Submission on the Commerce Commission's specified points of interconnection consultation paper

26 November 2019

CH●RUS

OVERVIEW AND SUMMARY OF ISSUES

Introduction

1   This submission responds to the Commerce Commission's (**Commission**) Specified Points of Interconnection Consultation Paper of 12 November 2019 (**Paper**). We welcome this opportunity given the importance of the specified points of interconnection to the operation and regulation of our fibre services.

2   We understand the Commission is using its power in section 231 of the Telecommunications Act (**Act**) to codify all points of interconnection that apply under the UFB initiative, and specify the UFB initiative areas to which they relate.

3   Section 231 has both a regulatory purpose and an operational purpose. From a regulatory perspective, the specified points of interconnection delineate the boundary of the regulated fibre fixed line access services and define specified fibre areas. Operationally, retail service providers (**RSPs**) need a unified list of the available points of interconnection, which function as handover points. The list of prescribed points of interconnection needs to continue to meet both these requirements going forward. We have set out our position on the key issues arising from the Commission's prescription of points of interconnection under section 231 in light of these purposes.

4   The Act requires the Commission to prescribe points of interconnection based on those that apply as at 31 December 2019. This should be a straightforward task that involves understanding which points of interconnection are provided for under our agreements with CIP, any that exist for fibre services outside of UFB areas and reflected in the agreements currently in place between Chorus and our customers. Our agreements currently provide for points of interconnection for both layer 1 and layer 2 services. The Act does not give the Commission discretion on which points of interconnection under the UFB initiative to apply for its first notice. Accordingly, the Commission's notice must include both layer 1 and layer 2 points of interconnection. If they are not all included, that raises uncertainty as to the regulatory implications as layer 1 handover points are key to defining our layer 1 services, for example, our direct fibre access service (**DFAS**).

5   The Commission also has the power to include additional points of interconnection beyond the UFB initiative. The provision of this power recognises that there may be good reasons to include additional points of interconnection, and accordingly to ensure there is a mechanism, as exists today, that enables points of interconnection to continue to evolve. Any departure from the existing flexibility could have unintended consequences for network developments and resilience.

Preliminary Interpretation Issue

6   When describing points of interconnection, precision is important. In this submission, we use references to "POI" and "point of interconnection" consistent with the way they are defined in the UFB initiative contract (**NIPA**) between Chorus and Crown Infrastructure Partners (**CIP**):

CH●RUS

6.1 "points of interconnection" refer to points where an access seeker's network can connect to Chorus' fibre network, including layer 1 and layer 2 handover points; and

6.2 "POI" refers to the layer 2 points of interconnection that are listed in Annexure 4 of Schedule 5 of the NIPA to serve a Network Stage.

7 In other words, POI is a subset of points of interconnection, not an abbreviation for the same thing.[1] This is important as it impacts the scope of the Commission's powers under section 231 of the Act. Functionally, both the POIs for our layer 2 services, and the points of interconnection for our layer 1 services, allow for RSPs to "interconnect" with our network. The RSP may pick up traffic at that particular Central Office (**CO**) itself or use our backhaul, third party backhaul, or the RSP may provide its own backhaul to transport the access traffic to another CO.

Key Issues

8 The key issues and points of difference and agreement with the Commission's position in the Paper are:

8.1 We disagree with the Commission's position that it should not specify layer 1 points of interconnection. The NIPA is the starting point for the definition of points of interconnection and the NIPA recognises that points of interconnection refers to both layer 2 points of interconnection (known as POIs) and layer 1 points of interconnection. This also reflects the actual layer 1 and layer 2 network architecture. Accordingly both layer 1 and layer 2 points of interconnection should be specified under section 231.

8.2 We agree with the Commission's starting point of ensuring there is at least one specified point of interconnection for all end-users within each candidate area. However, it is inaccurate to state that there is a single point of interconnection per candidate area, either as a matter of contract or operational reality. The NIPA[2] provides for a *minimum* of one point of interconnection per candidate areas but specifically requires more than one point of interconnection in some cases.

8.3 We also agree with using the Operations Manuals under the NIPA to identify these initial specified points of interconnection, but (in addition to the above point that there is more than one point of interconnection in some candidate areas) there have been additional points of interconnection added in several areas for various reasons. As a result the Commission's proposed list of specified points of interconnection as at 31 December 2019 does not reflect all operational points of interconnection.

---

[1] Accordingly, all POIs (layer 2 points of interconnection) are also layer 1 points of interconnection; but not all layer 1 points of interconnection are POIs (layer 2 points of interconnection).

[2] Clause 28 of Schedule 3 Annexure 2 of the NIPA.

C H ● R U S

8.4   We agree with the format and (generally) the content of the Commission's list of points of interconnection, although we have identified some errors. There is a reference in the Paper to specifying the geographic area covered by each specified POI, but ultimately this information would be difficult to include in a table like the one proposed, and kept up to date as UFB2 is still being built. We think it is sufficient for the table to specify the location of the layer 2 POI it was created to service by referring to the UFB1 candidate area.

8.5   We agree with the Commission's proposal that the relevant physical address for each point of interconnection should only be provided on a confidential basis.

8.6   We have identified some errors with the Commission's proposed table of "Chorus POIs" and attach an updated list, including additional points of interconnection that are currently operational. We also attach a confidential table with planned or in progress layer 2 points of interconnection, and provide proposed tables specifying points of interconnection for layer 1 (see Appendices C and D).

8.7   It is important that the Commission's power under section 231 is exercised in such a way as to accommodate necessary operational changes to the list of specified points of interconnection. The process for changing points of interconnection is currently managed through appropriate industry consultation and associated change provisions (as required by the Wholesale Services Agreement[3] (**WSA**)), followed by recommendations for changes to CIP without additional consultation. If CIP approves the changes, they take effect with specified notice periods. As the Commission becomes responsible for changes to the list of specified points of connection under section 231, we expect that the Commission will operate in a similar manner to CIP. In particular, it is critical that we can continue to make appropriate network configuration changes, for example, the removal or addition of points of interconnection to deal with capacity constraints at existing points of interconnection, meet demand requirements and ensure network resilience).

9   We address each of these issues below and respond to the Commission's consultation questions in Appendix A.

LAYER 1/LAYER 2 POINTS OF INTERCONNECTION

10   We reiterate the point made in our submission on Fibre Emerging Views[4] that the Commission should prescribe, under section 231, the specified points of interconnection for both layer 1 and layer 2 services as the fibre handover points are different for each layer, and as recognised in the NIPA today. The identification of different points of interconnection for layer 1 and layer 2 is important because these points determine the scope of the regulated service for each of layer 1 and layer 2 (as the Act regulates particular fibre access services, not the network itself).

---

[3]   Clause 3.1 and 24 of the General Terms of the WSA.

[4]   Chorus submission on the Commerce Commission's fibre regulation emerging views paper, dated 21 May 2019.

11   As we understand, the Commission's position that it should not specify layer 1 points of interconnection is based on its:

11.1   Interpretation of the NIPA;

11.2   Assumption, consistent with an assumption made by the Select Committee in commenting on the Telecommunications (New Regulatory Framework) Amendment Bill, that there is only one point of interconnection per candidate area; and

11.3   View that multiple points of interconnection per end-user is inconsistent with taking a "single network" approach to the definition of "fibre network".

12   However, both the NIPA and a correct understanding of our network architecture support multiple points of interconnection, including at layer 1 and layer 2, being specified. This approach is not inconsistent with a "single fibre network" approach to the Act.

Points of interconnection under the NIPA

13   The Commission is required in its first notice to prescribe points of interconnection based on the points of interconnection that apply under the UFB initiative, although it is not limited to only UFB points of interconnection.[5] As the Act doesn't define "points of interconnection", the starting point should be how this term is used in the contracts governing the UFB initiative.

14   The definition of "points of interconnection" evolved between the NIPA for UFB1 and NIPA for UFB2. However, the current definition in the UFB2 NIPA clearly covers not just the points we colloquially refer to as "POIs" but also to the central office or other point of interconnection to the network. The UFB2 NIPA contains the relevant definitions:[6]

14.1   "CO" as "the point at which an RSP will connect to the Dark Fibre Services";

14.2   "POI" as "the Point of Interconnection … identified in Annexure 4 of Schedule 5 of the POI used (or to be used) to serve a Network Stage"; and

14.3   "Point of Interconnection" as "in respect of any dark fibre wholesale services, the CO or point of interconnection to the Network and, in respect of all other wholesale services, the point of interconnection to the Network".

15   In the UFB1 NIPA, "points of interconnection" was not a defined term. However, Schedule 5 defined "Interconnection Point" in the same terms as the UFB2 contract defines "Point of Interconnection" and the change between the NIPA versions is consistent with the natural interpretation that 'interconnection point' and 'point of interconnection' are interchangeable. Furthermore, the WSA also uses the term

---

5   Section 231(5) of the Act.

6   Schedule 1 of the NIPA for UFB2.

"Interconnection Point" throughout, including in the change mechanism in clause 3.1 (which covers changes to points of interconnection).

16   The Commission's characterisation of the points of interconnection it must prescribe under section 231 appears to be based primarily on the definition of "POI" in the NIPA for UFB1. In the Paper, the Commission uses the definition "POI" to refer to points of interconnection both in a general and specific sense, and has excluded layer 1 points of interconnection from the scope of its powers of prescription, on the basis that the layer 1 handover points are not referred to as "POIs" in the NIPAs.

17   This is an incorrect characterisation because "POI" is a subset of "points of interconnection" as that term is used in the NIPA. References to "points of interconnection" are properly interpreted as referring to both CO handover points (i.e. layer 1 points of interconnection) as well as what we commonly refer to as POIs (i.e. layer 2 points of interconnection). Accordingly, the specified points of interconnection under section 231 should cover both layer 1 and layer 2 with separate lists acknowledging that each has different handover points.

18   Despite conflating points of interconnection with "POI" in the NIPA, the Paper appears to recognise that layer 1 and layer 2 services have different handover points:[7]

> The NIPAs consistently make a distinction between layer 2 handover points, which are called POIs, and layer 1 handover points, which are referred to as being located at a Central Office (which is not also a POI).

19   This view is consistent with our submission – except that a layer 1 handover point at a CO is not a "POI", which according to the NIPA definition means a layer 2 point of interconnection, but is nevertheless a "point of interconnection".

20   The operational distinction and interaction between layer 1 and layer 2 points of interconnection is illustrated in the diagram below. The diagram depicts the Nelson candidate area and the layer 1 points of interconnection in each Exchange Service Area (**ESA**) serving the layer 1 access network and the layer 2 POI serving the whole candidate area.

---

[7]   See paragraph 30 of the Paper.

Nelson UFB1 Candidate Area

| RD | Layer 1 point of interconnection | | NN | Layer 2 POI | | | Central Office | | Exchange Service Area | | UFB Candidate Area |
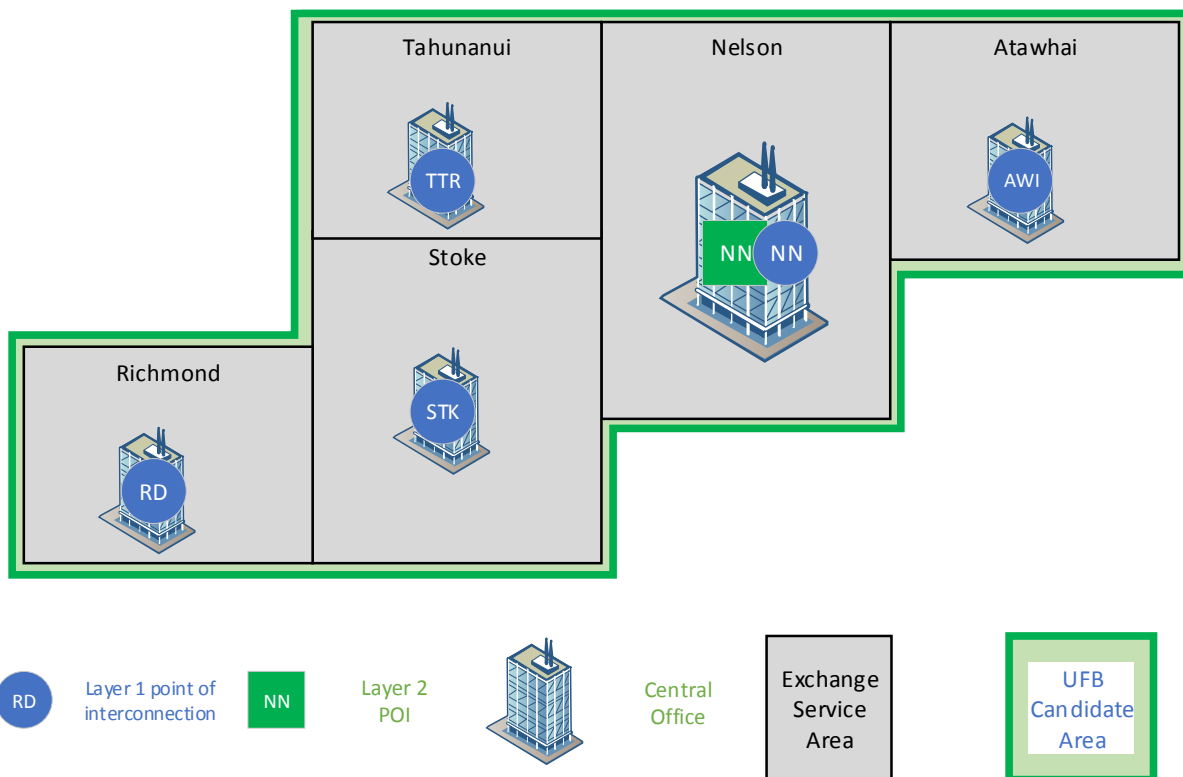
21   In the Commission's draft input methodology decision paper, it also explained that:[8]

> … we do not consider that prescribing POIs at the layer 1 aggregation points on the network is consistent with the words of the Act. In our view, to specify POIs at different layers of a network is not consistent with the definition of a single 'fibre network' in s 5.

22   The definition of "fibre network" in the Act[9] does not specify that there must be a "single" fibre network.

23   In any case, our approach is not inconsistent with a single fibre network. The definition of the "fibre network" is simply the "network structure" used to deliver telecommunications services over a fibre media connection between an end-user and a regulated fibre service provider's fibre handover point. This is capable of encompassing all fibre links between an end-user and the points of interconnection that serve that end-user. As we explain below, there may be (and are) multiple layer 2 points of interconnection for a given end-user. Accordingly, the definition of "fibre

---

[8]   At 2.82 of the Decision Paper.

[9]   Section 5 of the Act.

network" does not cast any light on the interpretation of points of interconnection in section 231.

24   In addition, it is unclear how the Commission's approach would affect assets used to provide only layer 1 services. If the Commission is correct that a specified point of interconnection cannot include a layer 1 handover point, and the definition of "fibre network" includes only those assets between a layer 2 point of interconnection and the end-user, then this would theoretically mean that any layer 1 assets that do not form part of this connection would not be within the "fibre network".[10] This cannot have been Parliament's intention to apply different treatment to layer 1 vs layer 2 assets depending on variances of network architecture.
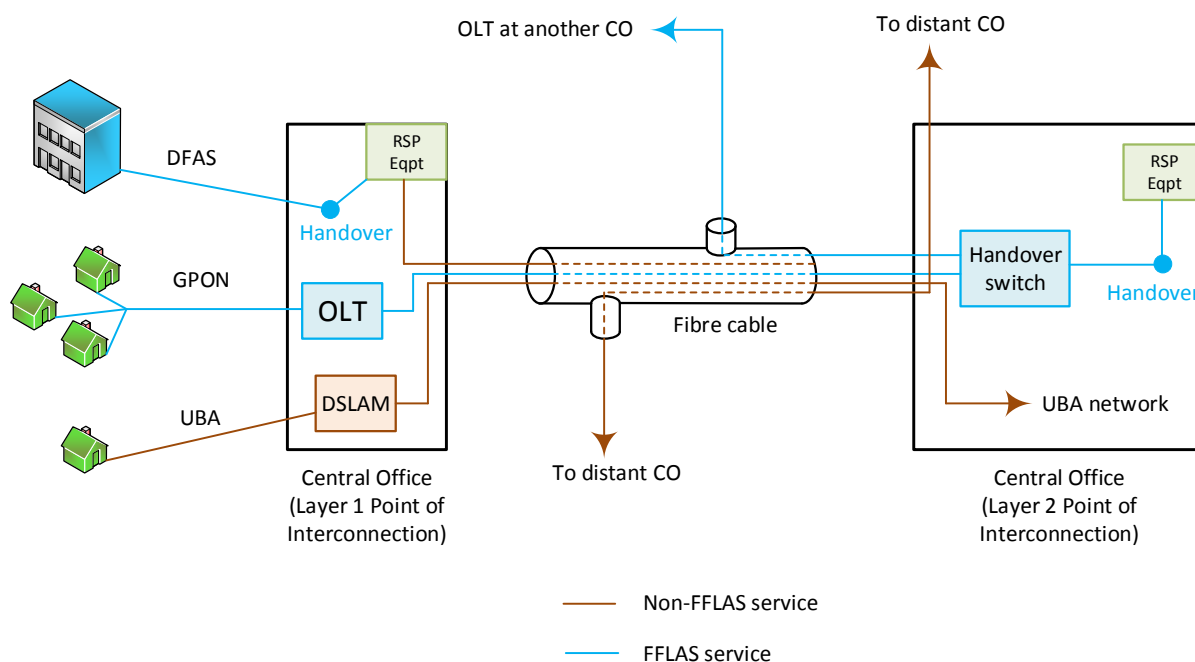
25   The figure above illustrates a typical urban case, with a DFAS handover at the serving CO (the layer 1 point of interconnect) and layer 2 services (e.g. Bitstream 2) handover at another CO specified as a layer 2 point of interconnection. Note that the fibre network between the two COs supports both FFLAS and non-FFLAS services – a combination of commercial backhaul and copper services in this case. Both layer 1 and layer 2 services are bounded by a handover point (the blue dot) at a point of interconnection, at which Chorus and RSP networks interconnect.

26   We welcome the opportunity to further engage with the Commission on a technical level to ensure a common understanding of these issues.

---

[10] For example, see diagram below at paragraph 37.

CHORUS

Identifying POIs

27   Every candidate area has a POI (i.e. a layer 2 point of interconnection) but it is incorrect to proceed on the basis that there is a single POI for each candidate area.

28   The Commission has started from the point that there is a "1:1 relationship" between POIs and a candidate area based on its reliance on a requirement in the UFB1 NIPA that "[all] layer 2 end-users within a Candidate Area must be accessible from a single POI".[11]

29   It also relied on the Select Committee's description of points of interconnection, which also appears to be based a similar reading of the clause in the UFB1 NIPA:[12]

> POIs are the places where the retail service provider's network connects to the wholesale fibre provider's network. A feature of the Ultra-fast Broadband (UFB) architecture is a single POI per candidate area, driving competition and supporting open access.

30   The Commission's reading of the NIPA requirement (that all end-users within a candidate area must be accessible from a single POI, i.e. a layer 2 point of interconnection) appears to overlook the fact that it is a *minimum* requirement. It does not follow that there is only a single point of connection for an end-user; the requirement is that there must be *at least* one. Furthermore, in some cases more than one POI is *required* (i.e. if there are more than 50,000 connections). Clause 28 of Annexure 2 to Schedule 3 provides:

> A sole POI in a Candidate Area must not support more than 50,000 Layer 2 End Users. Where a Candidate Area has more than 50,000 End Users, then at least two POIs must be supplied, and each POI must provide access to all End Users at the standard price and terms.

31   Accordingly, the reference in the NIPA to a "single POI" does not mean that there must only be one POI in each candidate area, but simply means that each POI must enable access to all surrounding end-users to RSPs. This is implicitly acknowledged in the Commission's own draft list of POIs, which includes three POIs for Auckland.

32   It would not be appropriate to give any weight to the Select Committee description of a single POI per candidate area, as the Select Committee was not specifically considering the nature or delineation of POIs at the time (the comment was in the context of removing the Minister's power to specify points of interconnection[13]). It is a reasonable starting basis that there was a POI per candidate area; provided it is understood this was a minimum only.

[11]   Clause 28 of Annexure 2 to Schedule 3 of the UFB1 NIPA.

[12]   At page 6.

[13]   This power was inserted in an earlier version of the Bill.

33   In addition, in practice additional POIs have been added since the original list in the Operations Manual, for various reasons, including capacity constraints at an existing POI. This has resulted in moving further away from the 1:1 relationship as increasingly a candidate area will have more than one point of interconnection. The potential for this is also acknowledged in the NIPA[14] (which provides that it "does not preclude [Chorus] from offering additional optional POIs within a Candidate Area"). These "alternate POIs" enable us to facilitate growth where we cannot do so at an existing POI.

34   A recent example of utilisation of this option was the addition of several POIs to manage network resilience and growth, where Rugby World Cup demand forecasts confirmed the need to bring forward the provisioning of these POIs to ensure sufficient handover capacity was available to serve the peak demands expected for the event. This resulted in adding POIs to existing candidate areas (including Wellington, Invercargill, Napier/Hastings and Hamilton). These resulting new POIs were practically agreed with RSPs (with CIP's knowledge) with the intention that CIP would formally approve them for addition to the list in the Operations Manuals. Therefore there are 5 new POIs that should be included in any list prescribed by the Commission, and have been included in our list at Appendix 1 as the list of POIs operational as at 31 December 2019.

35   In addition, the suggestion that there should be a "1:1 relationship" between a POI and end-user in a UFB candidate area also does not address situations where an end-user or access point is outside a UFB candidate area.

36   The most significant example of this situation is a layer 1 DFAS service between a remote non-building access point (**NBAP**) (such as a mobile tower) or some other end-user's premises (e.g. a factory) and a rural central office building or exchange that is not within a UFB candidate area. Chorus understands that these services are intended to fall within the scope of Part 6 regulation. However, in the case of these services there is no layer 2 POI associated with the service because the service is provided outside of the UFB initiative, and in fact is outside of a candidate area. It would be artificial – and inconsistent with the way in which the services are provided – to assign these access points to a notional POI within the UFB initiative. The relevant service and regulated fibre network is between the NBAP and layer 1 handover point. This again is consistent with the Commission specifying layer 1 points of interconnection under section 231.

37   The figure below illustrates a rural case (based on Apiti, in the northern Rangitikei). There is a DFAS service provided from the CO (and layer 1 point of interconnection) at Apiti, connected by a commercial backhaul service to the layer 2 point of interconnection in Palmerston North. Apiti is outside of all UFB candidate areas.
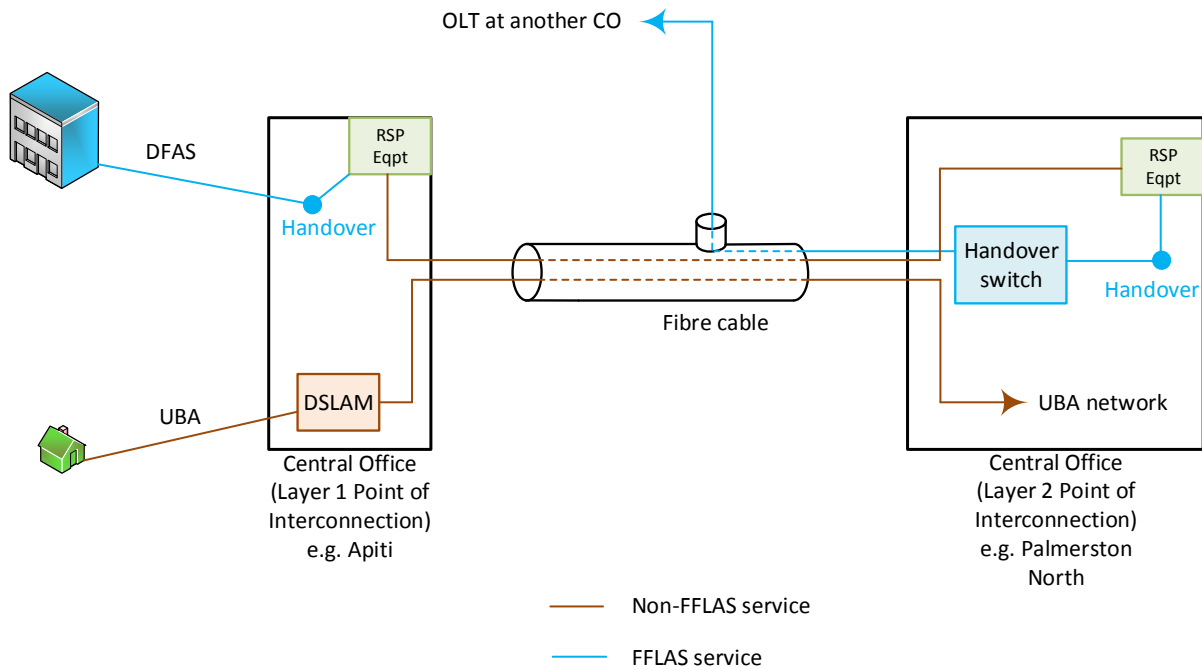
FORMATTING THE LIST

38   Generally, we agree with the Commission's proposed format and content of the list of points of interconnection. We agree that the physical addresses should be provided on a confidential basis only.

39   While we support the Commission's proposed approach in paragraph 34 of its Paper (to specify the related geographic areas serviced by a specified point of connection), the Commission's proposed table reflects the difficulty of specifying the relevant geographic area in this format. While information about points of interconnection changes relatively infrequently, this geographic information would be difficult to include and keep up to date in a table like the one proposed, as UFB2 is still being built. We think it is sufficient for the table to specify the location of the layer 2 POI it was created to service by referring to the UFB1 candidate area (as all UFB1 POIs are also UFB2 POIs),[15] and have proposed this in Appendix B.

40   As noted in our summary, we have attached (see Appendices B-D):

40.1 An updated list of "Chorus POIs" that corrects errors and includes additional POIs that are currently operational;

40.2 A confidential table with planned or in progress layer 2 points of interconnection; and

---

[15]   Clause 2.5 in Annexure 1 of Schedule 3 of the UFB2 NIPA requires that all Bitstream services must terminate on an existing aggregation point (such as one of the UFB1 POIs), unless otherwise agreed by CIP.

40.3 Tables for layer 1 points of interconnection (in line with our position above) – one for UFB1 and one for UFB2. These should be separated from the layer 2 table as there are a much greater number of layer 1 points of interconnection than layer 2 POIs.

PROCESS FOR CHANGING PRESCRIBED POINTS OF INTERCONNECTION

The current context

41   Chorus recognises points of interconnection are of major significance for both Chorus and RSPs. Changing them is not undertaken lightly. However, as a responsible and prudent network operator Chorus will from time to time need to add or remove points of interconnection for various reasons. Planning points of interconnection is a complex balance of commercial, technical and customer risk management. The main drivers for adding points of interconnection are that capacity at existing points of connection need to be managed to avoid a risky concentration of connections. This is because there are existing constraints that impede Chorus' ability to support bandwidth and connection growth or for improved resilience of Chorus and RSP networks.

42   Since the introduction of UFB a number of new points of interconnection have been added, which provide options for RSPs. Existing points of interconnection have in some cases become 'capped' in terms of capacity in third party sites where Chorus has not been able to obtain permission from the relevant third party to add equipment or augment existing equipment, e.g. Mayoral Drive, Glenfield, and Wellington. Where a site is capped Chorus has made managed capacity by establishing an alternative site to serve growth. Recent growth above previous forecasts (partly spurred by Rugby World Cup preparation) has meant that additional POIs were added earlier in 2019 under some urgency (these have not yet been formally added to the Operations Manual although change process is in flight with industry and CIP).

43   New points of connection have to date been optional – RSPs are not forced to migrate if they have sufficient capacity at existing POIs.

44   The change processes are currently based on contractual arrangements with RSPs (which include consultation requirements using contractual mechanisms, such as the Change Management and Product Forum[16]), followed by approval by CIP where required by the NIPA. Where changes are driven by wider network configurations, CIP generally approves the changes to points of interconnection as a necessary consequence of such network changes.

45   CIP has taken a pragmatic approach to the addition of, and identification of, points of interconnection where the NIPA wording doesn't make sense. For example, under the UFB1 NIPA it was envisaged that the candidate areas of Waiheke Island, Waiuku and Pukekohe would be served by their own POIs. However in practice it was more

---

[16]   Clause 24.8 of the General Terms of the WSA.

prudent and efficient to manage the network by diverting handovers to central Auckland POIs (i.e. Mayoral Drive, Mt Eden and Glenfield POIs). This effectively meant that the five original Auckland candidate areas of Auckland North, Auckland South, Pukekohe, Waiuku and Waiheke Island were served by three central POIs, i.e. it removed the need for these new POIs. This was a joint Chorus- and RSP-led solution that benefitted all parties, as it meant that neither had to invest in expensive equipment for a relatively small area that could be more efficiently and cost effectively served by other POIs. CIP acknowledged this and the necessary network configuration was approved.

46   To date, we have only added new points of interconnection, but there is a real possibility that conditions may one day exist where it would be appropriate to remove a POI, for example where a site is uneconomic to maintain or repair (e.g. due to structural issues caused by the Christchurch earthquakes to the Christchurch Exchange), or where inability to add or augment equipment to some sites may render those sites unusable as points of interconnection. While we do not expect this to happen in the immediate future, it is likely to be an issue in the next three to five years.

Process going forward

47   The Commission is able to prescribe new points of interconnection or amend an existing notice listing points of interconnection.

48   We appreciate the Commission's current process regarding the initial list of points of interconnection, including providing consultation. This is useful to ensure that the transition from the current framework governed by the NIPA to the legislative framework is smooth and that the Commission is fully informed so that its prescribed list reflects the points of interconnection in operation. This has been a useful exercise in clarifying the content and format of the proposed list.

49   Once there is an established list of existing points of interconnection in an agreed format as a result of this initial process, we anticipate that the Commission would exercise its powers under section 231 in a similar manner to the way CIP has done so under NIPA. CIP has been satisfied that if the industry has been consulted (where the WSA requires) then the industry is best placed to determine point of interconnection changes. In particular, as the WSA continues to be in force and contractually oblige an appropriate level of industry consultation for certain proposed changes, we would not envisage that further public consultation would be needed before the Commission prescribed changes to points of interconnection that had been through this consultation process.

50   It is vital that the Commission recognises the importance for Chorus and RSPs to have the ability to change points of interconnection when the network constraints or limitations require it (including adding or withdrawing a point of interconnection).[17]

51   Any substantive change to the existing process (especially if it involves additional steps such as public consultation by the Commission) could hamper flexibility and

---

[17] Clause 3.1, 24.1 and 24.7 of the General Terms of the WSA.

efficiency. Although the actual declaration of points of interconnection changes is relatively infrequent, the process for consideration of appropriate points of interconnection, including the possibility of new points of interconnection, is an ongoing and nearly continuous one. The introduction of new process steps or a reduction in the speed at which point of interconnection changes are approved could lead to potential efficiencies in the fibre network not being realised or being delayed.

APPENDIX A: CHORUS RESPONSE TO THE COMMISSIONS QUESTIONS

Q#	Commission question	Chorus response
1	Do you agree that the UFB initiative POIs are those POIs that were implemented to satisfy the single POI per candidate area requirement under the NIPAs?	As set out in our submission, with regards to layer 2 there is a one POI per candidate area *minimum* requirement. The "UFB initiative POIs" therefore includes the POIs that meet this minimum requirement but it also includes: - The additional POIs in candidate areas with more than 50,000 users (as required by the NIPA). - In practice, some of the identified candidate areas in the NIPA were unworkable, so by agreement with CIP these were annexed (see Auckland example above paragraph 38). - The list of POIs is an evolving one, with new POIs being added (through agreement with CIP). Therefore the UFB initiative POIs need to be updated for the current list. Our proposed table in Appendix B includes the POIs described above.
2	Do you agree that the UFB initiative POIs are limited to POIs at layer 2 handover points?	We don't agree that the Act limits the Commission to including only the UFB initiative POIs for layer 2 handover points under section 231 of the Act. This is inconsistent with the NIPA today that includes both layer 1 and layer 2 points of interconnection, as explained above. Instead the Commission is required to include points of interconnection for both layer 1 and layer 2 services under section 231. It can also include additional points of interconnection as the UFB initiative is only the starting point. As explained above, the UFB initiative set points of interconnection for layer 1 and layer 2 services. The term "POI" is used to refer to layer 2 handover points but these are simply a subset of the points of interconnection under the CIP agreements. See above section, "Layer1/layer 2 points of interconnection".

3	Is the list of UFB initiative POIs and their associated details in Attachment A complete and correct?	We have identified some errors with the Commission's proposed table of "Chorus POIs".
		A corrected version of the Commission's list is attached as Appendix B, this contains layer 2 POIs only.
		We propose that the Commission specify a separate table for layer 1 points of interconnection and we have provided a list in Appendix D.
		We have also provided a confidential list (Appendix C) of planned or works in progress layer 2 POIs, this demonstrates the dynamic and evolving nature of the network, and the necessity to preserve our ability to change and add POIs where appropriate and required.
4	Do you agree with our proposal in paragraph 34 above? That is, for each specified POI, to specify that its related end-user premises, buildings, or other access points are those that are within the POI's associated geographic area/s under the UFB initiative, plus any other end-user premises, buildings, or other access points that are associated with the POI.	Yes, we agree that each specified point of interconnection should have specified end-user premises or access points within a point of interconnection associated area whether UFB initiative or not. We are not sure what the best way to achieve this is, as the proposed table doesn't appear to do this (and it is probably not practicable to do so within the table).
5	Are you aware of any end-user premises, buildings, or other access points for whom fibre fixed line access services are available but that are not, or cannot be, associated with a UFB initiative POI? If so, how should we treat these?	Some layer 1 services are not associated with a layer 2 POI, but are associated with a layer 1 point of interconnection. However, this would typically occur where the layer 1 service is not associated with the UFB initiative.
		These (non-UFB initiative) layer 1 services are associated with a CO through which the service is delivered, and is the layer 1 point of interconnection (i.e. not a UFB initiative point of interconnection). These are not included in Appendix D, but they should be included in the Commission's notice of specified points of interconnection. We are working on this list and will share this with the Commission.
		It is unlikely that for any new locations where we offer layer 2 services, the layer 2 service would not be associated with an existing layer 2 POI. However, new layer 1 services might require addition of a new CO to the list of layer 1 points of interconnection.
		To reiterate, and as described above, the network is dynamic and continuously evolving and it is vital that network operators' ability and flexibility to make

		prudent and efficient changes where appropriate is not unreasonably curtailed.
6	Do you see any advantages in alternative approach of identifying related end-user premises, buildings, or other access points by reference to SFAs?	No. We consider this would be circular – if defining points of interconnection is needed in order to identify SFAs, then SFAs cannot be used to define POIs.
7	In circumstances where there is a future extension to a fibre network outside of the UFB initiative, rather than specifying a new POI, should we specify that end-user premises, buildings, or other access points served by the new fibre network be related to an existing UFB initiative POI?	Generally speaking and where prudent to do so, our starting point is existing UFB points of interconnection (see above Question 5), but it is subject to demand and capacity where we need flexibility to respond, which may require new points of interconnection.
8	Are there any other details we should provide for each POI?	Layer 1 points of interconnection should be included. We have no additional changes.
9	Are you aware of any UFB initiative POIs that are not in the list in Attachment A but will exist as at the close of 31 December 2019?	Yes – as noted above we have attached an updated list.

APPENDIX B: AMENDED COMMISSION LIST OF CHORUS LAYER 2 POIS

	POI ID	Name	Region	UFB1 initiative geographic area *Not funded by the UFB1 initiative but located in that geographic area
1	AR	Ashburton Exchange	Canterbury	Ashburton
2	BM	Blenheim Exchange	Marlborough	Blenheim
3	CH	Christchurch Central Exchange	Canterbury	Christchurch*, Rangiora and Rolleston
4	CPC	Courtney Place Exchange	Wellington	Wellington
5	DN	Dunedin Exchange	Otago	Dunedin
6	FG	Feilding Exchange	Manawatu-Whanganui	Feilding and Palmerston North
7	FOR	Forest Hill Exchange	Auckland	Auckland, Pukekohe, Waiheke Island and Waiuku
8	FJN	Frankton Exchange	Waikato	Hamilton*
9	GS	Gisborne Exchange	Gisborne	Gisborne
10	GLF	Glenfield Exchange	Auckland	Auckland, Pukekohe, Waiheke Island and Waiuku
11	GM	Greymouth Exchange	West Coast	Greymouth
12	HN	Hamilton Exchange	Waikato	Hamilton
13	HBN	Hastings Exchange	Hawkes Bay	Napier/ Hastings
14	IN	Invercargill Exchange	Southland	Invercargill
15	KNG	Kensington Exchange	Northland	Whangarei
16	LVN	Levin Exchange	Manawatu-Whanganui	Levin
17	MS	Masterton Exchange	Wellington	Masterton
18	MDR	Mayoral Drive Exchange	Auckland	Auckland, Pukekohe, Waiheke Island and Waiuku
19	MAW	Marewa Exchange	Hawkes Bay	Napier/ Hastings
20	MOD	Mount Eden Exchange	Auckland	Auckland, Pukekohe, Waiheke Island and Waiuku

	POI ID	Name	Region	UFB1 initiative geographic area *Not funded by the UFB1 initiative but located in that geographic area
21	NA	Napier Exchange	Hawkes Bay	Napier / Hastings
22	NN	Nelson Exchange	Nelson	Nelson
23	NU	New Plymouth Exchange	Taranaki	New Plymouth
24	OU	Oamaru Exchange	Otago	Oamaru
25	PM	Palmerston North Exchange	Manawatu-Whanganui	Palmerston North and Fielding
26	PRM	Paraparaumu Exchange	Wellington	Paraparaumu / Kapiti
27	PRO	Porirua Exchange	Wellington	Wellington
28	QST	Queenstown Exchange	Otago	Queenstown
29	RIC	Riccarton Exchange	Canterbury	Christchurch, Rangiora and Rolleston
30	RO	Rotorua Exchange	Bay of Plenty	Rotorua
31	SOD	South Dunedin Exchange	Otago	Dunedin
32	TPO	Taupo Exchange	Waikato	Taupo
33	TG	Tauranga Exchange	Bay of Plenty	Tauranga*
34	TU	Timaru Exchange	Canterbury	Timaru
35	WKW	Waikiwi Exchange	Southland	Invercargill
36	WN	Wellington Central Exchange	Wellington	Wellington
37	WHK	Whakatane Exchange	Bay of Plenty	Whakatane
38	WR	Whangarei Exchange	Northland	Whangarei*
39	WG	Whanganui Exchange	Taranaki	Whanganui

CH●RUS

APPENDIX C: CHORUS PLANNED LAYER 2 POIS (CHORUS CONFIDENTIAL INFORMATION)

APPENDIX D: CHORUS LAYER 1 POINTS OF INTERCONNECTION

Central Office ID	Name	UFB1 Candidate Area	Service Area
AT	Airedale Street Exchange	Auckland	Airedale Street Exchange Service Area
ALY	Albany Exchange	Auckland	Albany Exchange Service Area
ATN	Alicetown Exchange	Wellington	Alicetown Exchange Service Area
ABB	Andersons Bay Exchange	Dunedin	Andersons Bay Exchange Service Area
AR	Ashburton Exchange	Ashburton	Ashburton Exchange Service Area
AWI	Atawhai Exchange	Nelson	Atawhai Exchange Service Area
AVD	Avondale Exchange	Auckland	Avondale Exchange Service Area
BEA	Beachlands Exchange	Auckland	Beachlands Exchange Service Area
BMT	Belmont Exchange	Wellington	Belmont Exchange Service Area
BKL	Birkdale Exchange	Auckland	Birkdale Exchange Service Area
BD	Birkenhead Exchange	Auckland	Birkenhead Exchange Service Area
BM	Blenheim Exchange	Blenheim	Blenheim Exchange Service Area
BHB	Blockhouse Bay Exchange	Auckland	Blockhouse Bay Exchange Service Area
BGN	Brighton Exchange	Dunedin	Brighton Exchange Service Area
BSY	Browns Bay Exchange	Auckland	Browns Bay Exchange Service Area
CVE	Cloverlea Exchange	Palmerston North	Cloverlea Exchange Service Area
CTE	Corstorphine Exchange	Dunedin	Corstorphine Exchange Service Area
CPC	Courtenay Place Exchange	Wellington	Courtenay Place Exchange Service Area
DA	Devonport Exchange	Auckland	Devonport Exchange Service Area
DN	Dunedin Exchange	Dunedin	Dunedin Exchange Service Area
ETM	East Tamaki Exchange	Auckland	East Tamaki Exchange Service Area
EE	Eastbourne Exchange	Wellington	Eastbourne Exchange Service Area
ELL	Ellerslie Exchange	Auckland	Ellerslie Exchange Service Area

CHORUS

Central Office ID	Name	UFB1 Candidate Area	Service Area
FG	Feilding Exchange	Fielding	Feilding Exchange Service Area
FME	Flaxmere Exchange	Napier	Flaxmere Exchange Service Area
FOR	Forrest Hill Exchange	Auckland	Forrest Hill Exchange Service Area
GS	Gisborne Exchange	Gisborne	Gisborne Exchange Service Area
GLE	Glen Eden Exchange	Auckland	Glen Eden Exchange Service Area
GDW	Glendowie Exchange	Auckland	Glendowie Exchange Service Area
GLF	Glenfield Exchange	Auckland	Glenfield Exchange Service Area
GLT	Gleniti Exchange	Timaru	Gleniti Exchange Service Area
GG	Gore Exchange	Invercargill	Gore Exchange Service Area
GID	Green Island Exchange	Dunedin	Green Island Exchange Service Area
GNH	Greenhithe Exchange	Auckland	Greenhithe Exchange Service Area
GM	Greymouth Exchange	Greymouth	Greymouth Exchange Service Area
HFB	Halfway Bush Exchange	Dunedin	Halfway Bush Exchange Service Area
HBN	Hastings Exchange	Napier	Hastings Exchange Service Area
HTI	Hataitai Exchange	Wellington	Hataitai Exchange Service Area
HVN	Havelock North Exchange	Napier	Havelock North Exchange Service Area
HSN	Henderson Exchange	Auckland	Henderson Exchange Service Area
HBC	Hibiscus Coast Exchange	Auckland	Hibiscus Coast Exchange Service Area
HCK	Howick Exchange	Auckland	Howick Exchange Service Area
INE	Invercargill East Exchange	Invercargill	Invercargill East Exchange Service Area
IN	Invercargill Exchange	Invercargill	Invercargill Exchange Service Area
IBY	Island Bay Exchange	Wellington	Island Bay Exchange Service Area
JFK	John F Kennedy Dr. Exchange	Palmerston North	John F Kennedy Dr. Exchange Service Area
JV	Johnsonville Exchange	Wellington	Johnsonville Exchange Service Area
KRI	Karori Exchange	Wellington	Karori Exchange Service Area

CH●RUS

Central Office ID	Name	UFB1 Candidate Area	Service Area
KLB	Kelburn Exchange	Wellington	Kelburn Exchange Service Area
KGR	Kelvin Grove Exchange	Palmerston North	Kelvin Grove Exchange Service Area
KNH	Khandallah Exchange	Wellington	Khandallah Exchange Service Area
KIL	Kilbirnie Exchange	Wellington	Kilbirnie Exchange Service Area
KME	Kumeu Exchange	Auckland	Kumeu Exchange Service Area
LEI	Leith Valley Exchange	Dunedin	Leith Valley Exchange Service Area
LVN	Levin Exchange	Levin	Levin Exchange Service Area
LHT	Lower Hutt Exchange	Wellington	Lower Hutt Exchange Service Area
LYE	Lynmore Exchange	Rotorua	Lynmore Exchange Service Area
LYN	Lytton West Exchange	Gisborne	Lytton West Exchange Service Area
MBB	Macandrew Bay Exchange	Dunedin	Macandrew Bay Exchange Service Area
MRE	Mangere Exchange	Auckland	Mangere Exchange Service Area
MKY	Manukau City Exchange	Auckland	Manukau City Exchange Service Area
MNR	Manurewa Exchange	Auckland	Manurewa Exchange Service Area
MHL	Maori Hill Exchange	Dunedin	Maori Hill Exchange Service Area
MAW	Marewa Exchange	Napier	Marewa Exchange Service Area
MSY	Massey Exchange	Auckland	Massey Exchange Service Area
MS	Masterton Exchange	Masterton	Masterton Exchange Service Area
MT	Mataura Exchange	Invercargill	Mataura Exchange Service Area
MXL	Maxwells Line Exchange	Palmerston North	Maxwells Line Exchange Service Area
MDR	Mayoral Drive Exchange	Auckland	Mayoral Drive Exchange Service Area
MIR	Miramar Exchange	Wellington	Miramar Exchange Service Area
MNG	Mornington Exchange	Dunedin	Mornington Exchange Service Area
MSI	Mosgiel Exchange	Dunedin	Mosgiel Exchange Service Area
MAB	Mt Albert Exchange	Auckland	Mt Albert Exchange Service Area

Central Office ID	Name	UFB1 Candidate Area	Service Area
MOD	Mt Eden Exchange	Auckland	Mt Eden Exchange Service Area
MTL	Mt Roskill Exchange	Auckland	Mt Roskill Exchange Service Area
MWN	Mt Wellington Exchange	Auckland	Mt Wellington Exchange Service Area
NAE	Naenae Exchange	Wellington	Naenae Exchange Service Area
NA	Napier Exchange	Napier	Napier Exchange Service Area
NN	Nelson Exchange	Nelson	Nelson Exchange Service Area
NLN	New Lynn Exchange	Auckland	New Lynn Exchange Service Area
NOA	Ngongotaha Exchange	Rotorua	Ngongotaha Exchange Service Area
NVY	North East Valley Exchange	Dunedin	North East Valley Exchange Service Area
OU	Oamaru Exchange	Oamaru	Oamaru Exchange Service Area
OUN	Oamaru North Exchange	Oamaru	Oamaru North Exchange Service Area
ON	Onehunga Exchange	Auckland	Onehunga Exchange Service Area
OH	Otahuhu Exchange	Auckland	Otahuhu Exchange Service Area
OAA	Otara Exchange	Auckland	Otara Exchange Service Area
PAE	Paekakariki Exchange	Kapiti	Paekakariki Exchange Service Area
PGA	Pakuranga Exchange	Auckland	Pakuranga Exchange Service Area
PM	Palmerston North Exchange	Palmerston North	Palmerston North Exchange Service Area
PAK	Papakura Exchange	Auckland	Papakura Exchange Service Area
POP	Papatoetoe Exchange	Auckland	Papatoetoe Exchange Service Area
PRM	Paraparaumu Exchange	Kapiti	Paraparaumu Exchange Service Area
PAR	Paroa Exchange	Greymouth	Paroa Exchange Service Area
PTN	Petone Exchange	Wellington	Petone Exchange Service Area
PLM	Plimmerton Exchange	Wellington	Plimmerton Exchange Service Area
POY	Ponsonby Exchange	Auckland	Ponsonby Exchange Service Area
PRO	Porirua Exchange	Wellington	Porirua Exchange Service Area

Central Office ID	Name	UFB1 Candidate Area	Service Area
PC	Port Chalmers Exchange	Dunedin	Port Chalmers Exchange Service Area
PBO	Portobello Exchange	Dunedin	Portobello Exchange Service Area
PUK	Pukekohe Exchange	Pukekohe	Pukekohe Exchange Service Area
PKB	Pukerua Bay Exchange	Kapiti	Pukerua Bay Exchange Service Area
QST	Queenstown Exchange	Queenstown	Queenstown Exchange Service Area
RAM	Raumati Exchange	Kapiti	Raumati Exchange Service Area
RSB	Ravensbourne Exchange	Dunedin	Ravensbourne Exchange Service Area
RDB	Red Beach Exchange	Auckland	Red Beach Exchange Service Area
RUE	Remuera Exchange	Auckland	Remuera Exchange Service Area
RD	Richmond Exchange	Nelson	Richmond Exchange Service Area
RO	Rotorua Exchange	Rotorua	Rotorua Exchange Service Area
RCM	Runciman Exchange	Auckland	Runciman Exchange Service Area
SOD	South Dunedin Exchange	Dunedin	South Dunedin Exchange Service Area
STI	South Invercargill Exchange	Invercargill	South Invercargill Exchange Service Area
SHB	St Heliers Exchange	Auckland	St Heliers Exchange Service Area
STK	Stoke Exchange	Nelson	Stoke Exchange Service Area
SV	Stokes Valley Exchange	Wellington	Stokes Valley Exchange Service Area
TTR	Tahunanui Exchange	Nelson	Tahunanui Exchange Service Area
TNA	Takapuna Exchange	Auckland	Takapuna Exchange Service Area
TMK	Tamaki Exchange	Auckland	Tamaki Exchange Service Area
TDL	Taradale Exchange	Napier	Taradale Exchange Service Area
TPO	Taupo Exchange	Taupo	Taupo Exchange Service Area
TWA	Tawa Exchange	Wellington	Tawa Exchange Service Area
TAT	Te Atatu Exchange	Auckland	Te Atatu Exchange Service Area
TIS	Three Kings Exchange	Auckland	Three Kings Exchange Service Area

Central Office ID	Name	UFB1 Candidate Area	Service Area
TU	Timaru Exchange	Timaru	Timaru Exchange Service Area
TIB	Titahi Bay Exchange	Wellington	Titahi Bay Exchange Service Area
TGN	Titirangi Exchange	Auckland	Titirangi Exchange Service Area
TBY	Torbay Exchange	Auckland	Torbay Exchange Service Area
TRF	Turitea Exchange	Palmerston North	Turitea Exchange Service Area
UP	Upper Hutt Exchange	Wellington	Upper Hutt Exchange Service Area
UPN	Upper Hutt North Exchange	Wellington	Upper Hutt North Exchange Service Area
WH	Waiheke Exchange	Waiheke	Waiheke Exchange Service Area
WAE	Waikanae Exchange	Kapiti	Waikanae Exchange Service Area
WKW	Waikiwi Exchange	Invercargill	Waikiwi Exchange Service Area
WOA	Wainuiomata Exchange	Wellington	Wainuiomata Exchange Service Area
WTN	Waitangirua Exchange	Wellington	Waitangirua Exchange Service Area
WKU	Waiuku Exchange	Waiuku	Waiuku Exchange Service Area
WPU	Wakatipu Exchange	Queenstown	Wakatipu Exchange Service Area
WAY	Washdyke Exchange	Timaru	Washdyke Exchange Service Area
WN	Wellington Exchange	Wellington	Wellington Exchange Service Area
WTH	Wellington South Exchange	Wellington	Wellington South Exchange Service Area
WHK	Whakatane Exchange	Whakatane	Whakatane Exchange Service Area
WEI	Whenuapai Exchange	Auckland	Whenuapai Exchange Service Area
WTB	Whitby Exchange	Wellington	Whitby Exchange Service Area

Central Office ID	Name	UFB2 Candidate Area	Service Area
AU	Ahaura Exchange	Ahaura	Ahaura Exchange Service Area
APA	Ahipara Exchange	Ahipara	Ahipara Exchange Service Area
AO	Akaroa Exchange	Akaroa, Takamatua	Akaroa Exchange Service Area
ALY	Albany Exchange	Dairy Flat/Goodland	Albany Exchange Service Area
AL	Alexandra Exchange	Alexandra	Alexandra Exchange Service Area
AY	Amberley Exchange	Amberley, Leithfield, Leithfield Beach	Amberley Exchange Service Area
AW	Arrowtown Exchange	Arrowtown/Lake Hayes Estate	Arrowtown Exchange Service Area
AHP	Arthurs Pass Exchange	Arthurs Pass	Arthurs Pass Exchange Service Area
AH	Ashhurst Exchange	Ashhurst	Ashhurst Exchange Service Area
ATM	Atiamuri Exchange	Atiamuri	Atiamuri Exchange Service Area
AAI	Awanui Exchange	Awanui, Tokerau Beach/Whatuwhiwhi	Awanui Exchange Service Area
BL	Balclutha Exchange	Balclutha, Stirling	Balclutha Exchange Service Area
BTN	Barrytown Exchange	Punakaiki	Barrytown Exchange Service Area
BV	Bay View Exchange	Bay View/Bay View North, Whirinaki	Bay View Exchange Service Area
BDE	Benneydale Exchange	Benneydale	Benneydale Exchange Service Area
BLF	Bluff Exchange	Bluff	Bluff Exchange Service Area
BOB	Bombay Exchange	Bombay/Paparata Rd	Bombay Exchange Service Area
BGW	Brightwater Exchange	Wakefield/Brightwater	Brightwater Exchange Service Area
BS	Bulls Exchange	Bulls	Bulls Exchange Service Area
BUN	Bunnythorpe Exchange	Bunnythorpe	Bunnythorpe Exchange Service Area
CB	Cambridge Exchange	Karapiro	Cambridge Exchange Service Area
CI	Carterton Exchange	Carterton	Carterton Exchange Service Area
CT	Cheviot Exchange	Cheviot	Cheviot Exchange Service Area

CHORUS

Central Office ID	Name	UFB2 Candidate Area	Service Area
CD	Clevedon Exchange	Clevedon	Clevedon Exchange Service Area
CO	Clinton Exchange	Clinton	Clinton Exchange Service Area
CE	Clive Exchange	Clive Beach/Bay View UFB2 Fringe	Clive Exchange Service Area
CYD	Clyde Exchange	Clyde	Clyde Exchange Service Area
CDV	Clydevale Exchange	Clydevale UFB2 Fringe	Clydevale Exchange Service Area
CW	Collingwood Exchange	Gibbstown/Collingwood	Collingwood Exchange Service Area
CLV	Colville Exchange	Whangapoua	Colville Exchange Service Area
CL	Coromandel Exchange	Coromandel	Coromandel Exchange Service Area
CMW	Cromwell Exchange	Bannockburn, Cromwell, Cromwell/Pisa Moorings	Cromwell Exchange Service Area
CVD	Culverden Exchange	Culverden	Culverden Exchange Service Area
CVD	Culverden Exchange	Culverden UFB2 Fringe	Culverden Exchange Service Area
CU	Cust Exchange	Cust, West Eyreton	Cust Exchange Service Area
DV	Dannevirke Exchange	Dannevirke	Dannevirke Exchange Service Area
DRF	Darfield Exchange	Castle Hill, Darfield	Darfield Exchange Service Area
DRL	Dargaville Exchange	Baylys Beach, Te Kopuru	Dargaville Exchange Service Area
DHB	Diamond Harbour Exchange	Diamond Harbour	Diamond Harbour Exchange Service Area
DOB	Dobson Exchange	Dobson, Taylorville	Dobson Exchange Service Area
DSD	Dunsandel Exchange	Dunsandel	Dunsandel Exchange Service Area
DUN	Duntroon Exchange	Duntroon	Duntroon Exchange Service Area
DB	Duvauchelle Exchange	Duvauchelle	Duvauchelle Exchange Service Area
EDD	Edendale Exchange	Edendale	Edendale Exchange Service Area
EDG	Edgecumbe Exchange	Edgecumbe	Edgecumbe Exchange Service Area
EKA	Eketahuna Exchange	Eketahuna	Eketahuna Exchange Service Area

CH●RUS

Central Office ID	Name	UFB2 Candidate Area	Service Area
FK	Fairlie Exchange	Fairlie	Fairlie Exchange Service Area
FN	Featherston Exchange	Featherston	Featherston Exchange Service Area
FG	Feilding Exchange	Feilding	Feilding Exchange Service Area
FXR	Fox Glacier Exchange	Fox Glacier	Fox Glacier Exchange Service Area
FB	Foxton Beach Exchange	Foxton	Foxton Beach Exchange Service Area
FJG	Franz Josef Glacier Exchange	Franz Josef/Waiau	Franz Josef Glacier Exchange Service Area
GTN	Garston Exchange	Kingston	Garston Exchange Service Area
GD	Geraldine Exchange	Geraldine	Geraldine Exchange Service Area
GL	Glenavy Exchange	Glenavy	Glenavy Exchange Service Area
GLU	Glentunnel Exchange	Coalgate/Glentunnel	Glentunnel Exchange Service Area
GC	Granity Exchange	Granity	Granity Exchange Service Area
GID	Green Island Exchange	Dunedin	Green Island Exchange Service Area
GN	Greytown Exchange	Greytown	Greytown Exchange Service Area
HN	Hamilton Exchange	Hamilton - Whatawhata	Hamilton Exchange Service Area
HA	Hampden Exchange	Hampden, Moeraki	Hampden Exchange Service Area
HP	Hanmer Springs Exchange	Hanmer Springs	Hanmer Springs Exchange Service Area
HRI	Harihari Exchange	Hari Hari	Harihari Exchange Service Area
HBN	Hastings Exchange	Wall Rd	Hastings Exchange Service Area
HMN	Haumoana Exchange	Clive Beach/Bay View UFB2 Fringe, Te Awanga	Haumoana Exchange Service Area
HV	Havelock Exchange	Havelock	Havelock Exchange Service Area
HAW	Hawarden Exchange	Hawarden	Hawarden Exchange Service Area
HAW	Hawarden Exchange	Waikari	Hawarden Exchange Service Area
HL	Helensville Exchange	Helensville/Parakai	Helensville Exchange Service Area
HIM	Himatangi Exchange	Himatangi Beach	Himatangi Exchange Service Area

Central Office ID	Name	UFB2 Candidate Area	Service Area
HK	Hokitika Exchange	Hokitika, Kaniere	Hokitika Exchange Service Area
HO	Hororata Exchange	Hororata	Hororata Exchange Service Area
HOT	Horotiu Exchange	Hamilton - Horotiu	Horotiu Exchange Service Area
HR	Huia Exchange	Huia	Huia Exchange Service Area
HVL	Hunterville Exchange	Hunterville	Hunterville Exchange Service Area
INE	Invercargill East Exchange	Mill Road	Invercargill East Exchange Service Area
KHO	Kaikohe Exchange	Kaikohe	Kaikohe Exchange Service Area
KK	Kaikoura Exchange	Kaikoura, South Kaikoura	Kaikoura Exchange Service Area
KTA	Kaitaia Exchange	Kaitaia	Kaitaia Exchange Service Area
KNA	Kaitangata Exchange	Kaitangata	Kaitangata Exchange Service Area
KTI	Kaiteriteri Exchange	Kaiteriteri, Marahau	Kaiteriteri Exchange Service Area
KP	Kaka Point Exchange	UFB2 Fringe	Kaka Point Exchange Service Area
KPO	Kaponga Exchange	Kaponga	Kaponga Exchange Service Area
KM	Karamea Exchange	Karamea	Karamea Exchange Service Area
KPA	Kaukapakapa Exchange	Kaukapakapa	Kaukapakapa Exchange Service Area
KV	Kawakawa Exchange	Moerewa/Kawakawa	Kawakawa Exchange Service Area
KEU	Kawerau Exchange	Kawerau	Kawerau Exchange Service Area
KC	Kerikeri Exchange	Kerikeri, Rangitana, Waipapa	Kerikeri Exchange Service Area
KIM	Kimbolton Exchange	Kimbolton	Kimbolton Exchange Service Area
KWI	Kirwee Exchange	Kirwee	Kirwee Exchange Service Area
KUA	Kumara Exchange	Kumara	Kumara Exchange Service Area
KOW	Kurow Exchange	Kurow	Kurow Exchange Service Area
LTK	Lake Tekapo Exchange	Lake Tekapo	Lake Tekapo Exchange Service Area
LAW	Lawrence Exchange	Lawrence	Lawrence Exchange Service Area

CH●RUS

Central Office ID	Name	UFB2 Candidate Area	Service Area
LSN	Leeston Exchange	Doyleston, Leeston	Leeston Exchange Service Area
LH	Leigh Exchange	Leigh	Leigh Exchange Service Area
LEP	Lepperton Exchange	Lepperton	Lepperton Exchange Service Area
LCN	Lincoln Exchange	Christchurch - Lincoln	Lincoln Exchange Service Area
LRV	Little River Exchange	Little River	Little River Exchange Service Area
LMS	Lumsden Exchange	Lumsden	Lumsden Exchange Service Area
LYE	Lynmore Exchange	Hinemoa Point	Lynmore Exchange Service Area
MHO	Maheno Exchange	Maheno, Taranui/Kakanui	Maheno Exchange Service Area
MHG	Mahurangi Exchange	Mahurangi, Snells Beach	Mahurangi Exchange Service Area
MKW	Makarewa Exchange	Wallacetown	Makarewa Exchange Service Area
MKT	Maketu Exchange	Maketu	Maketu Exchange Service Area
MMK	Mamaku Exchange	Mamaku	Mamaku Exchange Service Area
MA	Manaia Exchange	Manaia	Manaia Exchange Service Area
MNK	Manakau Exchange	Manakau, Waikawa Beach	Manakau Exchange Service Area
MKO	Mangakino Exchange	Mangakino	Mangakino Exchange Service Area
MGA	Mangaweka Exchange	Mangaweka	Mangaweka Exchange Service Area
MWI	Mangawhai Exchange	Mangawhai UFB2 Fringe	Mangawhai Exchange Service Area
MGI	Mangonui Exchange	Hihi, Taipa, Taipa Bay-Mangonui	Mangonui Exchange Service Area
MKE	Manutuke Exchange	Manutuke	Manutuke Exchange Service Area
MPX	Mapua Exchange	Ruby Bay	Mapua Exchange Service Area
MBA	Martinborough Exchange	Martinborough	Martinborough Exchange Service Area
ML	Marton Exchange	Marton	Marton Exchange Service Area
MTK	Matakana Exchange	Matakana Village, Omaha, Point Wells,	Matakana Exchange Service Area

Central Office ID	Name	UFB2 Candidate Area	Service Area
		Snells Beach UFB2 Fringe	
MAM	Matamata Exchange	Matamata, Waharoa	Matamata Exchange Service Area
MTA	Matata Exchange	Matata	Matata Exchange Service Area
MPK	Matatoki Exchange	Matatoki	Matatoki Exchange Service Area
MGK	Maungakaramea Exchange	Maungakaramea	Maungakaramea Exchange Service Area
MPE	Maungatapere Exchange	Maungatapere	Maungatapere Exchange Service Area
MXL	Maxwells Line Exchange	Palmerston North	Maxwells Line Exchange Service Area
MVE	Melville Exchange	Hamilton - Rukuhia	Melville Exchange Service Area
MVN	Methven Exchange	Methven	Methven Exchange Service Area
MID	Midhurst Exchange	Midhirst	Midhurst Exchange Service Area
MI	Milton Exchange	Milton	Milton Exchange Service Area
MNA	Moana Exchange	Moana	Moana Exchange Service Area
MOA	Mokau Exchange	Mokau	Mokau Exchange Service Area
MOV	Morrinsville Exchange	Morrinsville	Morrinsville Exchange Service Area
MSI	Mosgiel Exchange	Allanton	Mosgiel Exchange Service Area
MOB	Mossburn Exchange	Mossburn	Mossburn Exchange Service Area
MU	Motueka Exchange	Motueka, Riwaka	Motueka Exchange Service Area
MSM	Mt Somers Exchange	Mt Somers	Mt Somers Exchange Service Area
MAT	Murchison Exchange	Murchison	Murchison Exchange Service Area
MUP	Murupara Exchange	Murupara	Murupara Exchange Service Area
NAT	National Park Exchange	National Park	National Park Exchange Service Area
NE	Ngahere Exchange	Blackball	Ngahere Exchange Service Area
NGT	Ngatea Exchange	Ngatea	Ngatea Exchange Service Area
NG	Ngunguru Exchange	Matapouri, Ngunguru	Ngunguru Exchange Service Area
NGC	Nightcaps Exchange	Nightcaps	Nightcaps Exchange Service Area

CH●RUS

Central Office ID	Name	UFB2 Candidate Area	Service Area
OKL	Oakleigh Exchange	Portland	Oakleigh Exchange Service Area
OW	Ohaeawai Exchange	Ohaeawai	Ohaeawai Exchange Service Area
OIH	Ohai Exchange	Ohai	Ohai Exchange Service Area
OKN	Ohakune Exchange	Ohakune	Ohakune Exchange Service Area
OHP	Ohaupo Exchange	Hamilton - Ohaupo	Ohaupo Exchange Service Area
OKE	Okareka Exchange	Lake Okareka/Okareka	Okareka Exchange Service Area
OTO	Okato Exchange	Okato	Okato Exchange Service Area
OF	Okere Falls Exchange	Okere Falls	Okere Falls Exchange Service Area
OMU	Omakau Exchange	Omakau	Omakau Exchange Service Area
OMM	Omarama Exchange	Omarama	Omarama Exchange Service Area
OAG	Onga Onga Exchange	Ongaonga	Onga Onga Exchange Service Area
OPN	Opononi Exchange	Opononi	Opononi Exchange Service Area
OP	Opotiki Exchange	Kukumoa/Waiotahi Beach, Opotiki	Opotiki Exchange Service Area
OK	Opunake Exchange	Opunake	Opunake Exchange Service Area
OT	Otaki Exchange	Otaki	Otaki Exchange Service Area
OTN	Otane Exchange	Otane	Otane Exchange Service Area
OAA	Otara Exchange	Flat Bush	Otara Exchange Service Area
OTR	Otatara Exchange	Otatara Ufb2 Fringe	Otatara Exchange Service Area
OAU	Otautau Exchange	Blackmount/Manapouri, Otautau	Otautau Exchange Service Area
OMT	Otematata Exchange	Otematata	Otematata Exchange Service Area
OHA	Otorohanga Exchange	Otorohanga	Otorohanga Exchange Service Area
ORA	Outram Exchange	Outram	Outram Exchange Service Area
OAK	Owaka Exchange	Owaka	Owaka Exchange Service Area
OWN	Owhango Exchange	Owhango	Owhango Exchange Service Area

Central Office ID	Name	UFB2 Candidate Area	Service Area
OX	Oxford Exchange	Oxford	Oxford Exchange Service Area
PEG	Paengaroa Exchange	Paengaroa	Paengaroa Exchange Service Area
POA	Paeroa Exchange	Paeroa	Paeroa Exchange Service Area
PHA	Pahiatua Exchange	Pahiatua	Pahiatua Exchange Service Area
PIH	Paihia Exchange	Opua/Okiato, Paihia	Paihia Exchange Service Area
PL	Palmerston Exchange	Palmerston	Palmerston Exchange Service Area
PRM	Paraparaumu Exchange	Kapiti, Otaihanga/Nikau Valley	Paraparaumu Exchange Service Area
PA	Patea Exchange	Patea	Patea Exchange Service Area
PHO	Patumahoe Exchange	Sedgebrook/Patumahoe	Patumahoe Exchange Service Area
PN	Picton Exchange	Picton	Picton Exchange Service Area
PIA	Piha Exchange	Piha	Piha Exchange Service Area
PIO	Pio Pio Exchange	Piopio	Pio Pio Exchange Service Area
PIR	Pirongia Exchange	Pirongia	Pirongia Exchange Service Area
PLP	Pleasant Point Exchange	Pleasant Point	Pleasant Point Exchange Service Area
PK	Pokeno Exchange	Meremere, Pokeno	Pokeno Exchange Service Area
POW	Port Waikato Exchange	Port Waikato	Port Waikato Exchange Service Area
PBO	Portobello Exchange	Dunedin UFB2 Fringe	Portobello Exchange Service Area
PUH	Puhoi Exchange	Mahurangi West/Waiwera, Puhoi	Puhoi Exchange Service Area
PE	Pukehina Exchange	Maketu/Pukehina Beach	Pukehina Exchange Service Area
PNY	Pukenui Exchange	Pukenui	Pukenui Exchange Service Area
RET	Raetihi Exchange	Raetihi	Raetihi Exchange Service Area
RAK	Rakaia Exchange	Rakaia	Rakaia Exchange Service Area
RNF	Ranfurly Exchange	Naseby, Ranfurly	Ranfurly Exchange Service Area
RR	Rangiora Exchange	Christchurch - Rangiora	Rangiora Exchange Service Area

C H ● R U S

Central Office ID	Name	UFB2 Candidate Area	Service Area
RWN	Rawene Exchange	Rawene	Rawene Exchange Service Area
RN	Reefton Exchange	Reefton	Reefton Exchange Service Area
RCK	Renwick Exchange	Renwick	Renwick Exchange Service Area
RD	Richmond Exchange	Hope	Richmond Exchange Service Area
RVD	Riversdale Exchange	Riversdale, Waikaia	Riversdale Exchange Service Area
RI	Riverton Exchange	Riverton West	Riverton Exchange Service Area
ROL	Rolleston Exchange	West Melton	Rolleston Exchange Service Area
RON	Rongotea Exchange	Rongotea	Rongotea Exchange Service Area
RS	Ross Exchange	Ross	Ross Exchange Service Area
ROI	Rotoiti Exchange	Rotoiti Forest	Rotoiti Exchange Service Area
RXB	Roxburgh Exchange	Roxburgh	Roxburgh Exchange Service Area
RKW	Ruakawakawa Exchange	Kawakawa Bay	Ruakawakawa Exchange Service Area
RUT	Ruatoria Exchange	Ruatoria	Ruatoria Exchange Service Area
RUN	Runanga Exchange	Runanga	Runanga Exchange Service Area
RL	Russell Exchange	Russell	Russell Exchange Service Area
SN	Sanson Exchange	Sanson	Sanson Exchange Service Area
SDN	Seddon Exchange	Seddon	Seddon Exchange Service Area
SHN	Shannon Exchange	Shannon	Shannon Exchange Service Area
SD	Sheffield Exchange	Waddington/Sheffield	Sheffield Exchange Service Area
SOU	Southbridge Exchange	Southbridge	Southbridge Exchange Service Area
SCK	Spring Creek Exchange	Spring Creek	Spring Creek Exchange Service Area
STA	St Andrews Exchange	Pareora	St Andrews Exchange Service Area
SA	St Arnaud Exchange	St Arnaud	St Arnaud Exchange Service Area
TPE	Taihape Exchange	Taihape	Taihape Exchange Service Area
TAR	Tairua Exchange	Tairua	Tairua Exchange Service Area

Central Office ID	Name	UFB2 Candidate Area	Service Area
TAK	Takaka Exchange	Clifton/Tata Beach/Pohara, Takaka	Takaka Exchange Service Area
TPU	Takapau Exchange	Takapau	Takapau Exchange Service Area
TP	Tapanui Exchange	Tapanui	Tapanui Exchange Service Area
TPW	Tapawera Exchange	Tapawera	Tapawera Exchange Service Area
TPW	Tapawera Exchange	Tasman	Tapawera Exchange Service Area
TAP	Tapu Exchange	Tapu	Tapu Exchange Service Area
TDL	Taradale Exchange	Napier-Hastings	Taradale Exchange Service Area
TMN	Taumarunui Exchange	Taumarunui	Taumarunui Exchange Service Area
TPI	Taupiri Exchange	Hamilton - Taupiri	Taupiri Exchange Service Area
TNU	Te Anau Exchange	Te Anau	Te Anau Exchange Service Area
THR	Te Aroha Exchange	Te Aroha, Waihou	Te Aroha Exchange Service Area
THO	Te Horo Exchange	Te Horo/Te Horo Beach	Te Horo Exchange Service Area
TKK	Te Karaka Exchange	Te Karaka	Te Karaka Exchange Service Area
TUW	Te Kauwhata Exchange	Te Kauwhata	Te Kauwhata Exchange Service Area
TKT	Te Kuiti Exchange	Te Kuiti	Te Kuiti Exchange Service Area
TA	Te Puna Exchange	Te Puna (Minden), UFB1 Fringe: Te Puna	Te Puna Exchange Service Area
TUP	Te Puru Exchange	Te Puru, Waiomu	Te Puru Exchange Service Area
TTK	Te Teko Exchange	Te Teko	Te Teko Exchange Service Area
TUK	Te Uku Exchange	Tuakau	Te Uku Exchange Service Area
TK	Temuka Exchange	Temuka, Winchester	Temuka Exchange Service Area
TH	Thames Exchange	Thames	Thames Exchange Service Area
THS	Tihoi South Exchange	Ufb2 Fringe	Tihoi South Exchange Service Area
TGN	Titirangi Exchange	Parau	Titirangi Exchange Service Area
TKG	Tokanui Exchange	Tokanui	Tokanui Exchange Service Area

Central Office ID	Name	UFB2 Candidate Area	Service Area
TOK	Tokomaru Exchange	Tokomaru	Tokomaru Exchange Service Area
TOB	Tokoroa Exchange	UFB2 Fringe	Tokoroa Exchange Service Area
TGB	Tolaga Bay Exchange	Tologa Bay	Tolaga Bay Exchange Service Area
TBY	Torbay Exchange	Okura	Torbay Exchange Service Area
TTE	Tuatapere Exchange	Tuatapere	Tuatapere Exchange Service Area
TUA	Turakina Exchange	UFB2 Fringe	Turakina Exchange Service Area
TGI	Turangi Exchange	Kuratau/Pukawa, Turangi	Turangi Exchange Service Area
TRF	Turitea Exchange	Summerhill	Turitea Exchange Service Area
TRA	Turua Exchange	Turua	Turua Exchange Service Area
TWL	Twizel Exchange	Twizel Community	Twizel Exchange Service Area
UP	Upper Hutt Exchange	Alexander Rd, Racecourse Rd, Upper Hutt Zone UFB2 Fringe, Ward Street, Wellington Zone	Upper Hutt Exchange Service Area
URE	Urenui Exchange	Urenui	Urenui Exchange Service Area
WUA	Waiatarua Exchange	Waiatarua/Spragg Bush/Parkinsons Lookout	Waiatarua Exchange Service Area
WU	Waiau Exchange	Rotherham	Waiau Exchange Service Area
WU	Waiau Exchange	Waiau	Waiau Exchange Service Area
WAF	Waiau Pa Exchange	Waiau Beach	Waiau Pa Exchange Service Area
WBH	Waihi Beach Exchange	Waihi Town & Beach	Waihi Beach Exchange Service Area
WAH	Waihi Exchange	Waihi Town & Beach	Waihi Exchange Service Area
WAE	Waikanae Exchange	Peka Peka, Pukeko St Area	Waikanae Exchange Service Area
WK	Waikouaiti Exchange	Karitane, Waikouaiti	Waikouaiti Exchange Service Area
WMG	Waimangaroa Exchange	Waimangaroa	Waimangaroa Exchange Service Area
WRM	Waimarama Exchange	Waimarama	Waimarama Exchange Service Area

Central Office ID	Name	UFB2 Candidate Area	Service Area
WE	Waimate Exchange	Waimate	Waimate Exchange Service Area
WM	Waimauku Exchange	Muriwai Beach, Waimauku	Waimauku Exchange Service Area
WIR	Waiouru Exchange	Waiouru	Waiouru Exchange Service Area
WPR	Waipara Exchange	Waipara	Waipara Exchange Service Area
WI	Waipawa Exchange	Waipawa/Waipukurau	Waipawa Exchange Service Area
WD	Waipu Exchange	Langs Beach/Waipu Cove	Waipu Exchange Service Area
WRK	Wairakei Exchange	Wairakei Village/Wairakei	Wairakei Exchange Service Area
WA	Wairoa Exchange	Wairoa, Frasertown	Wairoa Exchange Service Area
WTI	Waitati Exchange	Michies Crossing/Waitati	Waitati Exchange Service Area
WTI	Waitati Exchange	Warrington	Waitati Exchange Service Area
WTO	Waitoa Exchange	Waitoa	Waitoa Exchange Service Area
WPU	Wakatipu Exchange	Jacks Point, Queenstown	Wakatipu Exchange Service Area
WNK	Wanaka Exchange	Luggate, Wanaka/Lake Hawea	Wanaka Exchange Service Area
WW	Warkworth Exchange	Warkworth	Warkworth Exchange Service Area
WV	Waverley Exchange	Waverley	Waverley Exchange Service Area
WFD	Wellsford Exchange	Wellsford	Wellsford Exchange Service Area
WP	Westport Exchange	Carters Beach, Westport Urban	Westport Exchange Service Area
WGU	Whangaehu Exchange	Ratana/Whangaehu	Whangaehu Exchange Service Area
WGM	Whangamata Exchange	Whangamata	Whangamata Exchange Service Area
WAA	Whataroa Exchange	Whataroa	Whataroa Exchange Service Area
WEN	Whenuakite Exchange	Hahei	Whenuakite Exchange Service Area
WEI	Whenuapai Exchange	Brigham Creek Rd, Fred Taylor Rd	Whenuapai Exchange Service Area

Central Office ID	Name	UFB2 Candidate Area	Service Area
WHT	Whitianga Exchange	Ferry Landing/Cooks Beach, Kuaotunu, Matarangi, Whitianga	Whitianga Exchange Service Area
WO	Winton Exchange	Winton	Winton Exchange Service Area
WND	Woodend Exchange	Christchurch – Woodend, Waikuku Beach	Woodend Exchange Service Area
WDV	Woodville Exchange	Woodville	Woodville Exchange Service Area
WYD	Wyndham Exchange	Wyndham	Wyndham Exchange Service Area