infancy, as it is being created in parallel with the proposed transaction.

3.3. Towercos are asset managers, not asset builders

38. In New Zealand, the MNOs will contract with the towercos to obtain access to existing towers and to build new towers, but the towercos are not the firms that actually construct the towers. Rather, the role performed by the towerco is:

    a. Owning and maintaining towers;

    b. Managing contractors to build new and upgrade existing towers, including project management;

    c. Identifying and acquiring sites for towers;

    d. Lease management;

    e. Customer management.

39. Regarding the construction of towers, this is done by a number of contractors, who do not have exclusive agreements preventing them from building towers for other parties. In particular, we understand that there are five large contractors that are involved in tower construction in New Zealand: Downers, Infratel, Ventia, Connect8 (now Entelar) and Broadtech.

40. More generally, given their asset management role, we can think of the service towercos provide as finding places for MNOs to place their active equipment, where the upstream input of land and buildings is generally owned by other parties. In this sense, towercos are a distributor who can be bypassed, since MNOs can deal directly with land and building owners themselves.

41. Given this, it is not surprising that there are many firms that own towers in New Zealand. In addition to Connexa, FortySouth and 2degrees, who own large national mobile tower networks, there are a number of other tower owners in New Zealand:

    a. **Dense Air**:[43] Operate a neutral carrier model for the provision of active mobile services and own their own towers. According to the RSM database, Dense Air has six licenses with two unique site locations,[44] noting that Dense Air's small cell sites 'host' other parties and therefore, may not appear in the RSM database. Dense Air have acquired 5G spectrum in New Zealand which will be used to provide rural connectivity.[45] We understand that Dense Air, globally at least, are also building private 4G and 5G networks.[46]

    b. **American Tower:** Describes itself as "one of the largest global Real Estate Investment Trusts (REITs)" and "a leading independent owner, operator and developer of wireless and broadcast communications real estate".[47] Globally, American Tower own approximately 223,000 communications sites. In New Zealand, American Tower purchased Clearspan, a company that has acquired land under a number of towers in New Zealand. We understand that the

[43] We note that Dense Air is owned by Sidewalk Infrastructure Partners, which in turn is 60% owned by OTPP.

[44] Based on grid reference as per the latest RSM database (accessed 29th of November).

[45] Clark, D., "Kiwis to benefit from accelerated 5G roll-out", Press release, 20 October 2022, www.beehive.govt.nz/release/kiwis-benefit-accelerated-5g-roll-out

[46] See, e.g. DenseAir, "Dense Air Acquires New Spectrum to Build Neutral Host Shared Wireless Networks in Australia", 5 August, 2021, denseair.net/dense-air-acquires-new-spectrum-to-build-neutral-host-shared-wireless-networks-in-australia/, where Dense Air states "In Australia's urban centres, Dense Air will focus on in-building neutral host solutions**, private 4G and 5G networks**, and outdoor network densification".

[47] American Tower, www.americantower.com/company, accessed 20/11/2022.

Clearspan portfolio comprises [
]. While we understand that American Tower does not currently own any towers in New Zealand, the Clearspan acquisition seems a likely steppingstone into tower provision, given they self-describe that "owning and operating towers is our core business."[49] In particular, the overseas investment decision relating to American Tower's acquisition of Clearspan (CPL) notes that: [50]

> *The Applicant wants to acquire CPL (and its interests in land) to grow CPL and to invest in the New Zealand communications industry.*

c. **Wireless internet service providers (WISPs):** WISPs provide FWA broadband in rural areas and we understand that they own their own towers, which are much smaller in scale and lower cost to the types of towers MNOs need. We understand there are currently 32 WISPs in New Zealand.[51] We understand that [ ].

d. **Chorus:** Chorus owns towers that it uses for radio linking for legacy voice and data services. We understand that MNOs and non-MNOs co-locate on Chorus towers. [
] [
]

e. **Kordia:** We understand that Kordia owns approximately [ ], of which the majority are large lattice structures. Kordia now uses these towers for paging, EDMR, and rural services. We understand that MNOs co-locate on Kordia structures.

f. **TeamTalk/Vital:** Vital provide digital radio services. In addition to owning their own sites, we understand that Vital co-locate extensively due to the low structural requirements for the structure that hold their equipment. Thus, where they do own their own towers, they are generally engineered to a lower standard than an MNO tower. According to the RSM database, Vital has 390 licenses with 130 unique site locations.[52]

g. **Non-MNOs:** A number of other non-MNOs also own towers, including NZ Police, Airways, BroadTech, Transpower, Mount Campbell Networks Limited and KiwiRail.

h. We are informed by Spark that it co-locates on the towers of [
]

3.4. The MNOs have protected themselves as part of the sales process

42. As discussed in section 3.2, the MNOs have committed a large volume of their future build requirements to the towercos in order to maximise the financial benefit of selling their tower assets. In Table 3.3 below, we summarise the key contractual aspects of the volume commitment made under the contracts between the MNOs and the towercos.

[48] Figures provided Spark and 2degrees.

[49] American Tower, "Tower Acquisitions", www.americantower.com/us/solutions/towers/tower-acquisitions.html, accessed 20/11/2022.

[50] Land Information New Zealand, *Overseas investment decision for case 202100802 - ATC New Zealand Limited*, 6 October 2022, www.linz.govt.nz/our-work/overseas-investment-regulation/decisions/2022-10/202100802

[51] See: WISPA, "Find your local WISP", www.wispa.nz/wispa-nz-members, accessed 27/11/2022.

[52] Based on grid reference as per the latest RSM database (accessed 29th of November).

Table 3.3: Volume commitments under the Master Infrastructure Service Agreement (MISAs)

	Spark	2degrees	Vodafone
Nature of volume commitment for new sites	[ ]	[ ]	Fixed volume BTS commitment over 10 year period 2023 – 2032. No public information about how uncommitted sites will be treated before and after initial BTS period.
Initial BTS volume commitment	671 sites	450 sites	390 sites
Uncommitted site forecasts (2023-2032)	[ ]	[[ ]	[ ]
Churn allowance for existing sites	[ ]	[[ ]	No public information.
Length of master contract	**Initial term**:15 years [ ] [ ]	**Initial term:** 20 years [ ] [ ]	**Initial term:** 20 years **Extension rights:** extension rights exist, but no public information on details.

Source: Spark = Spark MISA and data provided by Spark, 2degrees = 2degrees MISA and data provided by 2degrees, Vodafone = news.vodafone.co.nz/towerco and [ ]
Note: reference to "sites" in this table technically refer to points of presence (PoPs). With optimisation/co-location across the BTS commitments, the number of new towers is likely to be less than the number of new PoPs demanded.

43. While the MNOs theoretically recapture the present value of any access charges paid in the sales price, as we discuss later in this report, the uncommitted volumes are unlikely to be priced in full by investors, in the sense that investors would assign a probability of capturing these sites of less than 100%, or would assume a share of uncommitted volumes is won. This means that the MNOs are likely exposed to the contract prices agreed for these volumes. However, this carve out also allows the MNOs to maintain competitive tension on their towercos by self-supplying and acquiring towers from other tower providers. Given that the MNOs are exposed to price on these uncommitted sites, they will be incentivised to use parties besides the towerco if the pricing is not

competitive. In this regard, we understand that the pricing construct in Spark's MISA is based on Spark's estimate of the total cost of ownership (TCO) of each tower type.[53]

[53] We understand that access charges escalate annually at CPI+0.5% for the initial term, then CPI thereafter. This is subject to a cap of 3% and a zero floor (i.e., charges cannot deflate)

4. Competitive significance of tower input for downstream competition

44. In this section we discuss the competitive significance of the tower input for downstream competition between the MNOs. We find that tower costs and competition between tower providers are unlikely to have a large bearing on downstream competition for the following reasons:

    a. Towers make up a small percentage of overall costs to service the downstream market, and therefore any price effects will be small; and

    b. Towers are passive infrastructure, so competition between tower providers has little bearing on downstream innovation, quality and competitive dynamics.

4.1. Tower costs are a small proportion of the costs of the retail mobile business

45. We understand that the tower costs are not a material contributor to an MNO's total mobile sector costs. This implies that even if there were to be a large percentage increase in towerco prices (which we do not think would be the case, for the reasons set out elsewhere in this report), the flow through to the price charged to the end user will be small.

46. As an example, Spark's reported FY22 operating revenue for its mobile segment was $1,351m.[54] To illustrate the relative significance of the tower input, we understand that Spark's implied tower charges from Connexa for FY24 (the earliest forecast value available) would be [ ].[55] Therefore, estimated tower costs would be [ ]% of the total mobile segment revenue for Spark. To put this in context a 20% price increase across all towers (i.e., an additional [ ] in charges), if fully passed through to consumers, would result in consumer prices rising by [ ].

47. Furthermore, if tower costs are relatively small in the context of the broader mobile business, then a change in tower pricing also should not materially impact the profitability of the MNOs and hence their ability to invest/raise capital to maintain and improve their quality of service. In this context we note that Spark's mobile segment margin in FY22 was $904m.[56] The [ ] in extra charges associated with a hypothetical 20% price increase is therefore not material in the context of the overall profitability of a retail mobile business.

48. These illustrative calculations also overstate the impact of any theoretical price increases because:

    a. The MISAs set pricing for existing sites and BTS sites, so only uncommitted volumes could theoretically be subject to a price increase as a result of lost competition;

    b. MNOs have countervailing power, through their ability to bypass and leverage their uncommitted volumes in any negotiations; and

    c. The proposed transaction is likely to increase co-location (see section 8) which results in discounts for the anchor tenant and co-locating party. This will reduce tower costs and thus water down any potential effects on downstream competition even further.

[54] Spark New Zealand, *Annual Report 2022*, pg.87

[55] FY 2024 is the first full forecast year and so is the earliest value for Connexa tower revenue. Using the 2024 forecast revenue values for the implied tower charges may overstate the tower charge relative to mobile revenue in 2022. However, this likely overstates the relative significance of the tower input as mobile revenue will likely be higher in 2024 compared to 2022.

[56] This margin represents the gross product margin (i.e., $1,351m operating revenues less $447m product costs = $904m product margin. Spark New Zealand, *Annual Report 2022*, pg.87

49. Overall, this indicates that any increase in tower prices from reduced competition will therefore have limited impacts on the downstream competition and prices.

4.2. Active, not passive infrastructure is the primary driver of downstream competition

50. Towers are a passive and relatively mature infrastructure and the structures themselves are not a key aspect of the network advantage, so the level of competition and innovation in the provision of passive infrastructure is not the material driver of downstream competition and innovation.

51. Instead, the innovation and competition that drives changes in quality for consumers is innovation and competition in relation to hardware and software and also through innovation in value added services. Put another way, having a 'better' tower than a rival who has a similarly located tower that perhaps cost more will have an immaterial impact on the quality of the service consumed by consumers compared to an MNO having an edge on its rival with respect to the hardware and software it deploys and the value added services it offers.

52. This is to say, from an MNO's perspective, if they are able to set up their active equipment in the way they desire, absent contractual ties to the towercos, they are likely to be indifferent between the independent towercos (all other things being equal). Therefore, the competition between independent towercos does not have a material impact on the competitive dynamics of the downstream market.

53. Similar conclusions have been reached by regulators in the context of network sharing agreements (NSAs). For example, BEREC (The Body of European Communications Regulators) has noted, in the context of comparing the effects of passive vs. active sharing, that sharing passive assets is less likely to negatively affect downstream competition:[57]

> *Passive agreements are less likely to have a negative impact on the differentiation capacity of operators, provided that each of the sharing parties keeps its operational freedom (e.g., sharing parties should still have the possibility to deploy sites on a standalone basis).*

54. The NZCC's findings in its Mobile Market Study are also supportive of this general point. The NZCC highlighted three key issues which are likely to influence the further development of competition in the mobile market going forward. These are, the allocation of spectrum as 5G becomes more accessible, MVNOs that can provide further service innovations (including bundles of mobile services and other services), and the ease of accessing mobile usage information to enable optimal switching.[58] The report also predicts that future developments in mobile services will be driven by 5G mobile networks and the development and uptake of eSIMs by MNOs. These points made by the NZCC all indicate that the mobile market is a dynamic market with MNOs competing to adapt to technological change and innovation as well as capturing customers through value added services.

[57] Body of European Regulators for Electronic Communications, *BEREC Common Position on Mobile Infrastructure Sharing*, BoR (19) 110, 13 June 2019, p.18.

[58] NZCC, *Mobile Market Study – Findings*, Final report, September 2019, p.57.

5. Competitive impacts related to Spark's shareholding in MergeCo

55. Spark currently has a retained ownership interest in Connexa of 30%. We understand that, if the proposed transaction proceeds, this share will reduce to 17%. Given the proposed transaction results in Spark becoming a minority shareholder in 2degrees' key supplier of tower services, two possible theories of harm arise:

    a. Information flows via MergeCo facilitate coordination downstream (section 5.1); and

    b. Spark is able to influence MergeCo operational decisions in a way that forecloses 2degrees (section 5.2).

5.1. Spark ownership of MergeCo is unlikely to lead to any coordinated effects

56. The proposed acquisition will result in Spark becoming a minority shareholder in a key supplier to 2degrees. There is thus a potential concern related to coordinated effects post-merger that can negatively impact downstream competition. This would occur in a scenario where Spark's ownership interest in Connexa gives it access to competitively sensitive information from 2degrees, which results in a softening of competition, and this then allows tacit coordination in the downstream market.

57. However, the potential harm of such coordinated effects are mitigated in the current scenario because:

    a. There are strict information sharing protections that will prohibit any unnecessary non-public information to be shared with Spark (though the effectiveness of these protections is not within our expertise to test);

    b. Each MNO's tower locations are already publicly available through the RSM (radio spectrum management) database.[59] Therefore, it is expected that there will be minimal new information in relation to 2degrees network topology if the information sharing protocols are ineffective; and

    c. We understand that both parties have a good idea of what active equipment the other is using, as MNOs tend to publicly announce their vendors/technology choices as part of marketing the quality of their network. Active equipment is also publicly visible on towers and there is a relatively limited set of major vendors of active RAN equipment following the Huawei ban (Nokia, Samsung and Ericsson).[60] Therefore, if co-location increases in the future because Spark and 2degrees use the same towerco, this will likely reveal minimal new information regarding equipment choices.

5.2. Spark would be unlikely to be able to foreclose 2degrees through partial ownership of MergeCo

58. We understand that, legally, Spark would not have the ability to influence the operational decisions of MergeCo in a way that would materially disadvantage 2degrees. However, we have not analysed the governance of MergeCo in detail ourselves.

[59] RSM database: https://www.rsm.govt.nz/

[60] See e.g., Alan Weissberger, "Mobile Experts: Ericsson #1 in RAN market; Huawei falls to #3", IEEE Communications Society, Technology Blog, 25 January 2022, techblog.comsoc.org/2022/01/25/mobile-experts-ericsson-1-in-ran-market-huawei-falls-to-3, which presents global market shares for RAN equipment.

59. Nonetheless we make the following additional points which suggest that even if Spark could influence MergeCo in a way that was contrary to OTPP's interests (as OTPP would not benefit from a foreclosure strategy against 2degrees), Spark would not have the incentive to do so:

    a. As a general point, 2degrees would not enter into this transaction if they were concerned that they could subsequently be foreclosed. They also have the bargaining power when negotiating their supply terms to make sure that this not is the case. i.e., 2degrees can retain their towers or sell to an independent (of Spark) party.

    b. The majority of 2degrees' future site needs (450 out of [ ] sites over the next 10 years) are protected through the contract it has negotiated through the sales process.

    c. Price could only be raised for the 50% of uncommitted volumes which 2degrees needs to give to MergeCo under the BTS commitment, for which it does not have pricing protection. This volume is unlikely to be material enough to influence downstream competition. As already noted in section 4, the tower input is not competitively significant for downstream competition.

    d. 2degrees will have the option to self-supply and FortySouth has an incentive to win 2degrees' business (particularly in the form of co-location).

    e. Spark receives a co-location discount on Connexa towers where it is the anchor tenant and another MNO co-locates. It therefore benefits financially from Connexa providing co-location to 2degrees.

6. Competition for access to existing sites

60. In this section we address whether bringing together the Connexa and 2degrees tower assets would impact competition to provide co-location on the *existing* site footprint. In a scenario where Connexa and 2degrees have towers near each other (and provide comparable coverage) they might be considered to be competing to provide co-location to third parties.

61. In general, we note that the MNOs will have limited ability to switch off existing sites given the commitments they made as part of the sales process for the towercos. Specifically, the MISAs contain churn allowances which provide only a limited ability for Spark and 2degrees to "churn" off the existing towers they have just sold (see Table 3.3).[61] In this section we are therefore concerned with whether parties besides Spark and 2degrees might face reduced competition when seeking access to existing Connexa and 2degrees sites. In particular, whether Vodafone and non-MNO access seekers might face reduced competition in certain locations.

62. In the rest of this section, we assess:

    a. Switching costs to consider whether *existing* tenants will actually consider a nearby tower as a viable substitute;

    b. Whether the presence of a Vodafone tower owned by FortySouth will mitigate any competition concerns (in effect, "is two towercos enough?");

    c. The needs of non-MNO access seekers and whether they are likely to be impacted by the proposed acquisition;

    d. The geographic overlap of the existing tower footprint, to consider the extent to which:

        i. Spark and 2degrees have towers in range of each other where both towers have capacity to host additional tenants;

        ii. Whether Vodafone has a nearby tower in these situations, both to indicate whether there is likely to be a rival towerco and to find situations where Vodafone might feasibly want coverage but will have less competitive options as a result of the proposed transaction; and

    e. The countervailing power of MNOs, and thus whether the towercos would be incentivised to exercise any theoretical market power that arises in narrowly defined geographic markets.

6.1. Switching costs are high, and thus competition for existing tenants is likely to be limited

63. In situations where there is a Spark and 2degrees site in range of each other and there are existing tenants on one or both of the sites, it could be argued that the presence of the other site constrains pricing to existing tenants on the other site. In practical terms, whether the sites are actually substitutes from an individual access seeker's perspective will depend on local topography; the location of the access seeker's other points of presence; their spectrum holdings; and network strategy.

64. However, we understand that the costs of an MNO switching tower providers (i.e., physically moving equipment from one tower to a nearby tower) are material. Spark estimates that the costs of switching towers are [ ]. This is roughly the same as a co-locating MNO would pay annually to Connexa under the proposed rate card.[62]

[61] Though as noted in Table 3.3, we have no information on Vodafone's churn allowance. However, it seems reasonable to assume that one would have been included to protect the value of the investment being made by the new tower owners.

[62] We understand the annual fee for co-locating on a Connexa tower will be [ ].

65. To illustrate the materiality another way, we have completed a simple analysis of the percentage price increase that would be required for an existing tenant to switch towers. Using the co-location price for a macro tower, a 7% discount rate and a contract term of 10 years, price could rise by around 14% before it would be worthwhile switching.[63]

66. This assumes that the nearby tower has spare capacity and the structural integrity to host more equipment. Estimates on the costs of strengthening macro towers range [ ] and [ ]. We understand these figures reflect the fact that most towers have historically been built to only accommodate a single MNO. This is a further, and potentially much more material cost of switching over and above the cost of moving equipment.

67. [ ]

68. The economics literature suggests that high switching costs can result in market power even in unconcentrated markets.[64] More generally, high switching costs can also soften the incentive to compete for new customers, as the incentive to 'harvest' existing customers dominates the incentive to 'invest' in new customers through lower prices. Though this softening of competition only occurs in mature markets where price discrimination is not possible.[65]

69. We note that this effect, whereby high switching costs mean that customers are captive and not subject to competition, is unrelated to the proposed transaction. Having three independent towercos instead of two does not change the fact that a customer may not be contestable by nature of it being very costly for it to move (or in the case of the MNOs and their existing towers, being unable to do so in a material way due to churn restrictions).

70. Exceptions to this are:

    a. If towers reach the end of their life; and/or

    b. MNOs need to install new equipment and thus will be incurring switching costs anyway.

71. Another way to frame this is that competition can occur before the equipment is placed on the tower, but once it does the customer is likely to be captive until they need to upgrade/replace their equipment, or the tower reaches the end of its life.

6.2. Competition will remain where FortySouth has a nearby site

72. In a scenario where in the counterfactual there would be three towercos with capacity to host the MNO in question, but this reduces to two towercos in the factual, there is a question as to whether the competitive outcome would be materially different.

73. We can use auction theory to assess this question. In an auction, the driver of price is the costs of the second cheapest provider.[66] In a scenario where all three towercos have a tower in the

[63] Specifically, the annual payment with a present value equal to the assumed switching cost of [ ] is [ ].

[64] OCED, *Methodologies to Measure Market Competition – Note by New Zealand*, Directorate for Financial and Enterprise Affairs Competition Committee, 11 June 2021, p.6, one.oecd.org/document/DAF/COMP/WD(2021)5/en/pdf

[65] This is because when only a single price can be set, the firm faces a trade-off between attracting new customers with a low price and increasing profits from existing with a high price. This trade off does not exist where price discrimination is possible. See: MBIE, *Search & switching costs in the services sector: Literature review*, March 2017., p.52.

[66] Referring to Vickery's (1961) second-price auction theory. This is a widely recognized and popularly used mechanism due to its demand revealing nature and endogenous market clearing price. Under this theory, bidders have the incentive to tell the truth and reveal their true willingness to pay because the auction separated what they say from what they pay: the highest bidder buys one unit of a good and pays the second-highest bid. Vickery, W, "Counter speculation, auctions and competitive sealed tenders". *Journal of Finance* 16, 1961, p.8-37.

counterfactual, for there to be a material adverse change in price offered to the access seeker, it would require that Connexa and 2degrees to both have materially lower costs than FortySouth, such that the acquisition results in a combination of the firm that would win and the firm that would come second. This seems unlikely given we understand towers are relatively simple structures to build, are homogenous ("a tower is a tower") and there is a competitive set of contractors all parties can use to construct towers.[67]

74. The degree of co-location may, however, impact the price a towerco will offer an access seeker (as it means fixed costs can be spread more), and thus there may be asymmetries amongst the towercos. We understand that the Vodafone tower network in general has more co-location than the Spark and 2degrees networks,[68] though in a scenario where Vodafone is hosting an MNO, it is unlikely that both Spark and 2degrees have a tower in range. We also have no visibility on the extent to which Vodafone hosts non-MNO access seekers. Though we understand that non-MNOs require a different type of tower than MNOs and therefore often self-supply rather than co-locate, as we discuss in section 6.3.

75. In addition, given towers are essentially a fixed cost business, towercos would likely be willing to accept any incremental revenue to host an additional tenant, so long as the towerco recovered its incremental costs of hosting that tenant. Therefore, the price a tower charges when subject to competition may not necessarily be a function of the number of tenants it already has.

76. Therefore, the pricing outcomes when two towercos are competing are not likely to be that different materially from when three towercos are competing.

6.3. Non-MNO access seekers

77. Non-MNO access seekers are organisations that locate relatively small equipment on a tower and take a small portion of the tower's footprint. These small antennae, DMR (digital mobile radio) or EDMR (ethernet digital microwave radio), do not affect structural capacity significantly and thus the structural requirements to host the equipment are not high. We understand from Connexa that given the scale of the equipment involved and the basic requirements of these non-MNO access seekers, their requests seldom result in towercos having to modify their tower structure. Therefore, the marginal cost to a towerco of hosting their equipment is low and so is the opportunity cost, since they do not take up much space. Or to put this another way, MNO towers are generally over engineered for the needs of non-MNO access seekers (and thus are an expensive solution).

78. By nature of their simpler needs, non-MNOs generally have a broader set of options to host their equipment, including the ability to construct much cheaper and smaller towers and co-locate in places where MNOs cannot. Thus, non-MNOs only co-locate on a small fraction of MNO towers. For example, of Connexa's 1,243 sites, only [ ] have a non-MNO co-located (i.e., [ ]% of sites).[69] Regarding 2degrees, we do not have data on the tenants on individual sites, but we do know that only [ ] sites have co-location of any type (i.e. including MNOs), out of a total of [ ] (i.e. [ ]% of sites).

79. Co-locating non- MNO access seekers on the Connexa network include: [

]. Co-locating non-MNO access seekers on

[67] See section 3.3. Noting of course that for existing towers the costs are sunk, so our point is more that capital costs that a towerco would be hoping to recover would be similar.

[68] See section 3.1

[69] Noting that this is slightly different to the total number of Connexa sites in the overlap analysis, due to the dataset being constructed prior to the completion of the sale of Spark's assets to Connexa.

2degrees include: [
].

80. Table 6.1 shows the number of sites that these parties co-locate on the Spark network.

Table 6.1: Non-MNO organisations and sites on Spark network

Non-MNOs Co-locating on Spark Sites	Count of tenants
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]
[ ]	[ ]

Source: [ ]

81. This demonstrates that the vast majority of non-MNOs only co-locate on a handful of sites, supporting the proposition that they have alternatives.[70] We also understand that there are no churn restrictions on non-MNOs, which means they are more able to switch than MNOs.

82. The most common non-MNO access seeker is Vital (TeamTalk), yet they still only co-locate on a small proportion of Spark's sites. We understand that Vital has 130 unique sites registered on the RSM database, [ ], suggesting they have alternatives.

83. As a more general illustration of the point, as noted in section 3.3, there are more than 30 WISPs in New Zealand, [ ].It therefore appears to be the case that non-MNO access seekers, by nature of their less stringent site requirements, have a broader set of options for their sites than MNO spec towers. Non-MNOs are thus unlikely to be impacted by the proposed transaction.

6.4. Limited geographic overlap of existing tower footprint

84. In this section we consider the extent to which the Spark and 2degrees tower portfolios overlap. The purpose of this analysis is to consider the size of the potential problem, rather than demonstrate there are no areas where there might be a lessening of competition on a narrow geographic basis, or precisely identify the specific areas where localised market power might be considered a potential issue.

85. Thus, our analysis is a 'screening' analysis that, in simple terms, involves drawing circles around site and seeing if they intersect. To properly identify whether two sites are actually substitutes would require a detailed site specific analysis that accounted for:

    a. Whether the sites in question have space for an additional MNO;

    b. Whether the sites in question have the structural capacity to host an additional MNO;

    c. The geographic terrain (e.g., two sites could be close as the crow the flies but separated by a hill);

[70] It is of course possible that they co-locate extensively on Vodafone, but we have no way of verifying this. The NZCC can verify this with Vodafone/FortySouth.

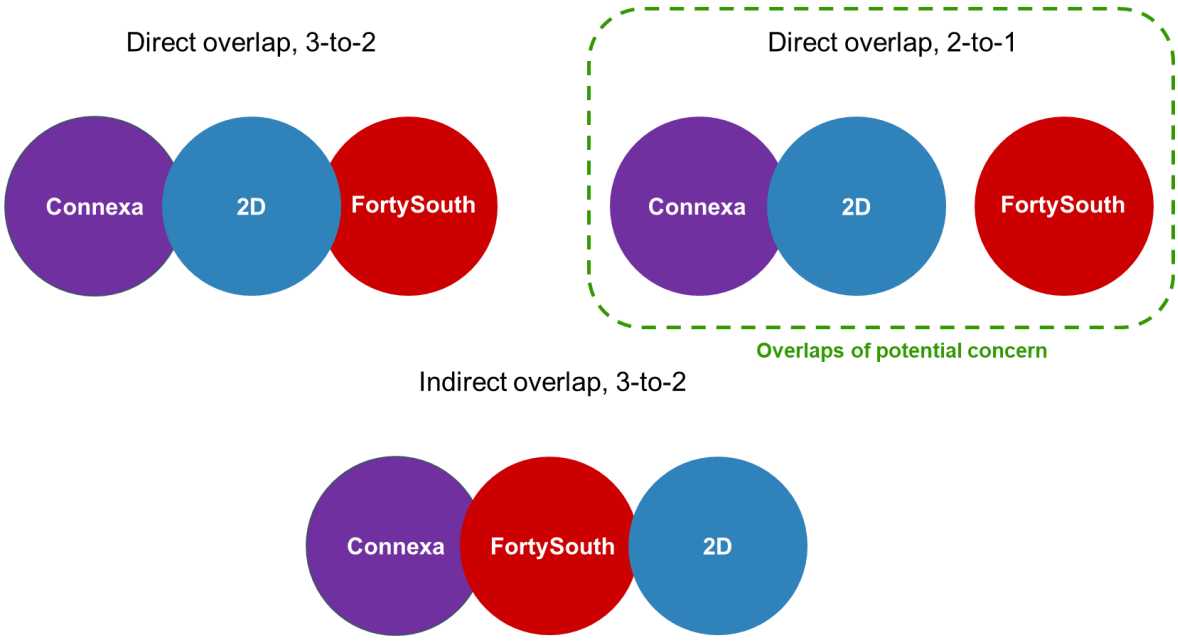
d. The location of targeted population relative to the towers; and

e. The access seeker's network strategy and needs in the area (which will be a function of their spectrum holdings and the location of their other towers).

6.4.1. Conceptual approach to overlap analysis

86. The previous two sections outline that switching costs are high (and therefore existing tenants are not contestable during the life of the tower/assets) and that FortySouth will be incentivised to compete aggressively for co-location. Therefore, outcomes will likely not differ much in areas with three towercos compared to areas with two. The key residual theory of harm is therefore in relation to Vodafone seeking co-location in an area where there are overlapping Connexa and 2degrees towers that both have capacity to host additional tenants. In our overlap analysis we discard overlaps where there is a FortySouth tower in range (on the basis that Vodafone would not need access to a Connexa or 2degrees tower). This is demonstrated in Figure 6.1 below, where only 2-to-1 direct overlaps trigger our filter for overlaps.

Figure 6.1: Overlap analysis only triggered for 2-to-1 direct overlaps



Source: NERA illustration

87. This filtering strategy also addresses a potential theory of harm in relation to access seekers besides Vodafone. If there is a FortySouth tower in range, there would still be two towercos in the factual, though that would require also knowing whether the FortySouth tower has capacity. Given that we are relying on public data in relation to Vodafone/FortySouth, there is no way for us to ascertain whether the FortySouth site has capacity. In addition, if the access seeker is not Vodafone, it would by definition be a non-MNO (unless a fourth MNO enters New Zealand, which seems unlikely). As described in section 6.3 above, we understand that non-MNO access seekers generally have different requirements for their towers meaning that a) it is more likely that they can be hosted on a tower, even if an MNO could not, and b) they are more able to build their own towers.

6.4.2. Methodology and data sources

88. As discussed above, our approach is to find Connexa/2degrees pairs of sites that are within a defined distance of each other that both have capacity for co-location (proxied by looking at

macro towers), and then determine whether there is a FortySouth site within range of *either* the Connexa or 2degrees site. Note that every tower that has space may not structurally be able to hold more MNO equipment without structural upgrades to the tower. We have not been able to directly control for this, but we understand a sampling analysis of towers in the Spark and 2degrees portfolio suggests that [ ]% of Spark's macro towers and [ ]% of 2degrees' macro and rooftop towers would require strengthening to host an additional MNO.[71]

89. We have used data from a site location dataset that includes site data provided by Spark/2degrees and site data from RSM database for Vodafone/FortySouth.

90. To identify sites, we find areas that are:

    a. **Sharable sites:** We narrow the Connexa and 2degrees sites to macro tower types (which are more likely to be able to host additional tenants) and find all the possible site pairs of Connexa and 2degrees towers;

    b. **Where Connexa and 2degrees towers overlap:** We drop the site pairs where the Connexa and 2degrees towers are too far apart to be overlapping (i.e., pairs in 'rural' or mixed areas where the sites are more than 3 kms apart, and any pairs in 'urban' areas where the sites are more than 500 m apart);

    c. **And where Vodafone may seek co-location:** We drop site pairs where there is unlikely to be new or additional demand from Vodafone to co-locate because there is either already a FortySouth site nearby (i.e., within 3 kms for 'rural' and 500m for 'urban' of the Connexa or 2degrees site), or where Vodafone is already co-locating on the Connexa site.

91. To determine in which cases one site is close enough to another site to act as a substitute, we set a radius using a defined distance, which differs between 'rural' and 'urban' sites. The radius we have used is that used by the parties as an input into their commercial negotiations for the proposed transaction.

    a. The defined distance is 3 kms for 'rural' or mixed[72] sites.

    b. The defined distance is 500 m for 'urban' sites.

92. As part of this we have mapped Spark and 2degrees' own location classifications to 'urban' and 'rural':

    a. For Spark 'provincial' and 'rural' were categorised as rural, and 'metro' was categorised as urban

    b. For 2degrees, 'rural settlement' and 'rural other' were categorised as rural, and 'small urban area', 'medium urban area', 'large urban area' and 'major urban area' were categorised as 'urban'.

6.4.3. Results

93. We find that there are 68 site pairs that are areas where Vodafone may seek to co-locate. Table 6.2 shows the process of filtering site pairs down to the 68.

[71] Prepared as part of technical due diligence for Project Fairway.

[72] If one site of the site pair is defined as a rural site and the other is defined as an urban site, then a defined distance of 3 km is used.

Table 6.2: Site pair analysis steps

	Connexa/2D definitions		Stats NZ definitions	
	Site pairs dropped	Remaining site pairs	Site pairs dropped	Remaining site pairs
Total Connexa/2degrees macro site pairs[73]		**[ ]**		**[ ]**
Connexa and 2D site pairs further than defined distance of each other	[ ]	**407**	[ ]	**335**
Remaining pairs with a VF site within the defined distance of the Connexa site	*(324)*	**83**	*(245)*	**90**
Remaining pairs with a VF site within the defined distance of the 2D site	*(7)*	**76**	*(6)*	**84**
Remaining pairs where VF currently co-locates on the Connexa site	*(6)*	**70**	*(6)*	**78**
*Remaining duplicate pairs that relate to a unique Connexa site**	*(2)*		*(0)*	
Remaining sites		**68**		**78**

*Note:*This is instances where the same Spark site overlaps with multiple 2degrees sites and thus triggers multiple overlaps. We filter in this way because we calculate the overlaps by iterating through the list of Spark sites and calculating the distance to every single 2degrees site.*

94. We have currently categorised Spark and 2degrees sites as 'rural' or 'urban' according to the geolocation information in the site location dataset. Of the 68 site pairs identified, eight are mixed site pairings where one of the sites is mapped as a rural site and the other as urban. This suggests that there may be a disconnect in the site location categorisations used by Spark and 2degrees. Three of these site pairings are less than 3 km but greater than 500 m apart, so could potentially be dropped out with more accurate consideration of whether the sites are actually substitutes (or if we used a 500m cut-off for mixed pairs). This would reduce the number of overlaps to 65.

95. As an alternative approach, we can use Stats NZ's categorisation of whether areas are urban and rural. Doing so removes inconsistencies in how Spark and 2degrees have categorised sites. Using this categorisation, we are left with 78 pairs, compared to 68 using Spark and 2degrees categorisations.

96. To further refine the overlap pairs, [

]

97. Using this analysis, we have removed site pairs where the estimated demand for the SA2 for *both* of the sites in the pair is "low".[74] Doing this reduces the number of site pairs to 25 if we use the MNO categorisation of sites as urban/rural and 28 if we use the Stats NZ categorisation.

[73] i.e. [ ] Connexa macro sites * [ ] 2D macro sites

[74] This can occur where two sites are close to each other but on either side of a SA2 geographic area boundary.

98. We have thus far assumed all macro towers have both the space and structural capacity to host an additional MNO, whereas we understand that for a large number of macro towers this is unlikely to be the case (as noted in section 3.1, the MNOs have historically built their networks to meet their own requirements and were not incentivised to build in extra capacity for other MNOs when coverage provided a competitive edge). On these two points:

    a. **Structural capacity:** We understand [ ]% of Spark's macro towers and [ ]% of 2degrees' macro and rooftop towers would require strengthening to host an additional MNO. This means that there is approximately a [ ]% probability that either the Connexa or 2degrees site in the overlapping pair require strengthening to host an MNO.[75] Applying this to the remaining site pairs suggests that 47 of the 68 site pairs (using the MNO location categorisations) may need strengthening on one or both of the towers before being able to host an MNO. Dropping these sites out leaves 21 site pairs remaining. [

        ].

    b. **Spare space**: The Aurecon technical due diligence of the Spark tower assets notes that a tower would need to have spare effective sale area (ESA) in excess of 7.5m^2 to host an additional MNO. Based on Aurecon's sampling of Spark's towers, once Spark has its full complement of 4G and 5G equipment on towers,[76] only [ ]% of macro towers will have enough space to host another MNO. This means [ ]% will not have space for another MNO to co-locate. Applying this to the remaining site pairs suggests that [ ] of the 68 site pairs (using the MNO location categorisations) would have enough space for another MNO to co-locate.

99. Some caveats to this analysis are:

    a. We have currently excluded rooftop sites, which we understand can provide co-location, thus we may be underestimating the overlaps;

    b. It is possible that some sites would be structurally upgraded in the counterfactual; and

    c. Drawing circles is a simplistic way of assessing the substitutability of two sites, so a deep dive would likely be required on any site overlaps to determine if the sites in question are actually substitutes. Doing so would likely reduce the overlap.

6.5. MNOs can exercise countervailing power where localised market power exists

100. As set out in the previous section, there are a relatively small number of localised areas where one could argue the proposed transaction is essentially a 2-to-1 merger. Regarding the remaining overlap pairs, the following questions arise:

    a. Are the sites in question actually substitutes?

    b. Are there other non-MNO tower substitutes available in the area, such that it would be incorrect to characterise the transaction as a "2-to-1"?

[75] Following the formula of conditional probability for non-mutually exclusive events:

P(A or B) = P(A) + P(B) – P(A and B)

P(Connexa tower needs strengthening OR 2degrees tower needs strengthening) = P(Connexa tower needs strengthening) + P(2degrees tower needs strengthening) – P(Connexa tower needs strengthening AND 2degrees tower needs strengthening)

[ ] + [ ] - ([ ] *[ ]) = [ ]

[76] This is referred to in the analysis as "Load Case 2" which is Spark's standard 4G and 5G end state configuration.

c. Would MergeCo actually be incentivised to exercise any local market power it gains as a result of the proposed transaction?

101. Regarding the first two points, this would require a fact specific inquiry into the individual site pairs. Given the proxy and conservative nature of our analysis thus far, we would expect that conducting a deep dive would narrow the overlap further. At this stage we do not consider it necessary to engage in this exercise, on the basis we do not consider that MergeCo would have the incentive/ability to exercise any theoretical local market power it gains as a result of the proposed transaction. This is because the MNOs have countervailing power (and as already described for non-MNOs, they generally have alternative options).

102. Two factors suggest that MNOs would have significant countervailing power in scenarios where they face a single provider with an existing tower:

a. **MNOs have the ability to self-supply**: This is particularly strong in scenarios where light-poles would be a substitute for the site in question. We have already described in various places in this report that light poles provide a low-cost way of building towers. The ability to self-supply thus places a cap on the price a towerco can charge to co-locate without getting bypassed. While light poles do not provide the same coverage as traditional macro sites, we have already described that coverage is no longer a key dimension of competition and also note that building multiple cheap light-pole instead of co-locating on a macro site would also provide capacity benefits.

b. **MNOs can make credible threats to switch uncommitted new build requirements to other providers (or to self-supply):** As demonstrated in the previous section, the current area of overlap between the Spark and 2degrees sites where Vodafone would be likely to demand coverage is relatively narrow. So as long as the actual overlap is small relative to the future build demand of the MNOs, then MNOs could credibly threaten to punish the towerco by switching volumes away from it. While we do not know Vodafone's contractual situation or uncommitted volumes, we do know that Spark and 2degrees are forecasting uncommitted volumes that would be available for other towercos/self-supply of [ ] and [ ] respectively. This threat also goes beyond just the lost margins on forecast uncommitted volumes, as the MNOs could use these volumes to directly underwrite a new towerco rival, which would be a longer term cost to the towerco in question. While entry by a new fourth MNO does not seem likely, we note they would have a very large demand for sites and thus this threat would be even stronger.

7. Competition to build new sites

103. In the previous section we assessed competitive conditions for access to the existing footprint. In this section we consider competition to build new sites for parties requiring incremental coverage. Specifically, we discuss that:

    a. Competition *for* the market has already occurred for the majority of each MNOs future needs (section 7.1);

    b. Uncommitted volumes are exposed to price risk, but these volumes allow towercos to maintain competitive tension and would still be subject to competition from the remaining two towercos (section 7.2);

    c. Competition can occur again after the term of the contract (section 7.3);

    d. There should be sufficient competition for uncommitted volumes and after the contracts end. This is because barriers to entry/expansion and self/supply are low (section 7.4).

7.1. MNOs have agreed bilateral terms with the towercos as part of sales process

104. As described in section 3.4, Spark and 2degrees have already committed a large portion of the expected future tower needs to the towercos. We understand the same is true of Vodafone with respect to FortySouth. Therefore, the MNOs are protected from price increases for the duration of the contracts, which have a very long term of 15-20 years (with additional rights for renewal) as summarised above in Table 6.1.

105. Fixing their respective prices bilaterally with the towercos as part of the MISAs that have been separately negotiated as part of the sales processes protects each of Spark and 2degrees for the duration of their respective agreements. In this sense, competition *for* the market has occurred as part of the sales process (in relation to the BTS sites).

106. While Spark/2degrees may have the incentive to increase the access price to increase the sales price for the tower assets, this should be financially neutral as it would get compounded in the sales price. More importantly, price for these volumes is set in the counterfactual and this price does not apply to uncommitted volumes.

107. Given the existence of the BTS commitments under the contract, the potential residual concerns regarding competition to build new towers are therefore that:

    a. There would be a lessening of competition to build uncommitted towers; and

    b. Once the contract terms ends, the MNOs will be exposed to price increases.

7.2. Uncommitted volumes expose MNOs to price risk, but also maintain competitive tension

108. As noted above in section 7.1, the MNOs have not committed the entirety of their expected demand to the towercos. This means there are volumes of towers that the towercos are not guaranteed to get, so this will not be factored into the purchase price by investors, or be discounted.[77] This means the MNOs are still exposed to the price they pay on these volumes.[78]

[77] I.e. investors might place a probability <100% of the towerco building the uncommitted towers.

[78] As described in section 3.4, the MISA provides limited pricing protection for uncommitted sites.

109. Though equally, it also means that the MNOs will be able to maintain competitive tension (including for the contracted towers), as the MNOs will be able to play off the remaining two towercos against each other, and also threaten to self-supply.

110. The question then becomes whether two independent towercos plus the threat of self-supply and new entrants (e.g., American Towers) is sufficient competition (relative to the counterfactual with three towercos).

111. Given procurement of towers is essentially an auction, this is likely to be the case so long as combining Connexa and the 2degrees towerco does not materially change the cost of the second cheapest tower provider. Similar to our analysis is section 6.2, we can use auction theory to consider whether pricing outcomes would change with 2 national towercos competing to provide new builds as opposed to three.

112. Given the homogeneity of costs for constructing a new tower (due to using the same contractors and towers being simple structures), it seems unlikely that pricing outcomes would be materially different (this would only occur if Connexa and 2degrees have a material cost advantage vs FortySouth).

113. More generally, we note that building a new tower in an area that other providers do not have coverage will likely provide future co-location opportunities, and thus the two remaining towercos will be incentivised to win the contest for the anchor tenant, so that they can then sell co-location to other access seekers.

7.3. Competition can occur after the contract term

114. At the end of the MISA period, any contractual protection will no longer apply. There may therefore be concern that the proposed transaction will lessen competition at that point when the MNOs seek to negotiate a new agreement with a towerco.

115. In this regard we note:

    a. 5G and the move towards small cells may mean that at the end of the contract term the new sites MNOs require will have alternatives to towers;

    b. If barriers to entry/expansions and self-supply are low, then the proposed transaction is unlikely to materially affect competitive dynamics at the point of contract renewal; and

    c. As noted in section 2, a move towards small cells may make entry/expansion/self-supply easier (to the extent it is hard, which we address in the next section) since it will involve less tower construction.

7.4. Barriers to entry/expansion/self-supply are low

116. As noted in section 7.3, the potential residual concerns relate to competition for uncontracted volumes and in general at the end of the contract term. As long as barriers to entry/expansion/self-supply are low and there are not material economies of scale, then two independent towercos plus the ability to self-supply should provide a sufficient constraint on MergeCo to price efficiently.

117. The evidence suggests that barriers to entry/expansion and self-supply are likely to be low:

    a. **Towercos are asset managers, not asset builders:** As mentioned in section 3.3, a towerco's function is to manage/own the towers and not to build the towers. The asset-building process is outsourced to contractors who can be used by any towerco or the MNOs if they wish to self-supply. This does not appear to be a complicated business, and therefore it would not be difficult to obtain the requisite expertise to enter/expand.

b. **Constructing towers does not appear to be complex:** We have been informed that the main complexity in building a tower is obtaining a resource consent to build the tower (however, this is simplified for light-pole towers as described in section 3.1). Once this stage is cleared, the process of building the physical tower itself is relatively simple with many of the components such as the tower pole structure being built off-site (i.e., are pre-made). We have also been informed by Connexa that any contractor that is "capable of signing a PS3"[79] is able to build towers.

c. **Economies of scale to construct incremental towers appear to be limited:** Economies of scale can be a driving factor of barriers to entry in many industries, but in the recent determination on Cellnex UK Limited's acquisition of CK Hutchinson Networks' passive infrastructure, the CMA concluded that "although there are some economies of scale which may advantage larger suppliers, these are likely to be relatively limited".[80] The CMA states that while there are some benefits from scale in relation to the costs of maintaining existing or new sites, the evidence suggests that these are relatively modest.[81] It is not clear why the same is not true in the New Zealand context. In this regard we understand that there are a number of non-MNO tower owners in New Zealand (see section 3.3). Australia's Stilmark Group is an example of how new and small entrants can successfully expand as an independent towerco in the market. Established in 2013,[82] Stilmark currently has more than ~75 towers nationally,[83] suggesting a large volume of sites is not necessary to succeed.[84] More generally, the TowerXchange global league table shows that in the United States there are 28 towercos with less than 100 towers.[85] The same data source shows that globally there 65 towercos with less than 100 towers and 100 towercos with less than 200 towers. Looking into some of these smaller towercos reveals a mixture of concentrating on specific narrow geographic areas and much more opportunistic construction of strategic sites in disperse geographic areas. For example:

   i. **Prime Tower Development**: Figure 7.1 shows Prime Tower site locations, there are 10 sites in Georgia clustered around Atlanta, and a further 23 sites spread over Maryland (5), North Carolina (1), Tennessee (10) and Virginia. This suggests that small towerco economics are not contingent on having a high number of sites in a narrow geographic area.

[79] Producer statement 3 - construction (often used by the installers of proprietary systems). A producer statement is a professional opinion based on sound judgment and specialist expertise. See: https://www.building.govt.nz/projects-and-consents/apply-for-building-consent/support-your-consent-application/producer-statements/

[80] CMA, *Anticipated acquisition by Cellnex UK Limited of the passive infrastructure assets of CK Hutchison Network Europe Investments S.A R.L.* Final Report, 2022, pg. 111, para 7.33.

[81] CMA, *Anticipated acquisition by Cellnex UK Limited of the passive infrastructure assets of CK Hutchison Network Europe Investments S.A R.L.* Final Report, 2022, pg. 114, para 7.45.

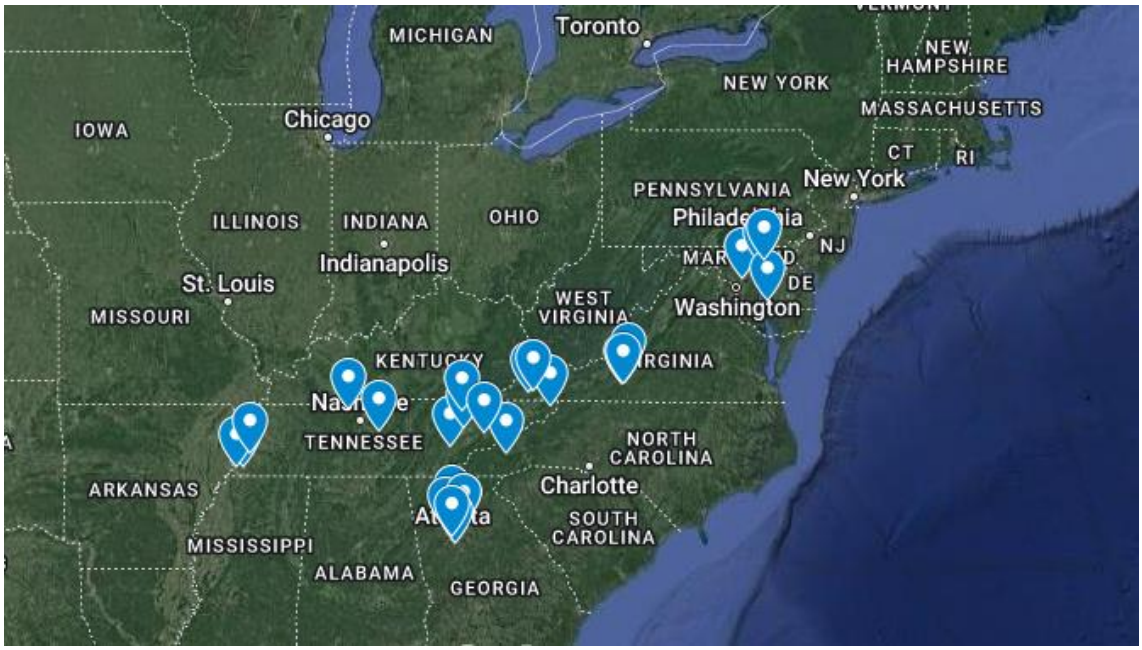
[82] Stilmark, "About Stilmark", www.stilmarkgroup.com/About-Stilmark.html

[83] Dgtl Infra, "OMERS Infrastructure Buys Stilmark, Scales Towers Presence in Australia", 22 June 2022, dgtlinfra.com/omers-infrastructure-stilmark-towers-australia

[84] Noting that Stilmark was recently acquired by OMERS. See: Omers, "OMERS Infrastructure Announces Second Agreement of 2022 to Acquire Australian Digital Infrastructure Assets", Press release, 22 June 2022.

[85] TowerXchange, "Towerco League Table Q3 22", www.towerxchange.com/Towerco-Table, accessed 28/11/2022.

Figure 7.1: Prime Tower Sites



Source: Prime Tower Development, Tower locations, www.primetowerdevelopment.com/tower-locations

ii. **Telecom Tower Group:** Figure 7.2 shows Telecom Tower Group site locations. There are 10 sites in Michigan, two sites in Alabama, two sites in Georgia, one site in Missouri, one site in Mississippi, one site in South Carolina, three sites in Tennessee and one site in Virginia.

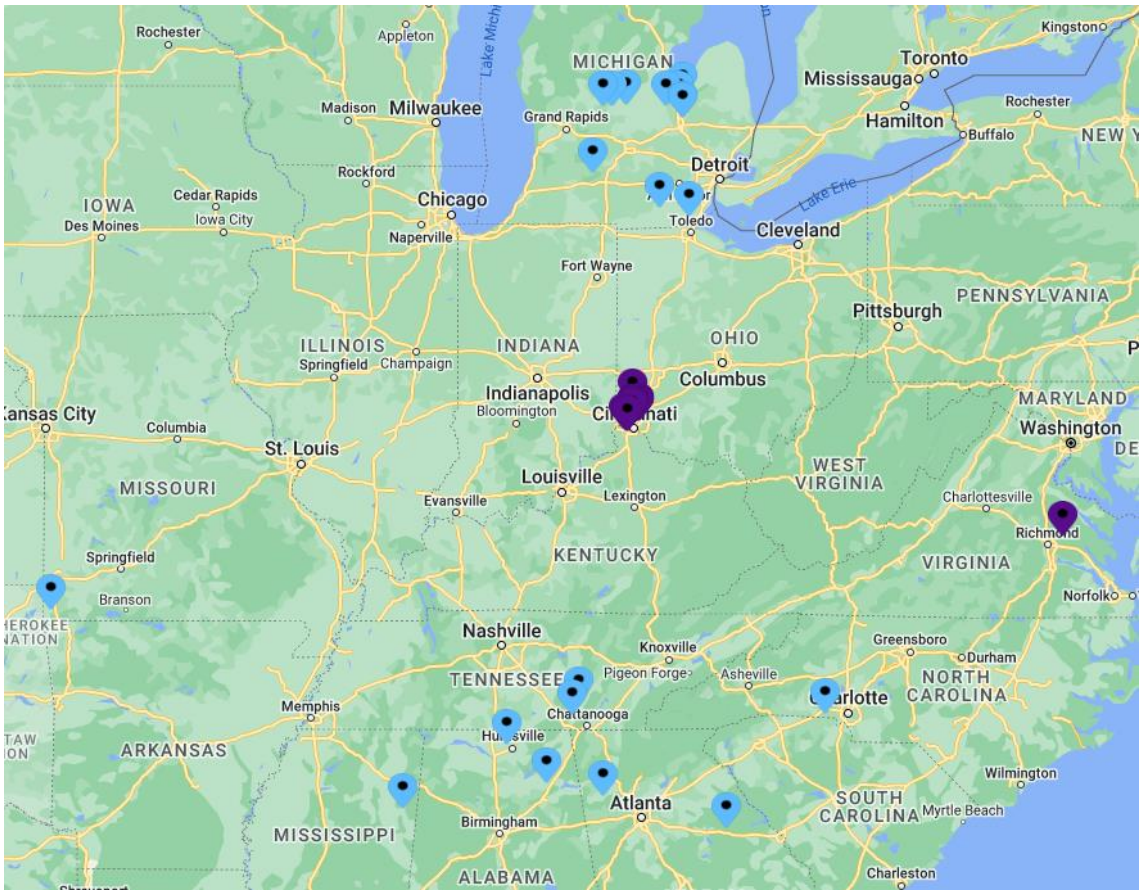
Figure 7.2: Telecom Tower Group Sites

Source: Telecom Tower Group, Site listing map, telecomtowergroup.com/ttg/sitelistingmap

iii. **Arcadia towers**: Figure 7.3 shows site locations for Arcadia Towers. Arcadia Towers appears to have started with a dense concentration of rooftop sites in urban Cincinnati

(purple towers in the map below) and now has a number of macro sites it has constructed in a broad geographic area spanning Michigan, Virginia, North Carolina, Tennessee, Georgia, Alabama, Mississippi and Missouri.

Figure 7.3: Arcadia Towers Sites



Source: https://sitetracker-arcadiatowers.secure.force.com/publicmap/?id=a0o5e000001jM74AAE

d. **Incremental costs of self-supply by MNOs are low:** While there may be concern that MNOs will no longer have the capability to self-supply tower services after spinning off their tower assets and capabilities, it appears to be low cost for an MNO to retain the capability to self-supply. This is because, even after transferring the tower assets and tower management capability to the towerco, MNOs retain core network planning, engineering, and maintenance (for active infrastructure) capacity. Because the MNOs still have infrastructure to manage and a network to plan, the incremental cost of managing tower assets on top of this retained capability is therefore unlikely to be high. In particular, the key capability that MNOs will need to retain is procurement and contract management and the MNOs will retain this capability as part of their broader operations. [

] [

]

e. **Uncommitted volumes are material and could be used to underwrite entry:** Spark and 2degrees have uncommitted volumes of [ ] and [ ] respectively, of which we understand 50% can be provided to an alternative tower provider (i.e. [ ] and [ ] towers). We expect Vodafone also has uncommitted volumes but have no information on how many sites. The Stilmark example in Australia already mentioned and the numerous small tower owners in the US suggests that there would be ample volumes available to make entry worthwhile.

As already noted, we understand American Towers is entering New Zealand. The ability to threaten to underwrite an entrant strengthens the countervailing power of MNOs we describe in section 6.5.

8. Competition to provide national coverage to new entrants

118. The preceding sections assessed competition where established downstream firms require *incremental* coverage, either through accessing existing sites or having a new site built. In this section we briefly consider the position of a new entrant that is seeking a *national* footprint, both from the perspective of a new entrant MNO and a non-MNO.

8.1. A new entrant MNO would likely be in a similar, if not stronger, position compared to existing MNOs

119. For this theory of harm, we consider the position of a new entrant MNO seeking national coverage that has the option of two national towercos in the factual and three national towercos in the counterfactual. We note that given international trends towards consolidation in the mobile sector,[86] this seems an unlikely scenario.

120. In some ways, the analysis to this question is the same as that already considered when considering incremental coverage on a more site specific basis:

    a. To the extent that the new entrant MNO is seeking to co-locate on exiting towers, the remaining two national towercos will be incentivised to compete aggressively to provide co-location where they have spare capacity.

    b. A new entrant MNO would have the option to self-supply towers. While not in the same position as an existing MNO that has recently been self-supplying, as noted already building towers is not complicated and it seems unlikely that a new entrant MNO would be a party with no experience in mobile telecommunications, or be unable to obtain that expertise.

121. Providing the national coverage overlay actually strengthens the conclusion that competitive pricing would result with two towercos. This is because a new entrant MNO seeking national coverage would be in a very strong bargaining position given the large volumes it would be seeking to place. As already noted, existing MNOs have countervailing power due to the ability to threaten to move their uncommitted volumes – a new MNO's entire volume would be "uncommitted" and therefore it would likely have greater bargaining power than existing MNOs have.

122. A new entrant MNO could also seek active sharing agreements with the existing MNOs as an alternative to acquiring passive infrastructure from the towercos and installing their own active equipment. This would provide an indirect constraint on towerco pricing and also bargaining power to the new MNO.

123. Finally, we discussed auction theory in section 7.4 and noted that the proposed acquisition is unlikely to materially change the price for incremental sites because the costs of the second cheapest bidder are unlikely to change. In a national coverage context, this framework suggests that the price obtained by a new entrant MNO might actually be lower as a result of the merger. To understand why this is, recall that auction theory suggests that mergers will raise prices when the number 1 and number 2 bidder merge. As the US Department of Justice and Federal Trade Commission Horizontal Merger Guidelines, when discussing bargaining and auction markets state that:[87]

[86] As discussed in section 2.3.

[87] U.S. Department of Justice and the Federal Trade Commission, *Horizontal Merger Guidelines*, 19 August 2010, section 6.2.

Anticompetitive unilateral effects in these settings are likely in proportion to the frequency or probability with which, prior to the merger, one of the merging sellers had been the runner-up when the other won the business.

124. In the present context, given that FortySouth and Connexa have larger tower portfolios than 2degrees, if we proxy bidder strength when providing national coverage by the size of the tower portfolio, then we would expect FortySouth and Connexa to be the number 1 and 2 bidders for a new entrant MNO's business. Thus, if the number of towers is a proxy for bidder strength, then proposed acquisition would be unlikely to combine the number 1 and number 2 bidders. In a scenario where Connexa acquiring the 2degrees towers changes it from the number 2 bidder to the number 1 bidder, this would actually improve outcomes for the new entrant MNO, as the strength of the number 2 bidder has increased as a result of the transaction. While using tower numbers as proxy for bidder strength is likely an oversimplification, the point remains that auction theory suggests a new entrant MNO would only be worse off if FortySouth is likely to be a distant third in any competitive tender to provide national coverage.

8.2. Non-MNOs are unlikely to be reliant on the towercos for national coverage

125. It is also possible that a new entrant non-MNO would seek national coverage. As a general point, we understand that no non-MNOs have sought this to date and thus this theory of harm is hypothetical. This is not because no non-MNO needs national coverage, but as we have already discussed in section 6.3, non-MNOs have alternatives to mobile towers and mobile towers are generally over-engineered for their needs. Thus, non-MNOs have lower cost means of achieving national coverage.

126. In this regard our findings are therefore essentially the same as for an existing non-MNO seeking incremental coverage. I.e., non-MNOs appear to primarily self-supply/place their equipment on structures that are not mobile towers, since mobile towers are generally over engineered for their purposes. That said, if a new non-MNO did need a national footprint on mobile towers, the presence of two national towercos would still likely provide sufficient competition. This is because the towercos would likely have "spare" capacity to host the non-MNOs, as hosting a non-MNO would be unlikely to compromise a given tower's ability to host MNO equipment or require any structural upgrades.

9. Coordination between towercos

127. The final theory of harm we address is the potential for the proposed transaction to lessen competition by increasing the potential for the remaining players in the market to collectively exercise market power in a coordinated (rather than unilateral) way. In particular, if the transaction is characterised as a 3-to-2 merger of towercos, one might consider that the proposed transaction makes coordination easier.

128. A coordinated effects analysis typically asks two questions:

    a. Is the market vulnerable to coordination?

    b. Would the proposed acquisition change conditions in the market to make coordinated behaviour more likely?

129. On its face, one might consider the towerco market is vulnerable to coordination for the following reasons:

    a. The product supplied is relatively homogenous (a "tower is a tower").

    b. There are a small number of towercos of a similar size that have strong relationships with existing customers (i.e., as a result of being spun out of the three MNOs, the market is already in some sense allocated).

    c. The towercos have a similar cost structure, given they all use the same pool of contractors to build towers.

130. However, we consider that the following factors mean that coordination would be unlikely to be sustained:

    a. **Limited barriers to entry**: As discussed in section 7.4 above, barriers to entry are unlikely to be high, meaning a third party could enter and disrupt any coordination. In effect, the concern about cost similarity is not actually a concern as costs are similar since the same contractors are available to anyone.

    b. **Existing smaller players and limited barriers to expansion:** As discussed in section 3.3, there are tower owners in New Zealand besides the towercos who could easily expand to disrupt co-ordination. In particular, American Towers have the potential to be a disruptive entrant.

    c. **Small cells mean outside alternative to towers:** If the market moves towards small cells, then future needs may not even be met by towers.

    d. **Countervailing power**: Similarly, the MNOs have countervailing market power:

        i. They can take their uncommitted volumes to other towercos, including to underwrite entry; and

        ii. They can self-supply and bypass the towerco.

    e. **High incentive to deviate**: The pricing constructs adopted by the towercos mean that hosting co-location is highly profitable. This means that:

        i. In areas where no towerco has coverage, they will be very incentivised to place the first tower and then have incumbency advantage in attracting co-location;

        ii. In areas where multiple towercos have towers already, the costs of the tower are essentially sunk and covered by the anchor tenant, so attracting additional co-location away from a rival is highly profitable when there is spare space on the tower.

131. On, this basis, we consider the market is not currently vulnerable to coordination and the proposed transaction will not change this, as none of the factors in the previous paragraph are changed by the proposed acquisition.

10. Merger may result in increased co-location, which is procompetitive

132. The proposed transaction may result in more co-location for new builds as the market transitions to an independent towerco model. The extent of the increased co-location enabled by the proposed transaction depends on the topology of future network build by both parties (i.e., small cells may not be suitable for sharing).

133. The BTS commitments, as outlined above in Table 3.3, indicate that the MNOs have committed a material proportion of their future build requirements to the towercos (e.g. Spark has committed [ ]% and 2degrees has committed [ ]% of their future demand). Of these commitments we understand the majority to be potential co-location sites. Macro towers have a potential of up to three tenants, rooftops up to two tenants and *new* light poles up to two tenants given smart pole design (existing light poles have no co-tenancy potential). Spark has committed to purchase [ ] macros and [ ] light poles. 2degrees has committed to purchase [ ] macro and [ ] light pole sites.

134. [ ] As a result of this co-location, the number of physical sites is less than the number of incremental sites demanded by Spark and 2degrees. [ ].[88]

135. More co-location would be an efficiency, though it is a fixed cost saving for MergeCo. In a clearance setting, fixed cost savings are generally ignored, although fixed costs savings can be pro-competitive (e.g., by enabling more investment) and regulators and courts have recognised this.[89] Regardless, if the MISA results in lower prices in situations where there is co-location, then this means the price in the tower access market will fall, which is relevant in a clearance context.

136. In this regard, we note the pricing terms in the Spark MISA provides discounts for anchor tenants and for co-location on committed BTS sites:

    a. **Discount for anchor tenant on a site is co-located on**: Anchor tenants benefit from a co-location discount of [ ]% when another party co-locates on the site in question. It is applicable with only new co-locations and is applied once per site, after any active sharing premium is applied.

    b. **Discount for co-locating party that is not the anchor tenant:** Spark receives a [ ] discount on the standard MISA rate card to co-locate on a site it is not the primary tenant on.

137. Increased co-location therefore translates to lower prices in the market as there are more instances of tenants paying for part of a tower rather than being a single tenant.

[88] [ ]

[89] For example, in Vodafone Hutchison Australia v ACCC, the court found that fixed cost savings can impact how much a firm can invest, and that investment is an important component of competition in mobile markets. See Vodafone Hutchison Australia Pty Limited v Australian Competition and Consumer Commission [2020] FCA 117, at [893-894].

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