



22 July 2023

Greater Christchurch Spatial Plan Consultation
Greater Christchurch Partnership
PO Box 73014
Christchurch 8154

By email: huihuimai@greaterchristchurch.org.nz

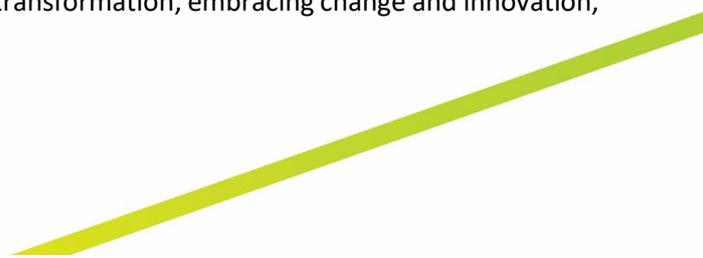
Dear Whakawhanake Kāinga Komiti

Greater Christchurch Spatial Plan

1. Thank you for this opportunity to make a submission on the draft Greater Christchurch Spatial Plan (Spatial Plan).

Background

2. As you will be aware, we own and operate the electricity distribution infrastructure in Central Canterbury, including Ōtautahi Christchurch. Our network is both rural and urban and extends over 8,000 square kilometres from the Waimakariri River in the north to the Rakaia River in the south; from the Canterbury coast to Arthur's Pass. We deliver electricity to more than 220,000 homes and businesses and are New Zealand's third largest Electricity Distribution Business (EDB). Orion and its various predecessors have been providing this essential service to the region for close to 120 years.
3. Orion is a Lifeline Utility for the purposes of the Civil Defence Emergency Management Act 2002. Orion has a statutory duty under this legislation to ensure it is able to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency.
4. Orion has a fully owned subsidiary, industry service provider Connetics, and together with Orion the two organisations make up the Orion Group.
5. Central Canterbury is a place of rapid growth and transformation, embracing change and innovation,



with Ōtautahi Christchurch at the heart of this diverse and vibrant region. Electricity distribution has always been an essential service that underpins regional, community and economic wellbeing. Our service is vital to the wellbeing and livelihood of the people and businesses who live and operate here. Now, it also has a critical part to play in New Zealand’s transition to a low carbon economy.

6. In this context Orion’s Group Purpose of “Powering a cleaner and brighter future with our community” is central to all we do. As Aotearoa New Zealand transitions to a low carbon economy, the energy sector has a critical part to play primarily through electrification. Orion has established its purpose to be a vital player in that transition for our community and our region. We are focused on helping our community realise its dreams for a future that is new, better, and more sustainable over the long term.¹

7. We are very conscious that we face a rapidly changing and massively different energy environment in the decades ahead. The changing landscape facing Orion is primarily driven by three factors – climate change, new technology and increasing demand for electricity. The increasing demand for electricity is driven by the need to both enable decarbonisation at pace, and support population growth.

8. As the draft Spatial Plan points out, the latest projections from Stats NZ indicate Greater Christchurch’s population will grow from a population of approximately 530,000 to more than 700,000 by 2051. This is around 170,000 more people and 77,000 more households. Although this population growth could occur sooner if Greater Christchurch grows at the rate seen over the last 15 years. It could reach a population of 700,000 within the next 25 to 30 years and one million within the next 60 years, doubling the size of today’s population.

9. This Spatial Plan will satisfy the requirements of a future development strategy under the National Policy Statement on Urban Development (NPS UD). Importantly, the NPS UD directs that local authority decisions on urban development are to be integrated with **infrastructure planning decisions**, and that planning decisions contribute to well-functioning urban environments.² A well-functioning urban

¹ A recent report by the Boston Consulting Group highlights the role the electricity industry can play in reducing New Zealand’s carbon emissions. The increase in electrification of transport and heating will allow New Zealand to make considerable movement towards the decarbonisation goals that have been set. In order to support this, New Zealand will need electricity networks to be expanded, more distributed and able to meet the changing needs of consumers. In essence, distribution will need to be widespread, flexible and reliable. See Boston Consulting Group Report: *The Future is Electric A Decarbonisation Roadmap for New Zealand’s Electricity Sector 2022*, page 200.

² Policy 1.

environment is one in which:

- Infrastructure is not adversely affected by incompatible activities; and
- Urban growth is planned with infrastructure provisions in mind, recognising that the two run hand-in-hand.

10. We note that *Rautaki Hanganga o Aotearoa New Zealand Infrastructure Strategy 2022 – 2052* emphasises the need to plan for infrastructure networks for our cities before they are required. Otherwise, it may be difficult, if not impossible, to provide them later. The Strategy also emphasises the preparation for future infrastructure should look at all the types of infrastructure and transport that will be needed.³

11. In this context, we strongly support integrated energy planning in developing this Spatial Plan. We explain this further in our submission when we talk more about the potential changes that will be needed to our infrastructure in order to progress the outcomes in this Spatial Plan. We will need as much foresight and prior knowledge as possible of significant changes to urban development and transport planning to provide successfully for the accompanying energy infrastructure.

12. We now set out our comments on the various questions raised in the online submission form.

Summary

13. Orion supports the intent of the draft Spatial Plan, a collaborative vision for how the Greater Christchurch area will grow and develop in the long term will assist Orion to plan effectively and efficiently. That said, how the Spatial Plan is executed and carried forward into the relevant planning documents will be vitally important to achieving that outcome.

³ See *Rautaki Hanganga o Aotearoa New Zealand Infrastructure Strategy 2022 – 2052*, para 6.3.3, p78. It should consider

- The potential for rapid transit networks in existing and future urban areas, even if they may not be needed in the near future.
- How land can be adapted if needs change. For example, land that's protected for a long-term rapid transit corridor could either be used for a busway or rail line, or converted to other uses.
- Designing street networks so they provide for current and future needs. For instance, street grids that distribute traffic across many routes may be better in the long-term than street layouts that feed all traffic into a small number of major roads

14. For Orion to be able to continue to provide a reliable and resilient supply of electricity to the intensified, and increasingly electrified, city it will need to be able to plan in advance for increasing demand and to have space for the required infrastructure. For this to occur Orion wishes to highlight the following.

Public Transport

15. Orion's ability to respond to changes in demand that result from changes to transportation (whether that is an increase in the use of private electric vehicles or the development of a Mass Rapid Transit (MRT) system that relies on electricity, or both) will be enabled by advance knowledge so Orion can make provision of infrastructure to support that increase in demand. The implementation of the public transport components of the Spatial Plan needs to enable that provision.
16. The Spatial Plan shows an indicative location for a MRT system. Existing Orion infrastructure will need to be considered in the planning of such a system. Relocation of some electricity infrastructure can require a large lead in time and Orion will need to plan for this in advance to avoid delays.

Urban centres and transport corridors

17. Where intensification occurs it can be difficult for Orion to find appropriate locations for the additional infrastructure that is inevitably required to meet the increase in demand. Infrastructure must be located close to the demand and as such Orion have sought amended provisions through Plan Change 14 to the Christchurch District Plan (PC14) and through Variation 1 to the proposed Selwyn District Plan (Variation 1) that require developers of intensified sites to discuss provision of space with Orion as part of the resource consenting of a development. The need to allow for additional infrastructure will continue to be important and should be central in the implementation of the Spatial Plan.
18. Intensification will also result in reduced setbacks from the front of properties and increased height limits; the resulting potential for conflict between electricity lines and built form needs to be addressed when the Spatial Plan is implemented. Orion have sought amendments through PC 14 and Variation 1 to this effect and reiterate here that this will continue to be an issue that should be considered in all areas where intensification occurs.

Natural Environment

19. Orion is supportive of the Spatial Plan's intentions in relation to the natural environment. Orion plays an

active part in maintaining and enhancing the natural environment through significant targeted planting programs. That said, there is a significant risk to Orion's infrastructure, and associated critical service to our community, as a result of negative interactions with vegetation. That risk must be considered when the Spatial Plan is implemented. Where any planting is proposed a collaborative approach needs to be taken to ensure that the planting is located appropriately and that species selection allows for the vegetation to thrive without interference with electricity infrastructure.

Blue-Green Network (Green Belt)

20. The introduction of a Greenbelt to separate urban and rural areas is a concept that Orion supports however, as with all areas of the Spatial Plan, it will be crucial that in the implementation of this concept the importance of installing, maintaining and protecting critical infrastructure is considered. If a Greenbelt was created, Orion would welcome the opportunity to assist in ensuring it is compatible with the continuation and installation of Orion's infrastructure; there may well need to be infrastructure links across blue-green areas to interconnect electricity supply depending on existing services and the layout of our network. Blue-green areas will also need to provide clearance corridors so that vegetation around our distribution network can be better managed.

Priority development areas

21. Orion supports the recognition of priority development areas but reiterates the need to proactively provide for additional infrastructure growth and ensure that existing and new infrastructure is not negatively impacted by intensification through planning provisions. It will also be important when planning for accelerated development and intensification to ensure that coordination with the timing of infrastructure upgrades occurs.

Spatial Strategy

22. Orion has suggested a number of amendments to the draft Opportunities set out in the strategy. The amendments sought are in order to strengthen the ability for Orion to provide a reliable and resilient supply of electricity through the time the Spatial Plan relates to.

Public transport

23. The draft Spatial Plan concentrates growth around urban centres and along public transport

corridors. An improved and more effective public transport system is needed to provide alternatives to private vehicles and to reduce carbon emissions.

24. Orion supports, in principle, the improved public transport system proposed in the draft Spatial Plan, including the proposed mass rapid transit system. There are two main areas where the execution of the proposed Spatial Plan will need to integrate with Orion's forward planning in order to avoid delay or unnecessary expense and Orion wishes to flag these areas now to ensure the Komiti is aware of the importance of a collaborative approach. The areas of specific interest are the implications of the MRT and broader public transport plans on use overall transport patterns, and hence future electricity demand and charging needs across the sub-region; where the MRT system requires power (and therefore additional infrastructure) in order to operate; and where existing Orion infrastructure is located within MRT corridors and needs to be relocated.

25. We explain further below the modelling work that we are doing to understand future electricity demand and we provide some comments about the practical implications for Orion of the proposed MRT system.

Modelling for future transport electricity demand

26. We expect growing demand for electricity for transport as fossil fuels are phased out of both private and public transport. Changes to network infrastructure will be required to support the growing electrification of transport. The overall demand for transport and mode of transport has a significant impact on how Orion plans for these investments.

27. Changes to our network infrastructure are significant investments and can have long lag times. This means as much foresight and prior knowledge as possible of significant changes to urban development and transport planning is critical. We welcome the opportunity to contribute to this consultation.

28. Orion is currently establishing its Future Energy Scenarios for the Mid Canterbury region. These Future Energy Scenarios are plausible development pathways for energy sector transition in our region over the next 30 years. By planning for different scenarios in 2050 we are able to understand the different potential needs and uses for our network in energy transition.

29. The Future Energy Scenarios will play an important role in local area energy planning. By understanding the changes in demand and generation of energy in our region, we can help to develop a

more collaborative understanding and planning environment for our region's long term energy needs.

30. Understanding the development of transport is critical to developing our Future Energy Scenarios. We are attempting to model different development pathways for demand and mode for transport and we welcome engagement and input from the Komiti on this work.

31. The primary considerations we are attempting to understand for the purposes of electricity network investment are:

a. When electricity will be required; this includes planning for infrastructure to support increasing load over years as transport is electrified, and sizing the network correctly to support the peak demand during the day;

b. Where electricity will be required determines what network infrastructure services the demand. There will be differences in where demand is highest on the network depending on whether people charge private electric vehicles at home, at work, or at charging stations, and where public transport is used and how it uses electricity (depot battery charging or en-route electricity supply).

c. Capacity required to service demand will also depend on the size of the load at any one time. A lot of relatively small private vehicles charging at disaggregated times has a very different network requirement to service than several rapid chargers charging concurrently to service large vehicles like buses.

32. We also need to consider practical implications such as acquiring land to build infrastructure to support transport demand, cross over between existing infrastructure and construction requirements for mass rapid transit routes, and the type of new connections that could be required by proposed mass rapid transit options including housing intensification or infill housing along such routes.

Mass Rapid Transit (MTR)

33. The proposed MRT system is likely to significantly change how demand for electricity in transport develops. By encouraging uptake of public transport, it will essentially concentrate demand from many potential private electric vehicles to larger point loads that service the MRT corridor. It will also likely reduce total demand for transport as more people live closer to where they work in higher density.

34. It is difficult to immediately assess the impact of this on the Orion network. Overall MRT is likely to be more efficient and lower overall energy demand compared to the counterfactual where it isn't developed. It could reduce the need for investment on the low voltage network to support in-home charging of private vehicles in some areas.

35. However, demand for electricity from the MRT could be less flexible, depending on the mode developed, requiring electricity when there is demand for transport, rather than private electric vehicles which have some flexibility in when they need to be charged. Depending on when MRT development occurs it could bring demand for electricity forward, if it is built ahead of mass private vehicle electrification, requiring earlier investment on the network. This will also require more complex and larger connections to the network.

Practical Implications for Orion

Planning Implications

36. Orion's ability to respond to changes in demand will depend on our ability to be flexible in the provision of infrastructure. In this sense it is important that the planning provisions that flow from the Spatial Plan allow for Orion to obtain additional space for infrastructure when and where it is required. Planning provisions will also need to recognise the importance of protecting Orion infrastructure in a changing environment that is likely to result in a more intense built form with a higher risk of negative interaction between built form and infrastructure.

37. Orion has submitted on Plan Change 14 to the Christchurch District Plan (PC14) and Variation 1 to the proposed Selwyn District plan (Variation 1) seeking the inclusion of provisions that allow for additional land to be set aside where intensification of a site occurs and the increase in demand means additional infrastructure is required. Enabling the upgrade of infrastructure in line with development that increases demand will be key to ensuring Orion is able to respond to that demand.

38. The ability for Orion to enable the MRT and broader electrification of our transport system, will require similar proactive, least-regrets planning, investment and flexibility. As set out above, whether the demand is to enable the charging of individual electric vehicles at home, or some form of MRT, it will require consideration as early as possible to allow Orion to support it. Provision in the planning framework to facilitate a range of scenarios will be required in order to ensure provision of electricity to meet the need.

Interface between proposed MRT and existing Orion Infrastructure

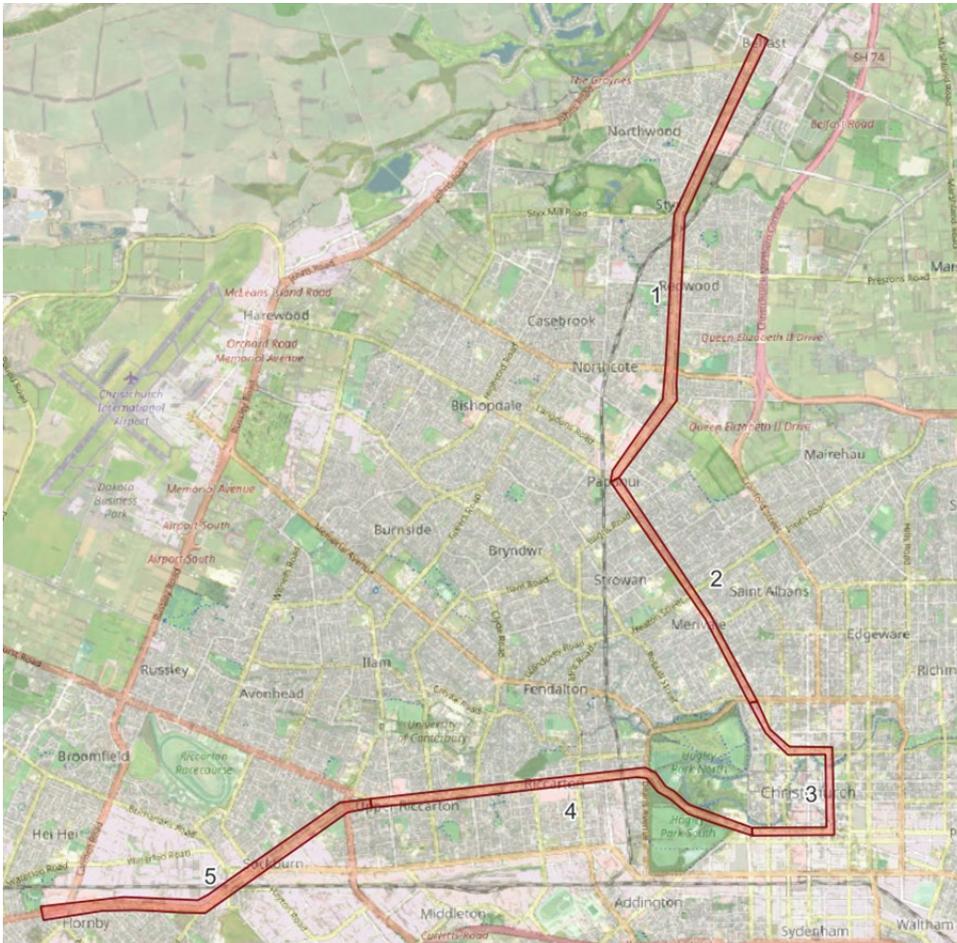
39. In addition to the provision of additional infrastructure to meet the likely increase in demand for electricity, there is potential for a MRT system to be located across, or in close proximity to, areas where Orion has significant infrastructure already in place. In some cases, the introduction of an MRT system will require the movement of the electricity infrastructure, as colocation would not be practical or feasible. This is likely to be a concern in any location that is suitable for MRT and Orion wishes to highlight the importance of communication and timing to enable investment in changes to Orion infrastructure where that is required.

40. An example of where colocation of Orion infrastructure and MRT would not be compatible is where high voltage cables run underground, either where an MRT route is proposed or in close proximity to the route. If movement of infrastructure is required, Orion will require as much time as possible to allow for planning and the physical relocation. Prior to the physical works commencing there is significant planning required, including design, resource consenting and procurement; these processes can take years to complete.

41. As an example of the time required for some projects, Orion is currently undertaking a 15 year project to upgrade the high voltage underground network within Christchurch City. Attached and marked "A" are images showing the works currently underway to install high voltage cable underground in the section between the Milton and Bromley zone substations on Ferry Road and setting out timeframes for the physical works. In this example the cable was ordered approximately 18 months prior to being available for use. Planning and design for the works commenced approximately 5 years before physical works commenced.

Orion Infrastructure located along the proposed MRT routes

42. The map below shows the approximate MRT Routes.



43. Orion has used the map above to calculate the following approximate list of assets that sit within or immediately adjacent to the MRT route such that they might be affected by the route:

1. 131x Sites:
 - i. 88 Kiosk Substation Sites
 - ii. 15 Outdoor Substation Sites
 - iii. 12 Building Substation Sites
 - iv. 6 Primary Network Centre Sites

- v. 6 Undeveloped Sites
- vi. 2 Zone Substation Sites
- vii. 2 Pad Mount Transformer Sites

2. 151 poles

3. 863 Distribution boxes

4. 338 Distribution cabinets

5. 2,900m of overhead lines

6. 2,438m of 33kV/66kV underground cable

7. 160,970 of underground cable (11kV, low voltage, out of service or street light)

44. The extent of infrastructure that will need to be relocated will depend on the specific location of the MRT within the corridor and the nature of the MRT system, however Orion wish to reiterate that these works will take some time and communication will be central to ensuring there are not delays.

Urban centres and transport corridors

45. According to the draft, concentrating future housing development around urban centres and along public transport corridors will enable a greater choice of housing to be developed, including more affordable options such as apartments and terraced housing.

46. In principle Orion supportsthe focus of future development and investment around urban centres and transport corridors. In order to ensure that intensification in these (or any) areas is successful and that there is a reliable and resilient supply of electricity, there must be consideration given to how and where the upgrading of infrastructure that will inevitably be necessary is to occur.

47. As with transport, housing development has significant impacts on our investment in network infrastructure. Orion is attempting to model these potential changes, including the potential energy system impact of housing intensification and typology; building energy efficiency; industrial development and decarbonisation; and transport plans, as part of our Future Energy Scenarios, in order to understand how

different outcomes can change energy demand and so enabling investment in the electricity network. We welcome the opportunity to engage with the Komiti on the Spatial Plan and would welcome the opportunity to engage on the development of our Future Energy Scenarios.

48. The Mass Rapid Transit corridors and intensification in surrounding areas and urban centres will have a significant impact on requirements for network investment. New houses need to be connected to the network and serviced from existing infrastructure. High density infill housing can have high impacts where individual properties with a single connection suddenly become multiple units servicing many households. The speed of change, particularly for infill housing, can have impacts where there are lags for building infrastructure. Space for new 11kV/415V transformer kiosks is required in conjunction with high density infill housing.

Practical Implications for Orion

49. As traversed in the section above, Orion has submitted on PC14 and Variation 1 that are currently being consulted on. The Orion submissions seek amendments to the provisions as notified to ensure that where there is intensification of lower density areas, the provision of additional infrastructure is not only possible but actively enabled.

50. The Orion submissions on PC14 and Variation 1 have also sought that where the density of built form is likely to be higher (in medium and high density zones) there are setbacks from all electricity infrastructure to ensure that where the built form is closer to the boundaries of properties and greater in height the likelihood of negative interactions is reduced.

51. Without the amendments sought by Orion, the ability to react and ensure reliable supply of electricity will be difficult. The infrastructure most commonly required to meet such increases in supply is fixed in size and needs to be located in close proximity to the demand.

Natural Environment

52. The draft Spatial Plan notes that the natural environment is integral to quality of life in Greater Christchurch. Focusing growth around urban centres will help to protect areas with significant natural values, and can improve the health of waterways, maintain highly productive land and expand the network of green spaces for relaxation and recreation. This is referred to in the draft Spatial Plan as the blue-green network.

53. Orion **supports** the proposed approach to maintain and enhance the natural environment within our urban areas. We very much agree that a healthy natural environment is intrinsically linked with the wellbeing of people and places. Blue-green networks provide a number of benefits including improving the overall quality of both urban and rural environments and mitigating the impacts of climate change and providing adaptation benefits. This is in keeping with our purpose of “Powering a cleaner and brighter future with our community”, and our focus area of being a Force for Good in the Communities we Serve

54. By way of example, Orion’s native forest carbon offsetting programme has now been launched thanks to two historic partnerships with local landowners committed to bringing new life to their land in Banks Peninsula.

55. On the whenua in Purau Bay we planted 21,000 kanuka seedlings in the 2022/2023 financial year. With additional planting of various other native species in subsequent years, this forest will sequester an average 95 tonnes of carbon dioxide per year over the next 50 years. It is also a win for biodiversity which is important for healthy ecosystems as well as protecting a major waterway into Whakaraupō (Lyttelton harbour).

56. In February 2023, Wairewa Rūnanga and Orion Group signed an agreement to recloak up to 280 hectares of Te Kaio farm, a 280-hectare block of ex-farmland near Wairewa, Little River, belonging to the Rūnanga. Orion is bringing forestry expertise, capital, and personnel to the project, with Te Kete o Wairewa, the legal entity of the Rūnanga, supplying the land and a mātauranga Māori lens.

Practical Implications for Orion

57. The draft Plan refers to supporting the development of local area plans, urban greening strategies and forest plans, new guidelines and regulations that support urban greening and increased tree cover as well as exemplar or demonstration projects. This is a sound approach but these plans and strategies will need to take into account the requirements of infrastructure in and around these areas. For example, there may well need to be infrastructure links across blue-green areas to interconnect electricity supply depending on existing services and the layout of our network. Blue-green areas will also need to provide clearance corridors so that vegetation around our distribution network can be better managed.

58. Orion has identified that trees and vegetation constitute a medium to high risk to Orion’s infrastructure. Recent weather events in the North Island have unfortunately demonstrated this, with a

significant percentage of the power outages occurring as a result of trees and vegetation on power lines.

59. As detailed in our Asset Management Plan for 2023-2024⁴

Orion's network has 6,000km of overhead lines that are more susceptible to the risks posed by vegetation growth. Many of these lines run parallel to property fence lines and in rural areas, they are often lined with hedges and trees for shelter belts. These hedges and trees, along with other vegetation encroaching on the power network pose significant risks to our overhead line assets and our service providers and the public who are near them. Without regular vegetation maintenance trees and hedges begin to encroach on the overhead network and can cause power outages, damage, injury and fires.

In some cases, outages caused by tree colliding with our lines can cause lengthy outages, with widespread impact on communities.

60. Our Climate Change Opportunities and Risks report⁵ indicates the growth rates for vegetation are likely to increase due to warmer and wetter conditions because of climate change. The report also indicates our biggest physical risk from climate change is likely to be from vegetation on our overhead lines causing power outages, severe storms, and drier conditions increasing the risk of fire.

61. Consequently, we want to emphasise that in "greening" the blue-green areas, a collaborative approach with infrastructure providers will be key when it involves planning and planting. Plans will need to allow for the realities of how a distribution network operates. Ensuring planting is undertaken in appropriate locations, and ensuring appropriate species are selected where planting is in the vicinity of infrastructure providers will be critical to the success of the blue-green network.

⁴ See <https://www.oriongroup.co.nz/assets/Company/Corporate-publications/Orion-AMP-March-2023.pdf>

⁵ See <https://www.oriongroup.co.nz/assets/Company/Corporate-publications/2020-Orion-Climate-Change-Report.pdf>

62. Trees interfering with power lines and tree roots interfering with underground cables can (and frequently does) result in damage to the network and ultimately in the removal of the tree. Orion already spends considerable time and expenditure⁶ in addressing such damage and is eager to ensure that future planting is not undertaken in a way that results in further damage to infrastructure and the need to remove vegetation.

Blue-Green Network (Green Belt)

63. As the documentation notes, one aspect of the blue-green network approach is to maintain green space to act as a buffer between urban and rural areas, known as a green belt. This potentially has multiple benefits and could include a range of different uses and activities including protection of nature, rural production and recreation.

64. Orion supports in principle the concept of a green belt around our urban areas and further investigation of this concept subject to our comments below.

65. At Orion, for planning purposes, our network is divided into two regions rather than urban and rural:

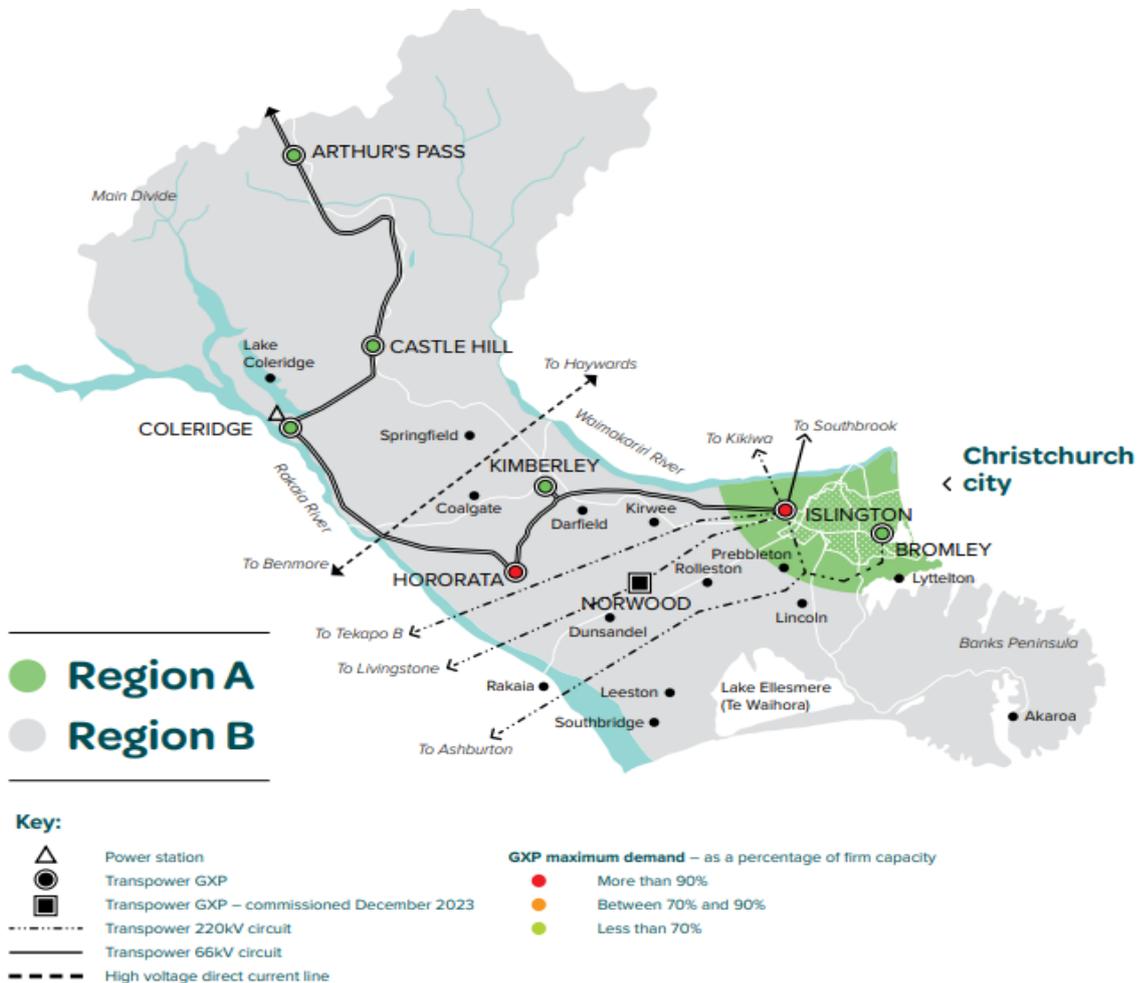
1. Region A – Christchurch city and outer suburbs, including Prebbleton, approximately 83% of our customers,⁷ and
2. Region B⁸ – Banks Peninsula, Selwyn district and townships, approximately 17% of our customers.

⁶ For example, we have budgeted \$4,300,000 in vegetation management operational expenditure for 2024 financial year.

⁷ Region A Grid Exit Points (GXP) are located at Islington and Bromley and supply Christchurch Central City, Lyttelton and the wider Christchurch metropolitan area. Islington and Bromley 220kV substations form part of Transpower's South Island grid. They interconnect between the major 220kV circuits from the southern power stations and our 66kV and 33kV subtransmission network. Islington has a 66kV and 33kV grid connection, while Bromley supplies a 66kV grid connection only.

⁸ Islington GXP also supplies a large part of the Region B network including Banks Peninsula, milk processing near State Highway 1, irrigation east of State Highway 1, and the Dunsandel, Rolleston and Lincoln townships. Hororata and Kimberley GXPs supply a significant proportion of inland irrigation load and milk processing. These two GXPs have a connection to the double circuit 66kV line between Islington and the West Coast with generation injection at Coleridge power station. Transpower provides a 66kV connection at Kimberley and a 66kV and 33kV connection at Hororata. Norwood GXP, when operational, will also supply this area. The remainder of Region B is fed at 11kV from three small GXPs at Arthur's Pass, Coleridge and Castle Hill. Together these supply less than 1% of our customers and load.

66. The two regions are connected by critical high voltage lines that cross the area shown as potential future green belt as shown on the map below. These connections are essential as they link Transpower grid exit points with the distribution system.



Practical Implications for Orion

67. It will be crucial to any green belt proposal that the importance of protecting and maintaining existing strategic infrastructure is recognised. Such recognition should include Orion’s distribution lines and cables and allow for new infrastructure to be constructed where required through or across the green belt. In the preceding section we have discussed the possibility of clearance corridors or infrastructure links and Orion considers that such concepts will need to be considered in this context as well.

68. We also refer to our comments above about the risks of planting near electricity infrastructure. This is an issue that Orion is already required to address, the prevention of further negative interactions will need to be considered to ensure reliability of supply and to reduce ongoing cost for consumers in our region.

69. If this proposal progresses, we would be able to work with the Komiti to assist in the development of a successful green belt action plan.

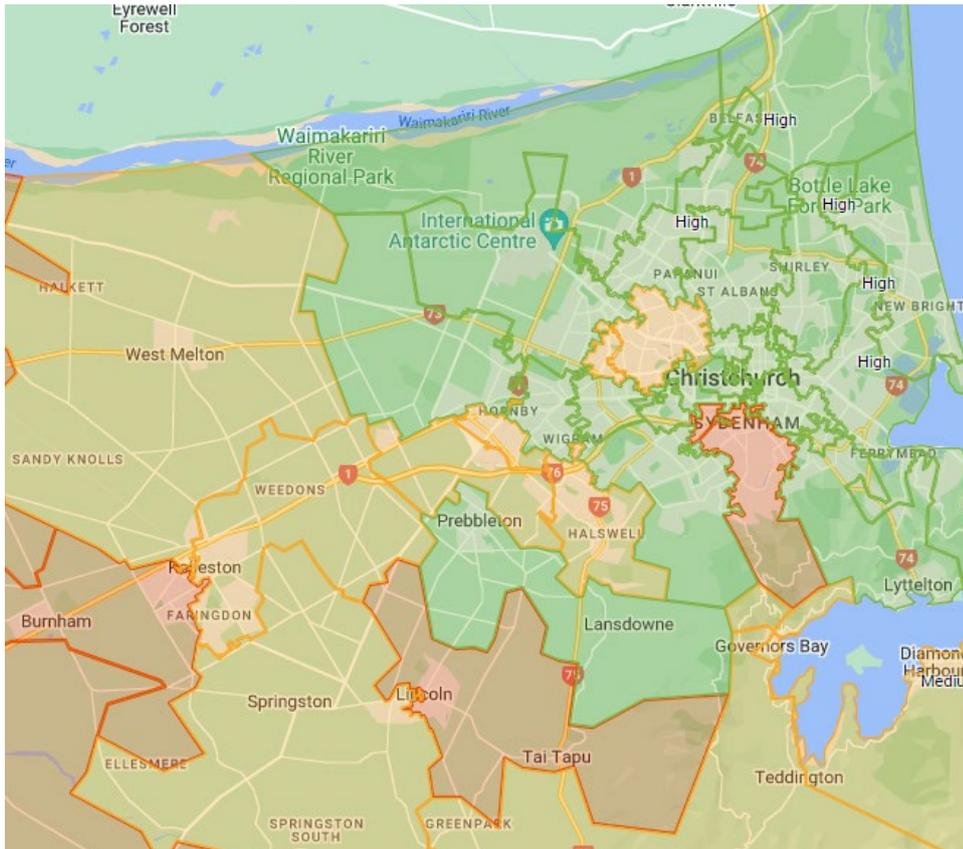
Priority development areas

70. Priority Development Areas provide a mechanism for coordinated and focused action across multiple agencies to inform, prioritise and unlock public and private sector investment. The draft plan notes that these are a key tool within the draft Spatial Plan to accelerate development in locations that will support the desired pattern of growth and/or facilitate adaptation and regeneration.

71. The Priority Development Areas in the draft Spatial Plan are Rangiora Town Centre and surrounds; Rolleston Town Centre and surrounds; Papanui; Central City; Riccarton; and Hornby. Eastern Christchurch is included as a priority area, recognising the need for a partnership approach to support this area to adapt to the impacts of climate change and to strengthen resilience.

72. Orion supports in principle the approach to focus on these areas but reiterates the concerns raised above, that the implementation of the Spatial Plan will be of vital importance to the success of its goals. Provisions must be included in policies and plans that actively address the need to upgrade infrastructure to meet increased demand.

73. The map below shows areas where bulk electricity provision may currently be constrained until infrastructure is upgraded. Some of the priority areas fall within red or yellow areas and, as such, the timing of intensification or acceleration of development may need to be planned with an eye to when adequate infrastructure can be provided. Equally, electrification and development in other currently 'green' areas may lead to additional network constraints, depending on a range of drivers and levers which we are exploring through our future energy scenarios, and would be keen to discuss with the Komiti.



74. There are plans for upgrading the bulk supply to some of the red and yellow areas (for example in Rolleston and Halswell), but timing of those upgrades will vary and as such any additional development that results in significantly increased demand will have to be planned to occur in conjunction with the relevant upgrades.

Spatial Strategy

75. The draft plan proposes six opportunities, which link to a set of clear directions and key moves to help shape the future of Greater Christchurch. It sets out the spatial strategy.

76. Orion **supports** the spatial strategy in principle but submits that some of the directions contained in the opportunities could be further amended or expanded as follows:

Opportunity 2

77. Page 60 and Map 9 refers to protecting strategic infrastructure, noting that urban development should be avoided around strategic infrastructure to ensure the safety and wellbeing of residents and to

safeguard the effective operation, maintenance and potential for upgrades of this infrastructure. Key strategic infrastructure in Greater Christchurch includes Christchurch Airport, the Port of Lyttelton, the inland ports at Rolleston and Woolston, state highway and rail corridors, and the electricity transmission network (see Map 9).

78. There is no specific link to this discussion in terms of a direction statement corresponding to an opportunity. In our view, Map 9 better corresponds with the discussion under direction 5.3. We suggest that Map 9 is moved to this part of the plan along with a new direction statement referring to the protection of strategic infrastructure. We also ask that this discussion is amended to refer to **electricity distribution** as well as electricity transmission. The distribution network is shown on the map but given its importance should also be specifically referred to in the accompanying narrative.

Opportunity 4

79. Direction 4.2 should be expanded as follows:

*4.2 Ensure sufficient development capacity (**including identifying, protecting, and securing land interests needed for infrastructure**) is provided or planned to meet demand*

80. In our view this is crucial to achieving the opportunities identified in the strategy. Early identification of land interests needed for infrastructure for housing and transport developments will better enable this opportunity to be achieved. Ultimately, we think this will be of lower cost in the long run and minimise social disruption.

81. Direction 4.4 should be amended as follows:

*4.4 Provide **a range of choice of healthy homes** taking into account affordability ~~housing choice and affordability~~*

82. We want to emphasise the importance of energy efficient buildings and healthy homes. Energy efficient buildings, especially housing, is critical for an efficient, lower cost / higher societal benefit overall transition to a decarbonised energy system. From our point of view, there is little point in New Zealand investing billions of dollars to enable a low carbon energy system, if the renewable energy supplied to heat, cool, light and maintain a building simply ebbs away through poorly designed, constructed and/or operated buildings. For housing this would further contribute to substandard conditions and energy hardship, as well

as driving our winter peak electricity demand, associated investment in infrastructure, and ultimately costs to our community.

Opportunity 5

83. Direction 5.1 should be amended to also refer to energy infrastructure as follows:

*5.1 Sufficient land is provided for commercial and industrial uses well integrated with transport links, **energy infrastructure** and the centres network*

84. Many of our commercial and industrial customers are exploring electrification as a pathway to decarbonise their process heat, replacing existing coil boilers and other fossil fuel energy sources. The resulting significant increase in electricity demand will require enabling investment in our network infrastructure.

85. Direction 5.3 should be amended as follows:

*5.3 Provision of strategic infrastructure that is resilient, efficient, **integrated** and meets the needs of a modern society and economy*

86. The discussion in relation to direction 5.3 refers to establishing strong partnerships with providers of energy and digital technologies, and ensuring that the planning for telecommunications and energy infrastructure is well integrated with new development. We think this should be emphasised in the opportunity itself.

87. We also highlight the need for a strong focus on energy resilience in the face of increasing climate change physical risk; our community's exposure to earthquakes, particularly an Alpine Fault event; and society's increasing reliance on electricity for critical services, including communication, transport and heat, and so vulnerability to outages.

88. See also our discussion about Map 9 as set out above.

89. In addition to strengthening electricity infrastructure, we see the potential for a network of community energy / resilience hubs as an enabler of community disaster resilience, and potentially broader community benefits. There may be benefit in considering the location and design of such hubs in the Spatial Plan, and we would welcome the opportunity to explore this with the Komiti.

Opportunity 6

90. We submit that a new direction should be included that allows for the electrification of the transport network. For example:

6.5 Enables and supports the electrification of the transport fleet including through charging infrastructure

91. As we have said above, we expect growing demand for electricity for transport as fossil fuels are phased out of both private and public transport. We acknowledge and fully support the focus on changing people's travel behaviours and shifting the focus from single occupancy vehicles to more sustainable modes. In addition, the electrification of the transport fleet will be critical to support decarbonisation of the region, and require significant and timely enabling changes to network infrastructure.

92. Charging infrastructure will also be integral to the electrification of the transport fleet. This will include residential charging (on and off street), commercial charging, and workplace charging. The spatial strategy will need to dovetail with the Government's electric vehicle charging strategy when that is finalised and released.

93. People and freight mode shift; the rate of uptake of electric vehicles across our region; together with where, when and how these vehicles are charged, are all important drivers of electricity infrastructure investment, highlighting the importance of integrated planning to achieve our decarbonisation goals.

Concluding comments

94. Thank you again for the opportunity to provide this submission. We would like to be heard in support of our submission when the Komiti holds hearings.

95. The joint contacts for this submission are Hannah Marks, Land and Planning Adviser, Hannah.marks@oriongroup.co.nz ph 021544929 and Vivienne Wilson, Policy Lead, vivienne.wilson@oriongroup.co.nz, ph 0272022718.

Yours sincerely



Sam Elder

GM Energy Futures

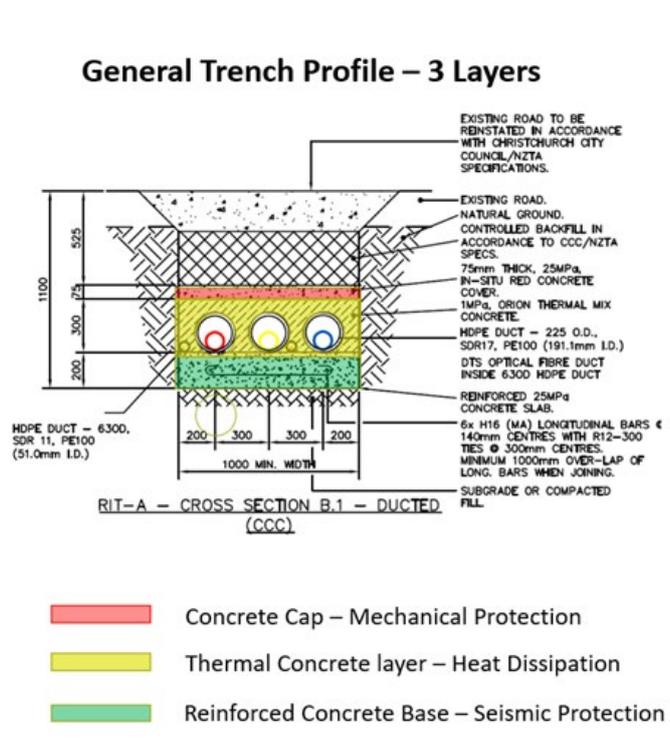
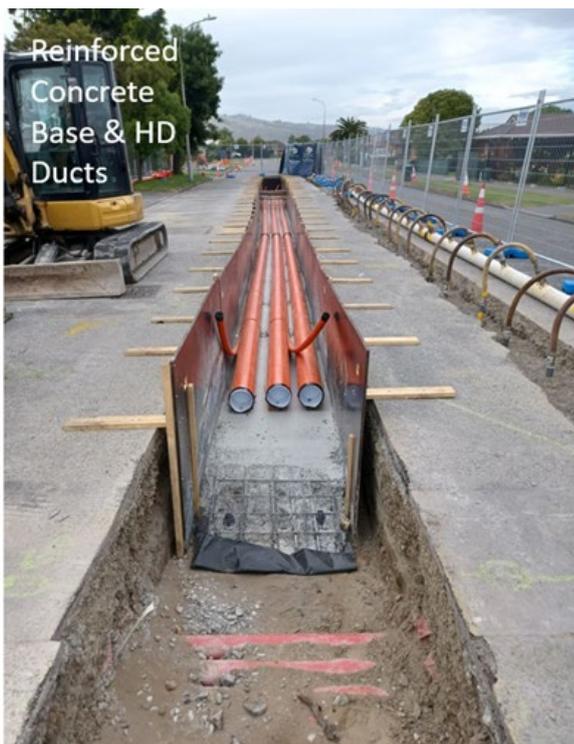
e. sam.elder@oriongroup.co.nz

p. 021 245 8945

“A”

The trench works and cable installation of a typical 800m long section of high voltage (66kV) cable would usually take approximately 8 weeks. A recent example is the section of cable installed at Ferry Road as part of the Milton to Bromley cable upgrade. This is one section of a 7km cable program.

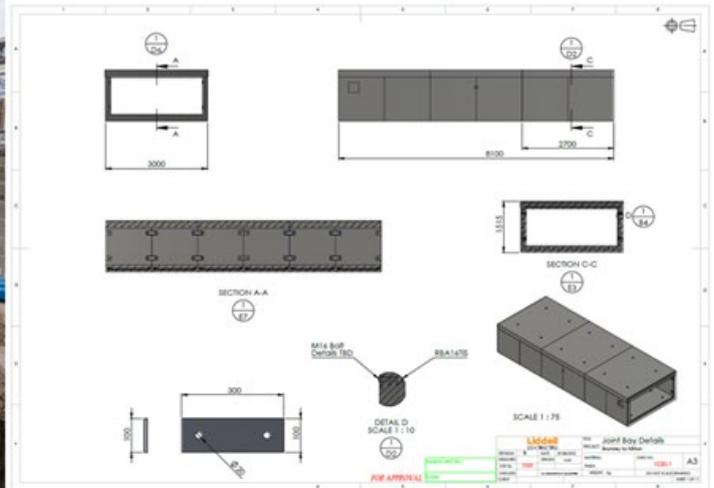
The scale of the works and the traffic management required can be seen in the images below. The images below show typical cross section of 66kV cable profile & installation with duct and dewatering set ups.



Relocating cable will also require the installation of two joint bays at either end. Below images show joint bay sizing and cable pull set up area required.



Pre-Cast Joint Bay Design



Benefits

- Strong shoring structure – load rated for vehicles
- Allows for temp reinstatement
- Quicker installation - 2 days faster per bay saving traffic management & site security
- Better trench hygiene than plywood alternative
- Fit jointing container
- Seismically rated & removes requirement for encasing joints in thermal concrete

