



## COVERSHEET

<b>Minister</b>	Hon. Kris Faafoi	<b>Portfolio</b>	Broadcasting, Communications and Digital Media
<b>Name of package</b>	<i>Renewal of radio spectrum management rights in the 1800 &amp; 2100 megahertz frequency bands</i>	<b>Date of issue</b>	25 February 2019

### List of documents that have been proactively released

<b>Date</b>	<b>Title</b>	<b>Author</b>
Lodged 25 February 2019	<i>Renewal of radio spectrum management rights in the 1800 &amp; 2100 megahertz frequency bands</i>	<i>Office of Hon. Kris Faafoi</i>

### Information withheld

Some parts of this information release are not appropriate to be released and, if requested, would be withheld under the Official Information Act 1982 (the Act). Where this is the case, the relevant sections of the Act that would apply have been identified and are listed below. Where information has been withheld, no public interest has been identified that would outweigh the reasons for withholding it.

<b>Section of the Act</b>	<b>Reason for withholding</b>
9(2)(b)(ii)	<i>To protect information where the making available of the information would be likely unreasonably to prejudice the commercial position of the person who supplied or who is the subject of the information</i>
9(2)(ba)(i)	<i>To protect information which is subject to an obligation of confidence or which any person has been or could be compelled to provide under the authority of any enactment, where the making available of the information would be likely to prejudice the supply of similar information, or information from the same source, and it is in the public interest that such information should continue to be supplied</i>
9(2)(f)(iii)	<i>To maintain the constitutional conventions for the time being which protect the political neutrality of officials</i>
9(2)(f)(iv)	<i>To maintain the constitutional conventions for the time being which protect the confidentiality of advice tendered by Ministers of the Crown and officials</i>
9(2)(i)	<i>To enable a Minister of the Crown or any department or organisation holding the information to carry out, without prejudice or disadvantage, commercial activities</i>
9(2)(j)	<i>To enable a Minister of the Crown or any department or organisation holding the information to carry out, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations)</i>

## COMMERCIAL IN CONFIDENCE

Office of the Minister of Broadcasting, Communications and Digital Media  
Chair, Cabinet Economic Development Committee

### RENEWAL OF RADIO SPECTRUM MANAGEMENT RIGHTS IN THE 1800 & 2100 MEGAHERTZ FREQUENCY BANDS

#### Proposal

1. This paper seeks Cabinet's approval to offer radio spectrum management rights in the 1800 and 2100 megahertz (MHz) frequency bands to Spark, Vodafone, and 2degrees, at a fixed price, to replace existing rights that will expire in 2021<sup>1</sup>.

#### Executive Summary

2. 2degrees, Spark, Telstra, and Vodafone have rights to use radio spectrum in the 1800 MHz and 2100 MHz frequency bands. These rights, known as *management rights*, are used to provide 3rd and 4th generation (3G and 4G) mobile phone services, it is likely that you have used these services when making a mobile call.
3. The management rights will expire in 2021 and decisions need to be taken about whether or not to renew them. The key policy question is how to balance the interest of existing management right holders, who would prefer to retain all their spectrum, against the value of having some vacant spectrum available to respond to alternative demands and technological development.
4. I am recommending that offers be made to renew the rights *in part*. Specifically, I recommend that offers be made to each of 2degrees, Spark, and Vodafone to:
  - 4.1. renew their rights to 40 MHz of spectrum in the 1800 MHz band (they currently hold 50 MHz); and
  - 4.2. renew all their rights in the 2100 MHz band (Telstra's rights to 10 MHz of spectrum are unused and would not be renewed).

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<sup>1</sup> A megahertz (MHz) is a unit of radio frequency. For example, you can listen to Radio New Zealand in Wellington by tuning your radio to 101.3 MHz.

5. The partial renewal would free up 30 MHz of spectrum in the 1800 MHz band and 10 MHz in the 2100 MHz band. The freed up spectrum could be allocated to a new entrant to the mobile market to increase competition, allocated for emergency services, used for some newly emerging technology, or put to some other use. If no new use were identified, the freed up spectrum could also be offered back to existing holders.
6. As a result of the partial renewal, existing management right holders are likely to have to bring forward some investment to compensate for reduced spectrum holdings and avoid any reduction in the quality of service. Officials advise that at current rates of demand-growth, this investment would probably have had to be undertaken soon anyway. The costs of bringing forward investment are offset by lower payments for the renewed management rights; with partial renewal, less spectrum is purchased and so less is paid.
7. I recommend that renewed rights be priced at \$720,000 per MHz excluding GST. Price ranges were provided by a UK consultant, Plum Consulting, using two methods. Officials arrived at the final figure as a compromise between the ranges for the two methods. At this price, the total value of renewal offers will be \$165.6 million excluding GST.
8. Payment for renewed rights would be made by payment in full or, at the option of the purchaser, by annual instalments over 5 years. Payment by instalments would increase the probability that all existing operators could afford to take up renewal offers, and would therefore support continued competition in the mobile market. A quasi-market interest rate, determined in conjunction with Treasury, would apply to payments by instalment.
9. The term of renewed rights would be 20 years.
10. Safeguards would be put in place to ensure that spectrum access is retained for Rural Connectivity Group cell sites, to meet obligations to provide rural broadband under the second phase of the Rural Broadband Initiative (RBI2).

## **Background**

### *Radio waves*

11. Radio waves are used in a wide range of applications, including mobile telephony, broadcasting, airport radar, and satellite communication. Radio transmissions for a particular application use a specified frequency or block of frequencies. For example, if you scan through the FM stations on your car radio you can see that FM uses the block of frequencies from 87–108 megahertz (MHz).

12. Transmissions at different frequencies have different characteristics. For instance, lower frequency transmissions can often travel further over land than higher frequency transmissions, and some frequencies can penetrate the atmosphere more easily than others for satellite communications. For this reason, particular applications are better suited to some frequencies than others.

#### *Allocation of radio spectrum*

13. People talk about allocating spectrum – ranges of radio frequencies – to different uses and users. The Ministry of Business, Innovation and Employment allocates spectrum using powers in the Radiocommunications Act 1989. Spectrum is allocated so that the range of frequencies allocated for each use is appropriate for that use, and so that transmissions by each user do not cause harmful interference to other users. Spectrum is also allocated in a way that meets New Zealand’s international obligations under the International Radio Regulations.
14. One of the ways to allocate spectrum is to grant a management right to a person. A management right effectively gives the person exclusive rights to use spectrum for up to 20 years. Management rights are used to allocate spectrum for mobile phone services in New Zealand.

#### **The reason for this paper – management rights expiring**

15. In 2021, radio spectrum management rights currently held by Spark, Vodafone, 2degrees<sup>2</sup>, and Telstra will expire.
16. The rights are in the 1800 MHz and 2100 MHz frequency bands, which are used to provide 4th generation (4G) and 3rd generation (3G) cellular mobile services respectively<sup>3</sup>. When you use your mobile phone, or a 4G wireless broadband router at home, there is a reasonable probability that you are using these bands at least some of the time. 4G is used for data. 3G is used for ordinary voice calls as well as data.
17. Table 1 shows the quantity of spectrum (in MHz) covered by each management right. Note that in the 1800 MHz band all right holders except Telstra have the same amount of spectrum, while in the 2100 MHz band Vodafone has significantly more spectrum than other right holders. Telstra does not currently use its 2100 MHz right<sup>4</sup>.

**Table 1: Current spectrum allocation in 1800 MHz and 2100 MHz frequency bands**

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<sup>2</sup> More accurately, 2degrees has some management rights and makes use of other management rights that are owned by Hautaki Limited. Hautaki Limited is owned by Te Huarahi Tika Trust, a charitable trust that seeks to increase the participation of Māori in the information and telecommunications sectors. In most cases in this Cabinet paper, references to 2degrees implicitly include Hautaki Limited.

<sup>3</sup> The 2100 MHz band was originally a 3G band and that has been its main use, but there is now some use of 4G in the band and this is increasing

<sup>4</sup> As well as management rights, there are also spectrum licences that were issued to some legacy users of the band. These are legal encumbrances on the management rights.

<b>Network operator</b>	<b>Spectrum, 1800 MHz band</b>	<b>Spectrum, 2100 MHz band</b>
<b>2degrees</b>	50 MHz	30 MHz
<b>Spark</b>	50 MHz	30 MHz
<b>Telstra</b>	0 MHz	10 MHz
<b>Vodafone</b>	50 MHz	50 MHz

18. There is no legal requirement to renew management rights when they expire. However, there has been an expectation that rights will be renewed if:
- 18.1. the rights are being actively used; and
  - 18.2. there are no public policy grounds to allocate the spectrum to some other use.
19. Decisions need to be made about:
- 19.1. whether to renew none, some, or all of the expiring management rights; and
  - 19.2. the terms that would apply to any renewal.
20. Making the decisions in advance of expiry will give the holders of management rights certainty about their future spectrum holdings and enable better planning of future investment.

### **Options for renewal**

21. I consider that a substantial portion of existing management rights should be renewed by direct offer to 2degrees, Spark, and Vodafone.
22. There was public consultation on a number of renewal options, including:
- 22.1. renewal of all rights (implicitly, by direct offer to current holders);
  - 22.2. partial renewal of rights (again, by direct offer), with the remainder of rights reserved for later allocation in some manner to be decided<sup>5</sup>; and
  - 22.3. no renewal of rights by direct offer, with *all* rights reserved for latter allocation on a "first principles" basis, possibly by auction.

<sup>5</sup> Several options for partial renewal were presented. In the 1800 MHz band, options included renewing 30 of 50 MHz for each of 2degrees, Spark, and Vodafone, or renewing 40 of 50 MHz. In the 2100 MHz band, there were options to reduce Vodafone's allocation from 50 MHz to 30 or 40 MHz (with full renewal for 2degrees and Spark and no renewal for Telstra).

23. However, officials have advised that only options (22.1) and (22.2) could provide sufficient certainty that existing mobile operators will be able to continue to provide services to existing customers and accommodate future growth. Without this certainty, there could be significantly reduced investment in mobile capacity in the bands, and customers could become concerned about loss of connectivity or service quality in 2021. Therefore, option (22.3) has not been further considered.
24. The partial renewal options would free up some spectrum in the 1800 and 2100 MHz bands. The freed up spectrum could be allocated to some new network operator, such as a fourth entrant into the consumer mobile market, or a completely new use, such as an emergency services network. Alternatively, if no other user or use was identified, the spectrum could eventually be offered back to the companies that have it now.
25. Under the full or partial renewal options, existing operators would not necessarily get the same block of spectrum as they have now. The positions of blocks within the band might be changed to ensure efficient use of spectrum. For instance, any freed up spectrum could be consolidated into a single block; this would require moving other blocks around.
26. As well as options for the *amount* of spectrum to be renewed, there are also options for the *terms* of any renewal.
- 26.1. Life of rights renewed by direct offer
- 26.1.1. 5, 10, or 20 years from the date of expiry of the current rights (3 options)
- 26.1.2. Align with expiry dates of management rights in other bands in 2031 (this option was included in consultation with the mobile network operators but not in wider public consultation)
- 26.1.3. Any other life (less than 20 years)
- 26.2. Method for determining price of spectrum renewed by direct offer
- 26.2.1. Set price equal to the expected net cash flows from the use of the spectrum over its life ("full enterprise" method)
- 26.2.2. Set price equal to the additional costs that the operator would face if the spectrum was not renewed ("optimal deprivation" method)
- 26.2.3. Set prices based on those paid for similar spectrum overseas ("international benchmarking")
- 26.3. Payment options for spectrum renewed by direct offer

- 26.3.1. Lump sum payment
- 26.3.2. Payment in instalments.

27. Finally, there are options to renew or not renew some "legacy" spectrum licences within the bands. These licences were granted when current management rights were created, to the existing occupants of the bands at that time. There is no intention to renew these licences. Holders of the licences have had many years to make alternative arrangements. This option is not further discussed in this paper.

### Criteria for evaluating renewal options

28. Several criteria are used to assess whether to have full or partial renewal (by direct offer) of existing management rights. These were discussed in consultation with mobile network operators, or in wider public consultation.
- 28.1. **Efficiency.** How much does the option promote efficient use of the spectrum? That is, under the chosen option, would all of the spectrum be in use, and would this use be valuable?
  - 28.2. **Competition.** How much does the option ensure that there is adequate competition in the cellular mobile (or other) markets?
  - 28.3. **Capacity and coverage.** How much does the option affect the capacity and coverage of services, including existing cellular mobile services?
  - 28.4. **Certainty for operators.** How consistent is the option with giving operators certainty about their future rights to use spectrum?
  - 28.5. **Crown revenue.** How does the option affect Crown revenue?
  - 28.6. **Public policy.** Is there some public policy reason (other than the ones above) to favour the option over others? This could include compliance with international obligations.

### Criteria for evaluating renewal options

29. Table 2 summarises officials' evaluation of the full and partial renewal options. For the partial renewal options, the assessment is somewhat uncertain because the alternative use of un-renewed spectrum, and the method for allocating it, is yet to be determined.

**Table 2: Summary evaluation of options**

<b>Renewal:</b>	<b>Full</b>	<b>Partial</b>
Efficiency	High	Depends on alternative use (difference likely modest)
Competition	Cuts off possibility of new entrants (in these bands)	Possibility of new entrants
Capacity & coverage	No change	Some minor capacity reduction for existing mobile services. Potentially an increase for alternative uses
Operator certainty	Maximum certainty	Some reduction in certainty (goes against historical expectations, although this would not be the first case where rights have not been renewed in full)
Crown revenue	Likely highest proceeds	Depends on alternative use
Other public policy	Cuts off options for use of spectrum, to respond to technological changes or other new demands	Allows for some use of spectrum, to respond to technological changes or other new demands

30. I am recommending that there be partial renewal of spectrum in the 1800 MHz band and full renewal in the 2100 MHz band (with the exception of Telstra's 10 MHz block, which will not be renewed). Specifically, I am recommending that 40 out of 50 MHz of each existing holding in the 1800 MHz band be renewed, and that all 2degrees', Spark's, and Vodafone's holdings in the 2100 MHz band be renewed.

31. This option is expected to have only modest impacts on operator certainty, Crown revenue<sup>6</sup>, and the capacity and coverage of existing services (though see further comments in the *Consultation* section below).

32. At the same time, partial renewal opens up possibilities for new entrants to the cellular mobile market, or some other new use of freed up spectrum.

33. One suggestion for a new use is a new emergency services radio network. Based on current plans this will require a cellular mobile band that is not at too high a frequency. Existing rights over *other* cellular bands cannot be

<sup>6</sup> Spectrum pricing is discussed later in this paper. At the price I am proposing to charge, partial renewal would reduce Crown revenue by, at most, \$28.8 million (excluding GST), from of a maximum possible figure of \$194.4 million. (The maximum assumes renewal offers are made for all existing rights, and that those offers are all accepted. The reduction assumes that no revenue is received from the new use to which the retained spectrum is eventually allocated). In the Crown accounts revenue is spread over the life of a management right, so for 20 year management rights \$28.8 million would be recognised as approximately \$1.4 million each year.



freed up for a long time, and the 1800 and 2100 MHz bands are the only suitable options currently identified. Other potential uses for the 1800 and 2100 MHz bands might arise as radio technology continues to develop rapidly. [REDACTED] s 9(2)(f)(iii) and s 9(2)(f)(iv) and s 9(2)(j)

[REDACTED] If no new entrant or new use emerges after a reasonable period of time, it would also be open to the government to offer the freed up spectrum back to the companies that have it now.

34. The flexibility to put spectrum to another use in future is valuable. Rights to use spectrum are generally allocated for a significant period, so that right holders have sufficient time to realise a return on associated investments in equipment and business development. A drawback of the longer terms is that, once allocated, spectrum is locked up for a considerable time. So if new technologies arise, there is less spectrum available to implement this. Delaying the allocation of some spectrum can reduce this problem.

#### **Renewal terms**

35. I am recommending that the rights that are renewed – partially or wholly – be renewed for a period of 20 years. This should provide the right incentives for investment in use of the band: it will ensure that new assets can be used over a long period to recover up front costs.
36. Renewal would be by direct offer, at a fixed price of \$720,000 excluding GST per MHz. This price has been determined using a combination of optimal deprival and international benchmarking valuation methods (there is further discussion of pricing later in this paper).
37. Offers would be for generic blocks of spectrum in each band, with the precise location of those blocks to be determined at a later date.

#### **Option to pay in instalments**

38. I recommend that all operators accepting renewal offers have a choice to pay the offer price in a lump sum following acceptance, or to pay in equal annual instalments over five years (the first payment to follow acceptance of the offer), with interest charged at a rate that reflects commercial risk.
39. The offer of an instalment option has been used before in New Zealand but requires some further explanation.

40. Instalment payments, which are treated as loans in the government's accounts, are suitable for companies with short-term cash-flow constraints, for the obvious reason that the payments are spread over time. s 9(2)(b)(ii)

[REDACTED]

41. In the general case, it is not necessary that companies effectively borrow from the government. They could borrow privately, for example by issuing bonds or borrowing from a bank. Indeed, private borrowing would usually be preferable, because the government is not a financier for private companies and would prefer not to have to manage the risk of lending on its balance sheet.

42. There are two reasons why government-provided instalment terms could be sensible in this specific case.

43. The first reason is that the risks the government is facing in this case are not exactly the same as those a private lender faces. The government is giving a management right, which it has created at no cost and which it can take back if there is failure to pay (the Crown will have a first-ranking mortgage over the management right). It gets back what it has lent.<sup>8</sup> A private lender, in contrast, would be providing cash which would be used to purchase a management right. If the private lender took back the management right, there is no guarantee that it could be sold for the amount of cash that was lent. In short, it could be difficult to find a private lender willing to accept a management right as security without charging a high interest rate or reducing the principal amount.

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s 9(2)(b)(ii)

<sup>8</sup> Two caveats are necessary here. (1) Strictly speaking, there is a loss for the government which is equal to the difference between the present values of (a) the payments it could have received from an up-front payment and (b) the payments it has actually received from the defaulting mortgagee plus the payments it can obtain from reselling the right after default. The question is what payments there would have been if only up-front terms had been available; competition concerns would presumably have made it undesirable for other incumbents to acquire the spectrum, and there has not been a raft of potential new entrants seeking spectrum in recent allocations. s 9(2)(i) and s 9(2)(j)

[REDACTED]

44. The second reason is that competition in the mobile market has significant benefits. Since the entry of 2degrees into the market, prices have come down steadily even as free calling minutes and data allowances have increased. It is likely that at least some of this reduction is the result of an extra competitor. If the government provides instalment terms at an interest rate that reflects the government's risk and a mobile operator could not obtain such favourable terms from a private lender, this could enable the operator to renew a greater amount of its management rights than it would otherwise be able to. Alternatively, it might enable the operator to maintain more of its investment in physical infrastructure rather than using its debt capacity for high-interest funding for management rights. Both of these would foster continued competition.

## s 9(2)(b)(ii)

46. Offering payment in instalments will require the prior approval of the Minister of Finance under the Public Finance Act. The Minister may approve such payments if "*it appears to the Minister to be necessary or expedient in the public interest to do so*".

47. Interest on instalment payments would be charged at a quasi-market rate.

s 9(2)(b)(ii)

Final rates would need to be determined closer to the time that offers are made, to take into account the most recent market movements.

48. I recommend that determination of the final interest rate be delegated to me and the Minister of Finance; we would jointly agree on a rate based on Treasury's estimate.

49. The payments would be secured by a mortgage placed against the title to the rights in the Register of Radio Frequencies. This would secure the Crown's interest until all installments are paid.

50. On final payment the mortgage would be discharged. There is currently no statutory mechanism for maintaining a hold on the rights once they are fully paid, so the government's ability to influence future ownership of the rights would then cease. In practice this may not be a significant problem. The company could not operate a cellular network without the rights, so on-sale of the rights would only be likely in the case of receivership or a liquidation event. In that case it is highly likely that the best interests of consumers would be served by a new owner taking over all of the company's assets and continuing the business. If, however, the Crown had a continuing interest in the assets this would complicate any on-sale and make it more difficult for a new company to step in and recommence services. In addition, it may make it much harder for the company to borrow privately (because of the perception that the government could render the company valueless at any time).

## Consultation

### *Public consultation*

51. There were two rounds of consultation on renewal of management rights in the 1800 MHz and 2100 MHz bands. The first round was limited to mobile network operators; the second round was public consultation.

### *Views of mobile network operators*

52. In their formal submissions following consultation, mobile network operators were in favour of renewing all existing rights in the 1800 MHz band. Spark and Vodafone also supported the renewal of all existing rights in the 2100 MHz band, but 2degrees preferred that allocations in that band be made equal (recalling that Vodafone currently has 50 MHz and the other operators have 30 MHz).

53. In subsequent communications with MBIE, Vodafone has argued that non-renewal of any rights in the 1800 MHz band would be significantly disruptive to its activities.

54. Vodafone has used its allocation in the 1800 MHz band as the backbone of its 4th generation (4G) mobile network, and has invested in equipment which can use all 50 MHz of its allocation in that band. Vodafone is increasingly rolling out equipment for the 700 MHz band and is beginning to re-purpose some of its allocation in the 2100 MHz band to provide greater 4G capacity, but nevertheless Vodafone says that it will also need all of its 1800 MHz allocation to accommodate rapid demand growth.

55. Vodafone says that removing 10 MHz of its allocation in the 1800 MHz band would be especially problematic in rural areas. As part of the first phase of the Rural Broadband Initiative (RBI) Vodafone is contracted to provide 3G mobile and wireless broadband services at a number of rural sites, and has voluntarily provided 4G at some of those sites. It says it is already at capacity at approximately 40 sites and that demand continues to grow. Vodafone is also part of the Rural Connectivity Group (RCG) that is

contracted to provide 4G services as part of the second phase of the RBI. The RCG contract allows s 9(2)(i) and s 9(2)(j) spectrum allocations are reduced, in some circumstances. (Note that MBIE's response to these points is given in paragraphs 63-68 and that Recommendation 22 fully mitigates the risk to the RCG contract.)

#### *Other views*

56. **The Police**, on behalf of the Next Generation Critical Communications programme (NGCC), submitted that 30 MHz of spectrum should be retained for emergency service uses (and possibly other government uses), with the rest allocated to mobile network operators.
57. The submission indicated that the Police, Fire and Emergency New Zealand, Wellington Free Ambulance, and St John, have been working together to develop a business case to move existing emergency communications to commercial cellular networks.
58. The submission argued that it will be helpful for the NGCC to have access to some dedicated radio spectrum to provide "itinerant coverage", such as coverage from a cell site located in an emergency vehicle. Dedicated radio spectrum could also be useful to provide additional capacity to emergency services at times when commercial networks are very congested.
59. It was submitted that spectrum in the 1800 MHz band would be most useful to the NGCC because this band is most commonly used for 4G services around the world, and will also be able to be used for 5th generation services when they become available. This means there would be a wide supply of equipment for emergency services.
60. I note that the question of spectrum for emergency services is distinct from the question of who provides the NG-CC with the services. There are, for example, arguments (which remain to be tested) that dedicated spectrum will still be needed even if the NG-CC services are provided by a commercial operator.
61. **Blue Reach**, a wireless communications provider that has owned management rights in other frequency bands, argued that 60 MHz should be put aside for auction to new entrants (the existing mobile network operators would be excluded from this allocation). The remaining 210 MHz of spectrum would be separately auctioned to mobile network operators<sup>9</sup>
62. The **New Zealand Technology Group**, which provides business support services to businesses in the information and communications industry, argued that a shared-spectrum model should be used in the 1800 MHz and 2100 MHz bands. In particular, the Group pointed to the "Managed

s 9(2)(b)(ii) and s 9(2)(ba)(i)

Spectrum Park” model which is used for some regional radiocommunications providers in the 2500 MHz band in New Zealand.

*Ministry of Business, Innovation and Employment’s view*

63. A partial renewal which results in non-renewal of 10 MHz for each of 2degrees, Spark, and Vodafone will result in a relatively small change in overall spectrum availability for those companies (see Table 3).

**Table 3: Spectrum allocation in all cellular mobile bands below 3000 MHz**

	Current allocation	Proposed	Change
<b>2degrees</b>	119.60 MHz	109.60 MHz	8%
<b>Spark</b>	259.97 MHz	249.97 MHz	4%
<b>Vodafone</b>	195.40 MHz	185.40 MHz	5%

64. 2degrees has spectrum allocations for cellular mobile in four frequency bands, Spark in six, and Vodafone in five (including the 1800 MHz and 2100 MHz bands considered in this paper). For each operator, MBIE estimates that only a small proportion of cell sites are making use of all the available bands.<sup>10</sup>
65. MBIE’s view is that non-renewal of a relatively small amount of spectrum in the 1800 MHz band will require mobile network operators to bring forward some investment, if they are to avoid reducing the quality of service. However, any cell sites operating at near-full capacity are likely to be profitable and therefore worthy of further private investment. In many cases it should be possible to increase capacity by installing additional equipment that makes use of other bands that are currently not fully utilised. In a small number of cases additional cell sites might be required. At current rates of demand growth, MBIE considers that this investment would have had to be undertaken relatively soon anyway. In addition, the government is working to make spectrum in other (new) bands available to mobile network operators, to implement 5th generation (5G) mobile technologies by approximately 2020. This is expected to add substantially to the total amount of spectrum available, and will help mobile network operators to accommodate increases in demand without needing to build as many additional sites.

<sup>10</sup> Usage figures are based on spectrum licence data from MBIE’s database of rights to use radio spectrum. Data is entered and maintained by the mobile network operators and is subject to error.

66. MBIE acknowledges that bringing investment forward comes at a financial cost to network operators. This cost needs to be compared to the expense that operators would incur to purchase more spectrum, if it were available to them. At the spectrum price proposed in this paper, an additional 10 MHz of spectrum for a provider would cost \$7.2 million excluding GST. This money can instead be used for additional network investment.
67. MBIE expects that this saving to operators will largely offset any additional network infrastructure costs. MBIE also notes that, although it is impossible to quantify, a broader economic assessment of the costs and benefits would also include the value to the government of having the flexibility to allocate the spectrum to another use, should that prove justified.
68. MBIE also acknowledges that the contractual terms for the second phase of the Rural Broadband Initiative (RBI2) include s 9(2)(i) and s 9(2)(j) spectrum allocations s 9(2)(i) and s 9(2)(j). To address this, this paper proposes that the Rural Connectivity Group should be granted spectrum licences, at no cost, as required to meet the RBI2 obligations it signed up to in 2017. These licences would be a legal encumbrance on new management rights.

#### *Consultation with Treasury*

69. There was consultation with Treasury about the proposals in this paper. Treasury has provided a statement of its views:

*'Treasury is generally supportive of this paper's proposal to renew spectrum rights. However, Treasury does not support the proposal for payments for renewed rights to be made by instalment over 5 years. As the paper notes, payment by instalment is treated as a loan in the Crown accounts. Consequently, there should be a clear policy rationale for why the government would act as a financier to a private company. s 9(2)(b)(ii)*

*We also note that there may be questions around the Crown's ability to rescind management rights for those paying by instalment, particularly considering the high cost that would be imposed on customers of affected providers.'*

70. Officials at MBIE consider that the rationale for instalment payments is provided in the material beginning on page 8. The risk that Treasury has identified about the Crown's ability to rescind management rights is noted in footnote 8. Unfortunately, despite the explanations in those passages, these remain issues that departments have not been able to reach agreement on. This is reflected in the recommendations at the end of the paper.

## Pricing

71. Officials contracted an international valuation company (Plum) to value the bands.
72. Following consultation with the mobile network operators, it was decided that Plum would use two valuation methods:

72.1. *The optimal deprivation method.* In broad concept, the valuation process is:

- 72.1.1. determine the service an efficient operator would deliver if it had the block of spectrum to be priced, and
- 72.1.2. work out how much extra the efficient operator would need to invest to deliver the same service, if the block of spectrum were taken away.

The extra amount of investment is the price.

2degrees, Spark, and Vodafone provided information to Plum that was used in the valuation process.

- 72.2. The international benchmarking method. This method uses prices paid overseas, adjusted for differences between New Zealand and other countries, as a proxy for the New Zealand price.
73. Plum produced a range of prices using the two methods. Prices using the optimal deprivation method were lower than those using the benchmarking method (ranges did not overlap).
74. Officials decided on a final figure of \$720,000 excluding GST per MHz. This represents a balance between the two methods used. At this rate, total offer prices would be \$64.8 million excluding GST for Vodafone and \$50.4 million excluding GST for Spark and 2degrees. The spectrum that would be reserved by the Government for future allocation would have a value of \$28.8 million excluding GST.

## Financial Implications

75. If the recommendations of this paper are accepted then:
  - 75.1. the total value of renewal offers will be \$165.6 million excluding GST;
  - 75.2. in the Crown accounts, revenue from the sale of management rights will be spread over the life of the management rights (20 years in this case); and
  - 75.3. if any mobile network operators take up the option to pay in instalments, interest revenue will be recognised as it accrues.



76. As the interest rate for the instalment payment option would be determined by reference to market interest rates, no appropriation would be required.

### The renewal offers

77. Following the Cabinet decisions sought in this paper, MBIE will draft formal renewal offer contracts, for consideration by the parties being offered the new management rights. [REDACTED] s 9(2)(j)

78. [REDACTED] s 9(2)(j)

### Legislative Implications

79. There are no legislative implications arising from the proposals.

### Publicity

80. My office will manage communications associated with the renewal of management rights in the 1800 MHz and 2100 MHz frequency bands, in consultation with other offices as appropriate.

81. MBIE will inform the affected parties.

### Recommendations

82. The Minister of Broadcasting, Communications and Digital Media recommends that the Committee:

1. **Note** that 2degrees, Spark, Telstra, and Vodafone have rights over radio spectrum (*management rights*) that will expire in 2021. 2degrees owns some of its own management rights and accesses others through Hautaki Limited. Hautaki is the commercial arm of a charitable trust that aims to encourage Māori participation in the information and communications technology sector.
2. **Note** that these existing management rights are in the 1800 megahertz (MHz) frequency band, which is used to provide 4th generation mobile phone services, and the 2100 MHz band, which is used to provide 3rd generation mobile phone services (Telstra's rights are currently unused).
3. **Note** that a Cabinet decision is required to renew any existing management rights when they expire.
4. **Note** that there is no legal requirement to renew management rights when they expire, but that in the past there has been an expectation of renewal if rights are in use and there are no overriding public policy considerations.

5. **Note** that the renewal of all existing management rights would allow mobile network operators to continue providing services with least inconvenience and cost to them, and that mobile network operators have expressed a preference for this option.
6. At the same time, **note** the complete renewal of all existing management rights would reduce options for potential alternative uses of radio spectrum, such as uses by new technologies or new competitors in the mobile phone market.
7. **Note** that the Police, Blue Reach (a wireless service provider), and the New Zealand Technology Group (which provides services to some wireless service providers) have argued against full renewal of existing rights.
8. **Agree**, balancing the considerations above, to make *partial* renewal offers to 2degrees, Spark, and Vodafone, and a full renewal offer to Hautaki, in accordance with the following table:

	1800 MHz band		2100 MHz band	
	Current rights	Renewal offer	Current rights	Renewal offer
<b>2degrees</b>	50 MHz	40 MHz	0 MHz	0 MHz
<b>Hautaki</b>	0 MHz	0 MHz	30 MHz	30 MHz
<b>Spark</b>	50 MHz	40 MHz	30 MHz	30 MHz
<b>Telstra</b>	0 MHz	0 MHz	10 MHz	0 MHz
<b>Vodafone</b>	50 MHz	40 MHz	50 MHz	50 MHz

9. **Note** that offers would be for generic blocks of spectrum in each band, with the precise arrangement of blocks within the band to be determined at a later time (operators would be required to retune their equipment once final positions are determined).
10. **Note** that the partial renewal offer will require network operators to bring forward some investment and that this will involve a cost, but that this cost should be compared to what operators would need to pay for additional spectrum if it were offered.
11. **Agree** that renewal offers be made directly to the companies concerned, at a price of \$720,000 excluding GST per MHz.
12. **Note** that prices were determined with the assistance of an external consultant from the United Kingdom (Plum Consulting).
13. s 9(2)(b)(ii)

14. **Note** that, under the Public finance Act (1989), the Minister of Finance may agree to allow lending (i.e. payment by instalments) if it is necessary or expedient in the public interest to do so.
15. **Note** that the Treasury opposes the use of instalment payments in this case, but that officials at the Ministry of Business, Innovation and Employment are in favour of allowing them.

**EITHER (Treasury recommendation)**

16. **Agree** that payment be required in full before the new rights are issued.

**OR (MBIE recommendations)**

17. **Agree** that companies accepting renewal offers will have the option to make payment immediately, or to pay by equal yearly instalments over five years.
  - 17.1 **Note** that officials will prepare a letter for the Minister of Finance to authorise the offer of instalment terms.
  - 17.2 **Authorise** the Minister of Finance and the Minister of Broadcasting, Communications and Digital Media, acting jointly, to determine the final interest rate for instalment payments, based on Treasury's current method for determining a quasi-market rate of interest.
  - 17.3 **Note** that because the interest rate for instalment payments would be based on market rates, no appropriation would be required.
18. **Agree** that renewals be for 20 years, to maximise incentives for operators to invest in use of their new rights.
19. **Note** that 30 MHz of spectrum in the 1800 MHz band, and 10 MHz in the 2100 MHz band, would not be renewed, and that this could be put to some other use in future or, if no other use is found, offered back to the current holders.
20. **Agree** that Crown management rights be created over the non-renewed spectrum, to enable later allocation as management rights or spectrum licences.
21. **Note** that as part of initiatives to provide broadband in rural areas, some existing contractual arrangements **s 9(2)(i) and s 9(2)(j)**
22. **Agree** that conditions be added to new management rights, as necessary, to ensure that the holder of any management right is obliged to provide a spectrum licence, at no charge, to allow the Rural Connectivity Group to use existing holdings of 1800MHz and 2100 MHz spectrum to meet existing contractual obligations in rural areas.

23. [REDACTED] s 9(2)(j)  
[REDACTED]

24. [REDACTED] s 9(2)(j)  
[REDACTED]  
[REDACTED]  
[REDACTED]

Authorised for lodgement

Hon Kris Faafoi

Minister of Broadcasting, Communications and Digital Media

PROACTIVELY RELEASED