
PREFERRED OPTION REPORT TO DISTRICT PLAN COMMITTEE

DATE: 27 March 2019

TOPIC NAME: Energy and Infrastructure

SCOPE DESCRIPTION: Orion Protection Corridors

TOPIC LEAD: Nicola Rykers

PREPARED BY: Nicola Rykers

EXECUTIVE SUMMARY

<i>Issue(s)</i>	<i>Whether to include electricity protection corridors for Orion's 33kV and 66kV electricity distribution lines in the Proposed District Plan</i>
<i>Preferred Option</i>	<i>Adopt proposed Orion Protection Corridor and associated provisions for 33kV and 66kV lines.</i> <i>That the Committee endorses the Preferred Option for Orion Protection Corridors' for further development and engagement, including Section 32 and plan drafting.</i>
<i>DPC Decision</i>	<i>"That the Committee:</i> <i>a) Notes the report.</i> <i>b) Endorses the Preferred Option for Orion Protection Corridors for further development and engagement, including Section 32 and plan drafting.</i> <i>c) Notes the summary report"</i>



1.0 Introduction

1.1 Background

The Committee may recall that at its meeting on 5 December 2018 the matter of potential electricity protection corridors for Orion's 33kV and 66kV electricity distribution lines was discussed.

The Committee endorsed the following approach to electricity distribution lines:

- Map the Orion sub-transmission lines on the planning maps.
- Before determining what types of policies or rules should be adopted in relation to maintenance and protection of sub-transmission lines:
 - o Undertake further assessment of the nature of existing land uses under and in the vicinity of potential electricity protection corridors; and assess the effect particularly in relation to fixed irrigation and other rural uses.
 - o Complete an assessment of the sub-transmission line in relation to the criteria for Strategic Infrastructure in the Canterbury Regional Policy Statement.

This report provides the Committee with a further up-date in respect of these matters and makes a recommendation in respect of Orion's request for protection corridors to be included in the Proposed District Plan.

2.0 Orion's Requested Rules

The proposed rules would apply to Orion's sub-transmission lines. A plan showing the location of those lines is attached as **Appendix 1**. A summary of Orion's requested rules are as follows:

Urban Zones

Sensitive activities to be setback:

- 10m from the centreline or the foundation of a 66kV double-circuit line
- 5m from the centreline or the foundation of a 33kV or 66kV single circuit line

Sensitive activities are defined in the National Policy Statement for Electricity Transmission as residential buildings and hospitals. In the Operative District Plan sensitive activities are defined as including residential activities, travelers' accommodation, community and recreation facilities, places of assembly, a restaurant, education facilities and camping grounds.

Fences made with conductive materials to be setback 5m from the foundation of a support structure except where meeting particular requirements of the NZECP34:2001.

Trees: - to be planted minimum of 5m from centreline where the tree grows above 3m, including road reserve.

Non-compliance would require a resource consent for a non-complying activity.

Rural Zones

A list of specific buildings comprising commercial greenhouses, wintering barns, produce packing buildings, milking/dairy sheds or structures associated with irrigation infrastructure (excluding mobile irrigators); and

Farm buildings and horticultural structures, except where they meet specific requirements of NZECP34:2001; are to be setback:

- 10m setback from the centreline or the foundation of a 66kV double-circuit line;
- 5m from the centreline or the foundation of a 33kV single circuit line.

Fences made with conductive materials to be setback 5m from the foundation of a support structure except where meeting particular requirements of the NZECP34:2001.

Trees: - to be planted minimum of 5m from centreline where the tree grows above 3m, including road reserve.

Non-compliance would require a resource consent for a non-complying activity.

Earthworks

Earthworks must:

- Meet the requirements of NZECP34:2001; or
- Meet requirements for excavation depth within specified distances of the foundation of a support structure¹ along with the clearance between the ground and

These limitations **do not** apply to earthworks for:

- Network utilities as part of an electricity distribution activity;
- Earthworks as part of agricultural or domestic cultivation, repair, sealing or resealing of a road, resealing of a road, footpath, drive or farm track.

Subdivision

- Subdivision of a site within 32m of the centreline of the electricity distribution line and identification of any building platform within 10m of the centreline, or a support structure is to be a restricted discretionary activity. Where non-complying with these requirements, the subdivision would be a non-complying activity.

3.0 Canterbury Regional Policy Statement

An analysis of the Canterbury Regional Policy Statement in relation to strategic infrastructure has been undertaken – See **Appendix 2**.

¹ No deeper than 300mm within 6m of the foundation of a double circuit sub-transmission line and no deeper than 3m between 6 and 10 from the foundation of a double circuit sub-transmission line

The analysis concludes that there is no regional policy impediment to electricity protection corridors being implemented across the district, and that the CRPS has strong policy support for such a measure to be included in the Proposed District Plan.

4.0 Mapping

The Council's GIS department has mapped:

- 33 kV electricity distribution/sub-transmission line and a 5m buffer measured from the centreline
- 66kV electricity distribution/sub-transmission line and a 10m buffer measured from the centreline

A Selwyn District Council student planner then interrogated the Council's aerial maps to identify the types of structures underlying the electricity distribution lines, and the nature of the underlying and surrounding land use. The analysis should be treated as indicative. This is because the aerials are not real-time and the use of the zoom can affect scale and accuracy. In addition, it is noted that it is not always possible to identify the purpose of a building from an aerial photo. See **Appendix 3** for a copy of the analysis.

The analysis confirms that the majority of the sub-transmission network is located within the road reserve. Accordingly, in those locations, the land immediately underlying the lines is typical of the road margins in Selwyn's rural and peri-urban areas. In this scenario, the proposed protection corridor frequently taps or lies on top of the road boundary of the respective property, or the protection corridor encroaches marginally into the property's front yard.

The question is if this encroachment into a front yard is a significant issue. In the vast majority of properties impacted in this way, the answer is no. In rural environments the first 1m to 2m of land is rarely occupied by buildings and is unlikely to be built on in the future, as the rural zone requires a 10m setback for buildings from the road.

There are a small number of examples where existing buildings are located very close to the road boundary in the rural zone. These generally fell into two categories:

1. Existing farm or homestead buildings, that are assumed to have existing use rights, due to their non-complying setback from the road. Any expansion of these buildings would be "caught" by the proposed Orion rules (as well as requiring resource consent for a reduced road setback).
2. Existing dwellings on very small allotments that are assumed to be historic subdivisions e.g., properties as shown in Figures 1 and 2 below.

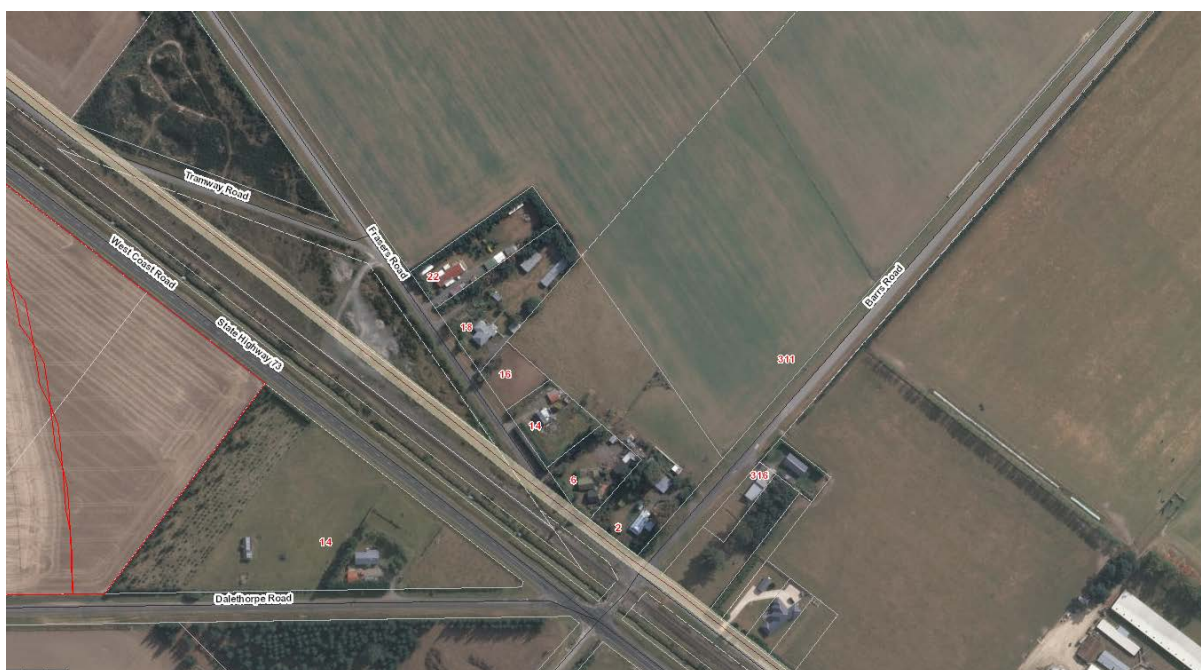


Figure 1: Corner of Frasers and Barrs Road



Figure 2: Duck Pond Road, Motukarara

On larger rural properties the homesteads and/or farm buildings are typically clustered and well away from the influence of electricity lines which are situated in the road reserve. Where clusters of buildings exist within larger rural properties there generally appeared to be sufficient contiguous area for more buildings to be located away from the road boundary. Overall, the analysis did not reveal recurring examples where existing farm buildings or activities would be compromised by the proposed corridors.

Pastoral activities

The maps in **Appendix 4** show those areas where the lines traverse private property rather than along the road. Those areas where the lines traverse rural properties are generally occupied by pastoral and arable land uses. The proposed Orion rules do not result in any limitation on cultivation or pastoral activities (noting the comments on irrigation below). As noted above, there did not appear to be multiple or recurring examples where buildings within these properties would be significantly compromised by the proposed protection corridor.

Horticulture and use of fixed irrigation

It is acknowledged that horticulture may be a rural land use that occupies land up to the road boundary. This was identified in the analysis of the aerial maps where orchards are revealed as occupying land up to the road boundary. Accordingly, any limitation on fixed irrigation within a 5m or 10m setback from a sub-transmission line, and where that setback encroaches onto private land is potentially problematic.

It is also understood that horticultural activities are frequently rotated between properties and this makes it more difficult for horticulturalists to “plan” the layout of a use of a property to avoid the influence of a protection corridor.

Urban Areas

Generally, the sub-transmission lines travel around the boundaries of townships and were located on the rural side of the road. Similar to the presence of historic under-sized allotments in the rural zone, there are some isolated parts of urban settlement more potentially impacted by a protection corridor. This includes Sheffield as shown on the map in **Appendix 4**. In the Sheffield example, the reducing depth of properties means that an increasing proportion of properties fall within the influence of the protection buffer.

5.0 Legal Opinion

A legal opinion was sought from Adderley Head on the relationship between the New Zealand Electrical Code of Practice for Electrical Safe Distances and the District Plan. A copy of the opinion is attached as **Appendix 5**.

Adderley Head was asked to provide advice on:

- The alleged inadequacy or difficulty of enforcing the NZ Code of Practice for Electrical Safe Distances 2001 as a reason for including the proposed rules sought by Orion in the District Plan; and
- If the inclusion of protection corridors in the City Plan creates a legal precedent to provide for protection corridors in the notified Selwyn District Plan.

In summary the key findings of the legal opinion are:

- The Council is entitled to rely on and adopt the New Zealand Electrical Code of Practice for Electrical Safe Distances.
- It is recommended that Council does include rules relating to safe distances within the Proposed District Plan and specifically references the NZECP34:2001 requirements.
- Without compelling or persuasive evidence from Orion for provisions which have differing or more onerous rules than the NZECP34:2001, Council should only impose those setbacks that are prescribed in the Code.
- There is no legal precedent for Council to follow the City Plan approach in relation to protection corridors. There may be similarities in issues that can be informing but the differences between metropolitan Christchurch and the significant rural areas of Selwyn District were noted.

6.0 Orion Provisions in Relation to the NZECP34:2001

Adderley Head's advice is that Council requires persuasive evidence from Orion in order to consider setbacks or provisions which may vary from the Code.

Set out below are the differences between the NZECP34:2001 and the provisions sought in respect of buildings and fences:

Minimum distances between buildings and overhead electric line support structures	NZEC34:2001	Orion Provision
11kV to 33kV	2m (to a pole)	5m
Exceeding 33kV to 66kV	6m (to a pole) and 9m (to a tower)	10m
Exceeding 66kV	8m (to a pole) and 12m (to a tower)	n/a
Fences	NZEC34:2001	Orion Provision
33kV	2.2m	5m except where it meets clause 2.3.2 or 2.3.3. of NZECP34:2001
66kV	5m and with written approval	5m and with written approval

Orion has submitted that the NZECP34:2001, first published in 1993 and then amended in 2001 does not adequately address the health and safety requirements now imposed by more recent legislation. For example, Orion advises that NZECP34:2001 is considered to be deficient in respect of "step and touch" potential arising from the conductivity of structures, fences close to structures and overhead lines.

Orion presented evidence to the Christchurch Hearings Panel advising that the width of the corridor should be determined by a number of considerations. These included:

- Ensuring that the mechanical performance of the infrastructure is maintained.
- Ensuring electrical performance is maintained.
- Ensuring safe operation in the event of electrical or mechanical failure.
- Management of reverse sensitivity effects relating to electric and magnetic fields, audio noise, radio interference.
- Access for operation and maintenance purposes.

In its evidence Orion applied Transpower's best practice guidelines to determine appropriate corridor widths. This guidance differs from that contained in NZECP34:2001.

It is relevant to note that the 66 kV that travels from Springston past Prebbleton was previously owned by Transpower and land use would therefore be subject to the National Grid rules which specify a 12m setback for sensitive activities from the centreline. This line is now owned by Orion, and a transfer in ownership does not alter the operational specification or criteria of the line, or the physics determining the appropriate width for a protection corridor. If the corridor width was previously, as best practice and provided for a national environmental standard as 12m, it is unclear how a change in ownership reduce the degree of protection required from a technical perspective.

Apart from the National Policy Statement for Electricity Transmission, Orion is subject to the same legislation and asset management requirements as Transpower. Accordingly, from an asset and operational perspective, Orion submits that it is appropriate to adopt the same technical criteria for determining a corridor width that will meet operational and safety requirements.

Transpower calculates the width of a corridor based on the swing of the conductor using standard line types, voltage and structural configuration. Transpower advises² that the distance a conductor swings is dependent on temperature, power being carried, wind speed, type and size of the conductor, tension of the conductor, supporting structure configuration and length of span. The width of the corridor is then determined by the 95th percentile span and access requirements. Transpower's calculation for a 66kV line was 10m from either side of the centreline and 10m from the outer edge of foundations. All of this information was presented to the Christchurch District Plan Hearings Panel and is a matter of public record.

Applying the same methodology, Orion has calculated a 5m setback either side of the centreline and from the outer edge of poles or foundations. These are the same setbacks applied in the Christchurch District Plan. This information has all been sourced from evidence presented to the Christchurch Hearings Panel and the decision of the Hurunui District Plan hearings panel.

It is noted that the 5m is just below the 6m that would apply to a line that is 33kV and over, while the 10m for a 66kV line falls below the 12m that applies to lines exceeding 66kV. On this basis, the measures sought by Orion are at the upper end of safe setbacks prescribed by the Code. They are however developed on a technical basis that has been accepted in other district plan hearing processes as an appropriate measure for setbacks.

Other key points from the Orion evidence includes:

- There is poor knowledge of the existence of the Code by property owners/developers, and therefore variable compliance with its requirements.
- The distances established in the Code have not prevented underbuild or earthworks with the potential to compromise the network.

² Evidence of Roy Noble, Asset Engineering (Lines) Manager Transpower, Christchurch Replacement District Plan Hearings

- Lines (technically called conductors) do occasionally fall to the ground, often due to third party activities; while insulators, conductors and joints can fail posing risk of damage and electrocution.
- Underbuilding complicates replacement of conductors which can no longer be lowered to the ground for replacement. Alternative methods involving rolling in and rolling out the old and new lines incurs considerable time, cost and safety risk.
- Underbuilding prevents linemen using trolleys to travel along conductors where spacers need to be replaced.
- Can restrict vehicular access.

Orion has provided further information to the Council in support of its provisions. This information is attached as **Appendix 6** and includes:

- Photos of breaches of the NZECP34:2001
- Legal Opinion on asset protection in the Selwyn District Plan Review
- Supporting statement

It is also necessary to acknowledge the views expressed by Federated Farmers and Horticulture New Zealand. Horticulture New Zealand has advised³ that it does not consider the provisions sought by Orion to be necessary because:

- *The Electricity (Hazard from Tree) Regulations apply so it is necessary to require a tree limitation.*
- *Fences are addressed in NZECP34:2001.*
- *Distances for buildings are set out in NZECP34:2001. A note could be included in the District Plan to advise that NZECP34:2001 needs to be complied with.*
- *Reverse sensitivity is likely to be a matter that is included in the district plan and the sensitivity of specified activities to electricity distribution lines could be included within the wider context, including a policy framework and assessment matters.*
- *NZECP34:2001 has clear provisions for earthworks and there is no need to replicate in the district plan.*
- *The limitation on a range of specified structures is not necessary as the NZECP34:2001 requirements need to be met.*
- *The provisions would mean that irrigation in an orchard would be non-complying as it is not mobile. It is not considered that this irrigation infrastructure is incompatible with electricity distribution lines.*

Federated Farmers has similarly advised that the provisions sought by Orion as a real concern⁴, and consider that the rules and restrictions from urban/rural zones are being unilaterally applied to rural areas. Federated Farmers states that it understands the responsibility to ensure there is sufficient infrastructure to support communities, but network utility companies should not be allowed to unduly impinge on landowners rights to reasonable enjoyment and use of their land. It considers that NZECP34:2001 addresses matters of safety, access for maintenance and protection of assets, and where

³ Hort NZ Comments on Orion Draft Network Utility Provisions for SDP review, November 2018, page 9

⁴ Federated Farmers, Feedback Selwyn Network Utility Provisions, November 2018, pages 5 and 6

private landowners host infrastructure assets, the provider should ensure there is suitable awareness of the requirements.

The variance or inconsistency between NZECP34:2001 and the Transpower methodology (based on the swing of the conductor using standard line types, voltage and structural configuration etc) is confusing and does not provide a singular option for a preferred protection corridor provision. The writer has contacted Worksafe New Zealand to understand if there is any proposal to review the Code of Practice. There is not, but Worksafe New Zealand indicated that the Transpower approach was valid, and that NZECP34:2001 was a minimum.

In summary, there is inconsistency between the requirements of NZECP34:2001 and the best practice approach that has been developed and adopted by Transpower. In the writer's opinion, ownership status should not be a factor in the technical or operational requirements for the appropriate protection corridor. The technical basis for the width of the protection corridor has been considered and adopted in both Christchurch City and Hurunui District, and in both those scenarios achievement of the CRPS requirements were a consideration in the decisions.

7.0 Options

There are two options for the Proposed District Plan as follows:

1. Adopt the setbacks of NZECP34:2001 for the Proposed District Plan; or
2. Adopt the Orion provisions (or as amended to address issues relating to definitions, exemptions and fixed irrigation) for the Proposed District Plan.

Either option is likely to result in submissions in opposition. Adderley Head has advised that Council should adopt the NZECP34:2001 as the starting point as this represents a well-researched and technically based standard and any variance from that approach would require compelling evidence.

In the writer's opinion, there are compelling reasons to consider adopting the Orion 5m and 10m setbacks for the Proposed District Plan. These include:

- There is a robust technical basis for the preferred protection corridor for 66kV lines of 10m. A change in ownership is not a technical reason that changes the physics of electricity lines. It therefore raises questions as to how NZECP34:2001 achieves the same level of safety that was deemed necessary and appropriate through the National Environmental Standards for Electricity Transmission, when Transpower owned the line.
- The technical basis for the Orion setbacks is consistent with the approach and methodology adopted by Transpower. Evidence presented to Christchurch City and Hurunui district plans on this matter resulted in protection corridors being adopted, consistent with the approach being sought by Orion in the Selwyn District Plan review.
- There are documented examples where NZECP34:2001 is not providing effective control.

On this basis the writer is of the opinion that the Orion provisions are robust and defensible.

Federated Farmers and Horticulture New Zealand have raised matters of concern which do require further consideration and refinement in the drafting of the rules. In particular, the following matters are noted:

- The range and type of buildings exempt from the setbacks needs to be rationalised with those proposed by Transpower.
- Provision for fixed irrigation is required.
- Exemptions for the activities of other network utilities also needs to be rationalised or considered.

8.0 Conclusion

In the writer's opinion there are sound planning reasons to support rules in the District Plan for protection corridors for electricity sub-transmission lines. These include:

- The provisions of the Canterbury Regional Policy Statement place emphasis on enabling and protection of regionally significant infrastructure which includes electricity distribution lines. There is specific reference to consistent cross-boundary jurisdictional management in addressing the adverse effects of, and on, lineal infrastructure corridors⁵.
- The significant risks to people's social and economic wellbeing from any failure or disruption to the electricity distribution network.
- That the provisions accord with the management approach to other lineal network utilities, such as roads, where there are provisions to protect people's safety as well as the functioning of the utility.
- Whilst there are differences between the NZECP34:2001 and the proposed provisions, those differences are based on technical calculations that reflect actual risk.
- Analysis of the proposed protection corridor in relation to existing land use activities does not reveal any pattern of significant or adverse recurring constraints on land use.

The proposed rules do however have include matters that will require attention during drafting as noted above.

9.0 Stakeholder engagement

It is recommended that the Council inform landowners of the proposed corridor protection corridors for 33kV and 66kV lines in those instances where:

- The lines traverse and are located entirely within private property; and
- Where the protection corridor intrudes into private property by a minimum of 1m.

It is recommended that a letter is sent to those property owners informing them of the following:

⁵ Chapter 5, page 44, 2nd paragraph, CRPS

- Council has resolved to show 33kV and 66kV electricity distribution lines on the planning maps;
- Advise property owners that building, earthworks and planting under and near these lines is regulated by the New Zealand Electrical Code of Practice for Electrical Safe Distances (NZECP 34:2001);
- Advise that the Council is proposing to introduce provisions which will include requirements for particular buildings, tree planting, earthworks and subdivision, including a setback 5m from the 33kV and 66kV single circuit lines and 10m for 66kV double circuit lines. These setbacks are wider than provided for under the NZECP34:2001. The reason for the increased setback is to protect the electricity distribution network and provide for the safety of property and people.

Between 800 and 1000 letters may need to be sent. The outcomes of the engagement can be considered by the District Plan Committee at its workshop on this topic in early May.

10.0 Recommendations

That the Committee adopts the proposed Orion protection corridor of 5m and 10m for single circuit (33kV and 66kV lines) and 10m for double circuit 66kV lines along with the associated provisions as a basis for engagement, and further development through plan drafting and section 32 analysis.

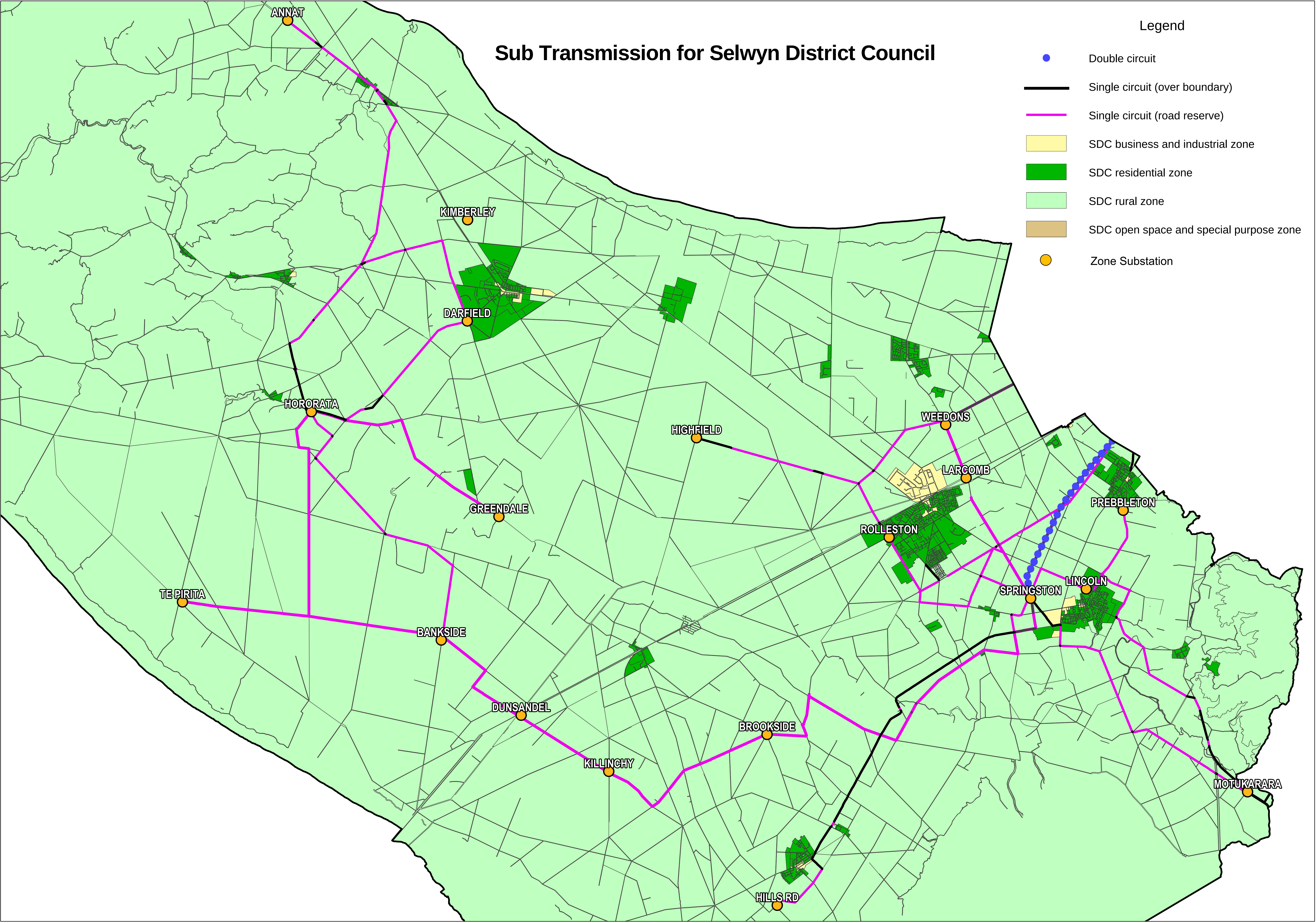
APPENDIX 1

LOCATION OF SUB-TRANSMISSION LINES

Sub Transmission for Selwyn District Council

Legend

- Double circuit
- Single circuit (over boundary)
- Single circuit (road reserve)
- SDC business and industrial zone
- SDC residential zone
- SDC rural zone
- SDC open space and special purpose zone
- Zone Substation



APPENDIX 2

CANTERBURY REGIONAL POLICY STATEMENT ANALYSIS

Analysis - Canterbury Regional Policy Statement (CRPS)

The relevant chapters of the CRPS are Chapter 5 Land Use and Infrastructure and Chapter 6 Recovery and Rebuilding of Greater Christchurch, which applies to those parts of Selwyn District encompassed within the boundary of Greater Christchurch¹.

The CRPS has the following definitions of relevance to network utilities:

- Community-scale irrigation, stockwater and rural drainage infrastructure
- Critical infrastructure
- Electricity transmission network
- Essential structures
- Regionally significant infrastructure
- Telecommunication/radiocommunication facilities

Definitions specific to Greater Christchurch include:

- Electricity transmission network
- Strategic infrastructure

Of particular relevance is understanding the differences, if any, between regionally significant infrastructure and strategic infrastructure. Some analysis of the differences between these two definitions is provided to clarify if the same policy status can be applied to electricity distribution in those parts of Selwyn District falling within Greater Christchurch and those parts which are located within the Wider Region. (This is a matter of policy interpretation raised by Federated Farmers and Horticulture New Zealand through consultation in respect of electricity distribution).

The definition of regionally significant infrastructure is comprised of a list of facilities and network utilities. Of relevance to the Network Utilities topic the following are identified as regionally significant:

- Strategic land transport network and arterial roads
- Telecommunication facilities
- The electricity transmission network
- Sewage collection, treatment and disposal networks
- Community land drainage infrastructure
- Community potable water systems
- Established community-scale irrigation and stockwater infrastructure
- Electricity distribution network

On the basis of this definition all of the network utilities to be incorporated into the Network Utilities topic are regionally significant, including electricity distribution.

¹ The CRPS refers to Greater Christchurch, the Wider Region (which is the geographic area of the region beyond Greater Christchurch) and the Entire Region (which encompasses both Greater Christchurch and the Wider Region).

The Plan has a list of separate definitions which apply to the area of Greater Christchurch. These include a definition for strategic infrastructure, which means:

“those necessary facilities, services and installations which are of greater than local importance and can include infrastructure that is nationally significant. The following are examples of strategic infrastructure...”

This text is followed by a list of examples of facilities and infrastructure that would fall within the definition. It is relevant to note that this list is not a “full and final list” but are examples only. Accordingly, if a network utility is not included in the list, it is not precluded from falling within the definition of strategic infrastructure. In addition, the definition clearly anticipates additional utilities may be Strategic as it refers to “other strategic network utilities”.

Having regard to the first part of the definition for Strategic Infrastructure, the key determinant of whether a network utility could be considered strategic is based on whether the utility is able to demonstrate that its service or facility is both “necessary” and of “greater than local importance”.

With respect to electricity distribution, this utility is specifically listed in the definition of Regionally Significant Infrastructure but is not identified as an example of Strategic Infrastructure. The absence of electricity distribution from the definition of Strategic Infrastructure does not however mean that electricity distribution is not Strategic. In considering the electricity distribution network in Selwyn District, approximately 250km of the 4,500km overhead electricity network is described as sub-transmission. These lines operate at 33,000 or 66,000 volts and are owned by Orion. Orion describes these circuits as the arteries of its network, inter-connecting Orion’s Zone substations and allowing for the efficient transfer of electricity. Failure of the sub-transmission lines has the potential to result in significant disruption to the supply of electricity to homes and business throughout the District. Based on information provided by Orion², it is concluded that the sub-transmission lines are necessary infrastructure and of greater than local importance. Accordingly, the sub-transmission lines can be considered to be both Regionally Significant and Strategic Infrastructure.

In respect of network utilities, the focus of Chapter 5 is Regionally Significant Infrastructure and its integration with land use. The Plan notes³ that without effective regionally significant infrastructure the benefits of development may not be realised, either declining or resulting in unacceptable adverse effects on the environment.

Issues relating to infrastructure are set out in Chapter 5. These include the following:

5.1.1 Adverse Effects of Development

The use and provision of infrastructure is identified as part of development, and whilst acknowledging the importance of infrastructure for enabling people and communities to provide for their wellbeing, the CRPS states that where development is not appropriately managed there can be significant adverse effects on the environment. The Explanation advises that these adverse effects may be individual or cumulative and a comprehensive list of matters of concern is set out. Those effects of infrastructure (as part of development) relevant to the district plan review include:

² Selwyn District Plan Supporting Document Overview, prepared by Orion November 2018

³ Canterbury Regional Policy Statement, Chapter 5, Introduction, page 5-1

- loss and degradation of amenity values, landscape values, historic heritage values, recreational values, public access, ecosystem values (including indigenous vegetation and habitats of indigenous fauna), along with estuary, river margin and wetland values.
- Increased vulnerability to impacts from natural hazards.
- Reduction in rural primary productive base.
- Locating development that lack necessary infrastructure.
- Reverse sensitivity effects limiting the operation of existing and consented infrastructure.
- Effects on Ngāi Tahu and their culture and traditions.

5.1.2 Inappropriate Design, Location and Function of Development (Wider Region)

The CRPS states that the design and location of development if inappropriate, will reduce the community's wellbeing. The issue states that it is necessary to ensure that public infrastructure is efficient and effective and reverse sensitivity effects are recognised and avoided. The relative value of land for other activities must also be recognised.

Issue 5.1.3 is concerned with the lack of strategic integration of regionally significant infrastructure and land use. The issue recognises that co-ordination and integration is required to ensure that benefits are achieved. This includes consistent cross-boundary management of adverse effects that is required both of, and on, regionally significant infrastructure. Particular reference is made to lineal infrastructure corridors which cross territorial boundaries. Without integration potential effects may include:

- Constraints on the safe, efficient and effective use, development and operation of regionally significant infrastructure.
- Untimely, inefficient and costly provision of regionally significant infrastructure
- Adverse effects on surrounding land uses
- Failure to realise the full "whole of operational life" value of investment made in establishing regionally significant infrastructure

Relevant objectives from Chapter 5 are summarised as follows:

5.2.1 Location, design and function of development (Entire Region)

This objective requires that development is located and designed so that it functions in a way that achieves consolidated, well designed and sustainable growth and enables people and communities to provide for their social, economic and cultural well-being and health and safety. Wellbeing is further qualified by a list of matters, which relate to quality of the environment, housing, economic development, energy efficiency, support for rural activities and establishment of papakāinga and marae. Of particular relevance to network utilities is that development is compatible with, and will result in the continued safe, efficient and effective use of Regionally Significant Infrastructure and conflicts between incompatible activities are avoided.

Objective 5.2.2 is more specific with respect to the integration of land use and regionally significant infrastructure in the Wider Region. The objective recognises the benefits of regionally significant infrastructure to the extent that it promotes sustainable management along with the need for the patterns and sequencing of land use to integrate with regionally significant infrastructure. This is to be

achieved by ensuring that there are no adverse effects on the operation, use and development of such infrastructure, and that adverse effects arising from regionally significant infrastructure are managed. The Explanation notes that regionally significant infrastructure makes a significant contribution to community wellbeing, it represents a considerable financial investment and is unlikely to be readily replaced or duplicated. It is noted that it is not always practicable to “internalise” all adverse effects on the environment arising from infrastructure and that recognising the importance of infrastructure will lead to greater weight being given to its requirements. In this context the CRPS advises that it is desirable to manage the location and form of surrounding development to reduce incompatibility and conflicts (as distinct from the utility being required to manage its location and form).

Relevant policies are discussed as follows.

Policy 5.3.1 Regional growth (Wider Region)

As a primary focus, this policy seeks to promote sustainable development patterns. Whilst there is no explicit mention of network utilities as part of that sustainable development pattern, the CRPS requires territorial authorities to include objectives, policies and methods in district plans which provide for integrated management and the avoidance, remediation or mitigation of reverse sensitivity effects. More specifically, the CRPS requires local authorities to work with providers of regionally significant infrastructure to identify patterns and locations of development as a key determinant of consolidated urban land use.

Policy 5.3.2 Development conditions (Wider Region)

This is a key policy for network utilities that is set out in 3 clauses. The first clause requires the development of regionally significant infrastructure to be enabled. Adverse effects which may compromise or foreclose existing or consented regionally significant infrastructure is to be avoided, remedied or mitigated. The second clause requires reverse sensitivity effects and conflicts between incompatible activities to be avoided or mitigated whilst the third clause seeks the efficient and effective provision, maintenance or upgrade of infrastructure. The CRPS requires local authorities to work with providers of regionally significant infrastructure when identifying patterns and locations of development and to recognise the economic and social benefits of such infrastructure. Local authorities must also manage any adverse effects from the installation, operation, maintenance and/or development of regionally significant infrastructure.

Policy 5.3.5 Servicing development for potable water, and sewage and stormwater disposal (Wider Region)

This policy is focused on the integration of development with the collection, treatment, disposal or re—use of sewerage and stormwater and provision of potable water. This is to be achieved by planning of development and services, but also by requiring services to be designed, built, managed or upgraded to maximise their on-going effectiveness.

Policy 5.3.6 Sewerage, stormwater and potable water infrastructure (Wider Region)

Within the wider region, this policy seeks to avoid development which may constrain the on-going ability of the existing sewerage, stormwater and potable water supply infrastructure to be developed and used. This is provided that through location and design adverse effects on significant natural and physical resources are avoided, or where this is not practicable, to be mitigated. The Council is to include objectives, policies and methods that control the location of development sensitive to the effects of existing sewerage and stormwater infrastructure and will provide for up-grading of existing and

establishing new sewerage and stormwater infrastructure. The explanation once again emphasises the importance of this infrastructure to people's social, economic and cultural wellbeing. Although important, this infrastructure must still manage adverse effects on the environment and particular mention is given to potential effects from sewerage, stormwater and potable water infrastructure on cultural values.

Policy 5.3.9 Regionally significant infrastructure (Wider Region)

This policy is specific to regionally significant infrastructure. It requires development (more generally) to avoid constraining the ability of infrastructure to be developed and used without time or other operational constraints. Provision is also to be made for existing infrastructure to be maintained and operated without prejudice to any future decision for ongoing operation or expansion. The policy further requires that provision is made for expansion of infrastructure and development of new infrastructure whilst recognising there may be logistical, technical or operational constraints limiting where the infrastructure may locate or if the infrastructure needs to locate where particular natural or physical resources exist. Whilst expansion of existing infrastructure or development of new infrastructure should seek to avoid adverse effects on significant natural and physical resources and cultural values, it may not always be practicable to remedy or mitigate adverse effects. When assessing infrastructure in a sensitive environment the policy requires that consideration is given to alternative sites, routes, methods or design of structures.

Policy 5.3.10 Telecommunication infrastructure (Wider Region)

This policy replicates the intent and direction of policies above, to enable such infrastructure and avoid reverse sensitivity effects.

5.3.11 Community-scale irrigation, stockwater and rural drainage infrastructure (Wider Region)

This policy replicates the intent and direction of the policies above, to enable this infrastructure and avoid reverse sensitivity effects. The importance of this infrastructure to Canterbury's rural economy is recognised, along with the considerable public and private financial investment that has been made in its establishment.

5.3.12 Rural production (Wider Region)

This policy requires natural and physical resources that contribute to Canterbury's overall rural productive economy to be maintained and enhanced. Of particular note is that development (which includes infrastructure) should not foreclose the ability to make appropriate use of land for primary production. This a particular consideration raised in relation to electricity protection corridors for electricity distribution lines.

In summary, there is a very consistent direction in objectives and policies of Chapter 5 of the CRPS to:

- Recognise the social and economic benefits of regionally significant infrastructure;
- Enable the continuing operation and maintenance of existing regionally significant infrastructure and provide for upgraded and new infrastructure;
- Require development and infrastructure to be integrated from a planning stage;
- Protect regionally significant infrastructure from reverse sensitivity effects; and
- Require regionally significant infrastructure to manage its effects on the environment, and in particular significant environments and cultural values.

Chapter 6 of the CRPS is concerned with Recovery and Rebuilding of Greater Christchurch

The Chapter 6 objectives and policies apply to those eastern parts of the district defined as Greater Christchurch in the CRPS. Of relevance to the Network Utilities topic are the following issues, objectives and policies.

Issue 6.1.2 is concerned with adverse effects arising from development. The issue identifies the need for efficient and effective provision for the maintenance, upgrade and delivery of services and infrastructure, and in particular strategic infrastructure. The CRPS advises that a key element in the successful recovery and rebuilding of Greater Christchurch is the recognition of existing infrastructure and ensuring that relocation and future growth do not compromise the efficient operation of strategic infrastructure in particular. These matters are recognised in the following objectives and policies:

Objective 6.2.1 Recovery Framework

This objective is concerned that recovery, rebuilding and development are enabled through a land use and infrastructure framework, which includes amongst a number of outcomes, the integration of strategic infrastructure with land use development and the optimization of the use of existing infrastructure. This includes ensuring that development does not adversely affect the efficient operation, use, development, appropriate upgrade and future planning of strategic infrastructure.

Policy 6.3.2 Development form and urban design

Policy 6.3.3 Development in accordance with outline development plans

These two policies are relevant in respect of integration between infrastructure and development, a requirement repeated in both policies.

Policy 6.3.5 Integration of land use and infrastructure

This is the key policy for infrastructure in Chapter 6, providing greater specificity into how integration is to be achieved. The clauses within the policy focus on forward planning for infrastructure and sequencing with development to:

- optimise efficient and affordable provision of infrastructure;
- protect investment in existing and planned infrastructure; and
- require infrastructure to be in place before new development occurs.

The ability to maintain and up-grade infrastructure is also required, and management of land use to avoid reverse sensitivity occurring. Territorial authorities are required to put in place objectives, policies and rules to achieve these ends.

In summary, the provisions of Chapter 6 identify the same issues and types of outcomes to Chapter 5, but with greater specificity with respect to particular infrastructure. The key matters that must be included in the Proposed District Plan concern:

- recognising and enabling strategic infrastructure, including maintenance and up-grading;
- avoid locating activities close to infrastructure which may compromise its operational efficiency;
- integrate provision of strategic infrastructure with planned development.

APPENDIX 3

LANDUSE ANALYSIS

Orion Proposed Protection Corridors;

Review of Activities and Structures within Protection Corridors and the Immediate Locality.

<u>Location:</u>	Annat, Odgens Road, corner of Tramway Road to Sheffield Township Boundary (corner of Railway Terrace East and Queen Street) Follows water race course
<u>Underlying structures:</u>	There do not appear to be any significant underlying structures.
<u>Underlying land use:</u>	Agricultural purposes and road reserves. Runs along the road reserve/railway corridor the whole time, does not appear to cross private property.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural with open paddocks. • Line begins at Orion substation • At the corner of Frasers Road and Barrs Road the line passes over a reserve/old gravel pit and the buffer touches or crosses just over the boundary of 4 residential sections. • As the line progresses on its course it passes near a few small areas of shrub/brush/trees. • 2282 Tramway Road the buffer touches the boundary of a residential property (which appears to have an intensive pig farm behind it). • 2192 Tramway Road the buffer crosses the boundary of an agricultural contractor's yard.

<u>Location:</u>	North Sheffield township boundary to the corner of SH73 and Deans Road. Appears to partially follow water race
<u>Underlying structures:</u>	There do not appear to be any significant underlying structures.

<u>Underlying land use:</u>	The line is contained within the road reserve thus there is limited/restricted/no use of the underlying land.
<u>Surrounding land use:</u>	• As the line passes through the Sheffield Township the buffer appears to sit on or cross into approximately 20 residential sections, including the town hall and a memorial reserve. • At the top of the Waddington township boundary the line moves across a reserve to begin to follow the path of SH73 along/near the Waddington township border.

<u>Location:</u>	Corner of Deans Road and SH73 to the corner of Deans Road and Homebush Road. Appears to partially follow water race
<u>Underlying structures:</u>	The line runs along the Road Reserve there do not appear to be any underlying structures.
<u>Underlying land use:</u>	The underlying land use is Road Reserve. The corridor may slightly cross over boundary into paddocks which are being used for agricultural purposes.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural sheep/beef/dairy. • Approx. 610m down Deans Road the line passes nearby a stream, at which point it appears that it may slightly tuck into private land. • At 530 Deans Road (S1) the line/buffer crosses into a residential property. • At 398 and 374 Dean's road (S2) the line/buffer crosses into 2 residential properties and a farm yard with multiple sheds. • At 759 Cullens Road the buffer touches a properties boundary. • At 152, 180 and 182 Deans Road (S3) the buffer crosses the boundary of 3 residential properties and what appears to be a small recreational orchard.

<u>Location:</u>	From the corner of Deans and Homebush Roads to the corner of Homebush and Clintons Roads. Crosses the paths of water races
<u>Underlying structures:</u>	The line follows the Road Reserve/road side and there does not appear to be any underlying structures.
<u>Underlying land use:</u>	At the corner of Hacketts Road and Homebush School Lane the line appears to cross a small section of private property. Adjoining paddock used for agricultural purposes. At the corner of Cullens and Homebush Roads the line crosses the Selwyn River riverbed.
<u>Surrounding land use:</u>	Surrounding land use is agriculture and some houses.

<u>Location:</u>	From the corner of Homebush and Clintons Roads to the corner of Clintons and McLaughlin's Roads. Follows path of water race
<u>Underlying structures:</u>	At the corner of Clintons and McLaughlin's roads the line feeds into a substation. The line follows the Road Reserve and does not appear to cross any significant underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, use of this land is limited.
<u>Surrounding land use:</u>	- The surrounding land use is agricultural with large open fields. - At many addresses on Clinton's road the buffer touches/crosses a property boundary, but buildings are well set back and tend to be clustered together.

<u>Location:</u>	From the corner of Clintons and McLaughlin's Roads to the corner of Derretts and Bealey Roads and onto the Hororata substation. Crosses and follows various water race paths
<u>Underlying structures:</u>	The line crosses several water courses.
<u>Underlying land use:</u>	The line follows the Road Reserve so underlying land use is limited but appears to traverse a

	paper road on private property used for stock grazing.
<u>Surrounding land use:</u>	• In the first approx. 1.3km from the McLaughlin's/Clintons corner the buffer crosses the boundary of many properties. All, are large sections or blocks with buildings well set back. • The line passes over the Hawkins River, at which point it appears to cross private land (S4)? • The line crosses the Waianiwaniwa River. • At the corner of McLaughlin's and Coaltrack Roads (S5) the line crosses over Coaltrack Road onto Derretts Road which is an unformed paper road crossing a farm property. On the property the line passes near pine and scrub patches and crosses the Selwyn River riverbed. • At the corner of Derretts and Bealey Roads (S6) the line enters private property (248 Hawkins Road) and continues across this property until it reaches the substation.

<u>Location:</u>	From the Hororata Substation to the corner of Bealey and Coaltrack Roads, then onto the corner of Coaltrack and Ridgens Road where the Greendale substation is.
<u>Underlying structures:</u>	None, the line predominantly follows the road reserve.
<u>Underlying land use:</u>	Road reserve/paddock/riverbed.
<u>Surrounding land use:</u>	• Where the line crosses the Selwyn River it leaves the road reserve entering property/riverbed. • At the corner of Bridge and Coaltrack Roads the line slightly enters private property. • On Coaltrack road the line crosses the Selwyn River. • All the way along the buffer and line cross property boundaries but land use is predominantly agricultural and housing and buildings are set back from the boundary.

<u>Location:</u>	Corner of Homebush School Lane and Hackett's Road to the corner of Scott's Road and Plantation Road (line enters private property just short of this intersection). Partially follows and crosses water race paths
<u>Underlying structures:</u>	Other than the rivers the line follows the road reserve so doesn't appear to have any significant underlying structures.
<u>Underlying land use:</u>	On Beattys Road the line crosses the Waireka River and Selwyn River riverbeds.
<u>Surrounding land use:</u>	• The surrounding land use is predominantly rural with open paddocks/land. • The buffer crosses the boundary of the old school on Homebush School lane. Now a residential address. • The line crosses the Waireka river riverbed. • All the way along Beatty's road the buffer crosses the property boundaries, but houses and buildings appear well set back from the boundary. • At the end of Beattys Road the line crosses the Selwyn River riverbed via a paper road or corridor of some description, and Beattys Road on the other side becomes Scotts Road.

<u>Location:</u>	Corner of Wards and Highfield Roads to the corner of Wards and Kerr's Roads. Partially follows and crosses the paths of water races.
<u>Underlying structures:</u>	The line predominantly follows the road reserve or goes along the edge of paddocks so doesn't appear to impact any underlying structures.
<u>Underlying land use:</u>	Underlying land use is Road Reserve or paddocks.
<u>Surrounding land use:</u>	• Orion substation on the corner of Highfield and Wards Roads. • Surrounding land use is agricultural with large open fields, the buffer touches the property boundaries all the way along Wards Road but any houses are set well back.

	The line passes near the Road Metals quarry which is operated on the property at 68 Sandy Knolls Road and has entrances off Wards Road.
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<u>Location:</u>	Corner of Wards and Kerr's Roads to the corner of Newtons and West Melton Roads. Crosses/partially follows water race paths
<u>Underlying structures:</u>	The line follows the Road Reserve so doesn't have any significant underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve so underlying land use is limited.
<u>Surrounding land use:</u>	- Surrounding land use is agricultural with large paddocks fronting the road. - Along Kerrs Road the line appears to run within the property boundaries, but all 4 properties buildings are set well back from the line/buffer. - On West Melton Road the buffer touches and at some point crosses the property boundaries, buildings tend to be set back from the buffer (193 may be an exception) (S7). - Some small scale horticulture activity.

<u>Location:</u>	Corner of West Melton and Newtons Roads to corner of Newtons and Weedons Ross Roads. Follows path of water race
<u>Underlying structures:</u>	The line follows the Road Reserve so there does not appear to be any significant underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve is underlying land use is limited.
<u>Surrounding land use:</u>	- Surrounding land use is predominantly agricultural with large paddocks and also some housing. - Some small scale horticulture activity. 218 Knights Road, there is a pig farm (buildings not impacted).

<u>Location:</u>	Corner of Weedons Ross and Newtons Roads to the district boundary (154 Newtons Road).
<u>Underlying structures:</u>	The line follows the road reserve; no underlying structures.
<u>Underlying land use:</u>	Road reserve.
<u>Surrounding land use:</u>	• Surrounding land use is agricultural, with farms of varying sizes predominantly smaller e.g. lifestyle blocks. • Some small scale horticulture. 394 Newtons Road there is a commercial greenhouse operation. • 383 Newtons Road there is a poultry operation. • All the way along Newtons Road the buffer touches/crosses property boundaries but all buildings are well set back.

<u>Location:</u>	From the corner of Wards and Walkers Roads to Rolleston substation on Dunns Crossing Road. Crosses culvert/path of water race
<u>Underlying structures:</u>	The line follows the Road Reserve and does not appear to cross over any significant structures.
<u>Underlying land use:</u>	The line follows the Road Reserve so the underlying land use is limited.
<u>Surrounding land use:</u>	• Surrounding land use is agricultural, residential and commercial, but density is not too high and open space is still predominant. • Corner of Walkers and Two Chain Roads the line passes near the Rolleston Prison. Opposite the prison the line also passes near a pine plantation. • The line crosses SH1 onto Dunns Crossing Road and passes near many empty subdivision sections (unsure if imagery is current). • 327 Dunns Crossing Road the line passes near West Rolleston Primary School. • Along Wards and Dunns Crossing Road the buffer touches and crosses property boundaries, all buildings are set back from the boundary though.

<u>Location:</u>	From Rolleston substation on Dunns Crossing Road to corner of Dunns Crossing Road and Selwyn Road.
<u>Underlying structures:</u>	The line follows the Road Reserve so there are no significant underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve so land use is limited.
<u>Surrounding land use:</u>	• Surrounding land use is residential and agricultural being on the outskirts of Rolleston. • 243 Dunns Crossing Road the line passes near a factory farm (most likely chicken) with multiple large sheds. • The line passes near a few properties with buildings set back from the road.

<u>Location:</u>	From corner of Dunns Crossing Road and Selwyn Road to corner of Selwyn and Shands Roads. Crosses and follows paths of water races.
<u>Underlying structures:</u>	The line follows the Road Reserve, there are no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve so underlying land use is limited.
<u>Surrounding land use:</u>	• 870 Selwyn Road greenhouse (commercial). • 483 Selwyn Road factory farming operation poultry sheds (opposite side of road). • 162 Selwyn Road the line passes nearby a factory chicken farm. • 58 Selwyn Road the line passes near a chicken farm. • 50 Selwyn Road the line passes in front of a quarry. • Right along Selwyn Road the buffer touches and crosses property boundaries. Number 6 on the corner of Shands Road is most significantly impacted by the buffer.

<u>Location:</u>	From the corner of Selwyn and Shands Roads to the end of the line at 544 Shands Road (district boundary). Follows/crosses water races
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is a mix of agricultural and lifestyle block/residential housing. • 780 Shands Road the line passes near a rose nursery (Greenhouses). • 770 Shands Road line passes near a rural contractor's yard. • 700 Shands road the line passes near a cemetery. • 598 Shands Road greenhouse operation. • 516 Shands Road, chicken farm. • All the way along the buffer touches the property boundaries but does not encroach (or at least very little).

<u>Location:</u>	Corner of Selwyn and Rattletrack Roads to corner of Rattletrack and Ellesmere Junction Roads. Crosses/follows water races
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural with some housing (all set well back from boundary). • Some small scale horticulture.

<u>Location:</u>	Corner of Selwyn and Goulds Roads, to the corner of Goulds and Ellesmere Junction Roads then to the corner of Ellesmere Junction and Rattletrack. Partially follows water race near RT/EJ intersect.
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.

<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	Surrounding land use is predominantly agricultural with some housing (not impacted).

<u>Location:</u>	Section of line on East Maddison's Road, between Goulds and Selwyn Roads.
<u>Underlying structures:</u>	None, line follows road reserve. (possible shed as noted)
<u>Underlying land use:</u>	Road reserve.
<u>Surrounding land use:</u>	- Residential. 583 East Maddison's Road (S8) may have a small shed partially under the buffer.

<u>Location:</u>	From the Springston substation on Shands Road to 96 Days Road (where line enters private property) Crosses/partially follows water race
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	- Surrounding land use is agricultural. 96 Days road (S9) the buffer slightly overlaps a house. Other buildings along this portion of line are set back from boundaries.

<u>Location:</u>	96 Days Road to corner of Leeston and Bethels Roads (via Collins Road). Does not follow/cross water races.
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures. A few small streams.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	- Surrounding land use is predominantly agricultural with some housing. 7 Mounces Road (S10) the map has 2 layers in this area, in one layer this address has a shed under the boundary. Imagery may be old though. 329 Goulds Road (S11) appears to have a shed partially under the buffer.

	• On Leeston Road the line crosses over a few small streams. We don't seem to have data for these, they are on private property and cross under the road. • The buffer touches/crosses property boundaries. Other than the ones mentioned, buildings are set back.
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<u>Location:</u>	From the corner of Leeston and Bethels Roads to Brookside substation on Branch Drain Road. Does not follow/cross water races.
<u>Underlying structures:</u>	The line crosses rivers/streams. The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural with some housing. • At the intersection the line appears to dip into private property (paddock). • Near Bethels Road the line crosses the Selwyn River. • 1148 Selwyn Lake Road (S12) the buffer crosses a boundary and may just touch the corner of a shed. • Crosses the Irwell River. • 2 Brookside and Burnham Road, the buffer crosses the property boundary and comes very close to a house. • All the way along the buffer ranges from just touching the boundaries to crossing over, other than the properties noted above all other buildings are set back from the boundary.

<u>Location:</u>	From Springston substation to Rattletrack and Springston Rolleston Roads corner. Crosses/follows water race
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural with some housing. • The buffer does cross property boundaries. Buildings are well set back from the boundary.

<u>Location:</u>	Lincoln Rolleston Road between Selwyn and Weedons Roads. Water races at either end of the road
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural. • Buffer touches/crosses boundary of 2 properties both with buildings set back from the boundary so unlikely an issue.

<u>Location:</u>	From Prebbleton substation to the corner of Birch's Road and Craig Thompson Drive. Crosses/follows water race
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is largely agricultural with housing on varying lot sizes. • 550-609 Birch's Road the line passes nearby approx. 27 houses on small subdivision lots (some empty sections). • All other properties which the buffer touches/crosses the boundary of have their buildings well set back from the road.

<u>Location:</u>	From the corner of Birchs and Tancreds Roads to the corner of Tancreds and Ellesmere Roads.
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is agricultural, there are a lot of buildings down Tancreds Road but all are moderately to well set back from the boundary.

<u>Location:</u>	From the corner of Tancreds and Ellesmere Roads to the corner of Ellesmere and Lincoln Tai Tapu Roads.
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural with some housing. • There are houses, a stables and wood mill in the vicinity of the line but outside protection corridor.

<u>Location:</u>	From the corner of Ellesmere and Lincoln Tai Tapu Roads to the corner of Wardstay and Gilmours Roads.
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Land use is predominantly agricultural with some housing. • The line crosses the Halswell River. • 212 Lincoln Tai Tapu Road the buffer touches a building. • 15 Glengarriff Drive the line passes near an orchard. • The buffer touches property boundaries and in some places crosses them but other than the address noted all buildings are outside influence of protection corridors.

<u>Location:</u>	From the corner of Wardstay and Gilmours Roads to corner of Gilmours Road and MacArtheys Road.
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural. • No areas of concern.

<u>Location:</u>	From the corner of Gilmours and MacArtheys Road to the district boundary.
<u>Underlying structures:</u>	No underlying structures.

<u>Underlying land use:</u>	Some underlying horticulture crops, likely grapes (winery)l.
<u>Surrounding land use:</u>	• The line runs over private property and crosses SH75 multiple times, following along the road reserve for a small portion too (S13). • Surrounding land use is agricultural.

<u>Location:</u>	From Springston substation to corner of Springs Road and paper road behind university.
<u>Underlying structures:</u>	Follows road reserve/paper roads no obvious underlying structures. Status of Road not yet confirmed, contact Rob Allen at council for further information.
<u>Underlying land use:</u>	At the intersection of Weedons and Ellesmere Junction roads the line enters a paper road/non-public access road behind the university.
<u>Surrounding land use:</u>	• 88 Weedons Road the line passes near a gravel screening and stockpiling operation. • On the paper road the buffer may impact a shed near the gravel pit, it then crosses springs road and crosses a Ngai Tahu owned property which is currently bare land but a subdivision consent is expected in the near future. • The buffer touches property boundaries but there are no houses or significant buildings in this area.

<u>Location:</u>	From the corner of Springs Road and the paper road behind the university to the corner of Collins and Hudsons Roads.
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• 1543 Springs Road (S14) the buffer overlaps a shed. Other than this shed there are no areas of concern, any existing buildings are set well back from the boundary. • Collins Road becomes a paper road which the line crosses for a short section before it meets Hudsons Road. This section of the road though appearing to cross private property is a legal road which can be accessed.

<u>Location:</u>	From the corner of Collins and Hudsons Roads to the corner of Hudsons and Ridge Roads.
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural with some housing. • 185 Hudsons Road (S15), the buffer appears to partially cover a stockyard (corner of property). • 396 Hudsons Road (S16) (corner of Ridge Road) the buffer enters a property, it does not impact any buildings but there are some in close proximity to the boundary.

<u>Location:</u>	From the corner of Hudsons and Ridge Roads to the Motukarara substation.
<u>Underlying structures:</u>	The line follows the Road Reserve (except for one stretch), no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve (except for one stretch of farmland), no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural with some housing. • 13 Burney's Road the buffer appears to come into contact with a structure? Possibly a trailer or container? • Near the corner of Burney's and Ridge Roads the line crosses private property re-joining a road reserve at the corner of Park and Canal Roads. • 26 Duck Pond Road there is a building under the buffer. • 115 Park Road, building under buffer. • The buffer touches and in some places crosses the property boundaries, buildings are mostly set back in the sections but there are a few properties built closer to the boundaries. • The small section of lines beyond the substation cross private land, no structures.

<u>Location:</u>	From the Brookside substation to the Killinchy substation. Follows/crosses water races
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural. • 293 Irwell Rakaia Road (S17) the buffer comes very close to a shed built near the boundary. • 380 Sanderson's Road (S18) (on the corner of Irwell Rakaia Road) a dairy yard appears to be built on or over the property boundary and overlaps with the buffer. • The buffer touches and crosses property boundaries in places but over all the buildings on these properties are set far enough back to not be impacted.

<u>Location:</u>	From Killinchy substation to Dunsandel substation.
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is agricultural, predominantly dairy. • The line passes near the Synlait milk factory in order to reach the substation (situated on the property).

<u>Location:</u>	From Dunsandel substation to the corner of Sharlands and South Two Chain Roads (bankside substation).
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is agriculture. • The line crosses over SH1 beside the Synlait factory. • The buffer touches boundaries but buildings are all set well back on properties.

<u>Location:</u>	From the Bankside substation to the Te Pirita substation.
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural. • 678 Ardlui Road the buffer appears to come close to/touch what appears to be a water tank for a residential property. • Corner of Mitchells and Sharlands Road line passes near SDC gravel pit. • The line touches/crosses property boundaries but all except for the ones mentioned have their buildings set back from the boundary.

<u>Location:</u>	From the Springston substation to Boundary Road outside Lincoln High School.
<u>Underlying structures:</u>	The line follows the Road Reserve, no obvious underlying structures.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is agricultural. Buffer touches property boundaries but there are no areas of concern. • The high school does have some car parking under the line.

<u>Location:</u>	Small section of line that runs along the Prebbleton township boundary to the District Boundary.
<u>Underlying structures:</u>	No obvious underlying land use, but the line appears to follow a portion of the Rail Trail.
<u>Underlying land use:</u>	Corridor/agriculture – the corridor is a portion of the Rail Trail.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agricultural with some housing. • The buffer crosses property boundaries/the edge of the corridor. This only causes concern for one property at 328 Marsh's Road where the buffer slightly overlaps a building.

<u>Location:</u>	From Weedons substation on Weedons Ross Road to the Larcomb substation.
<u>Underlying structures:</u>	2 sheds at the property 78 Weedons Ross Road (S19) fall under the buffer partially.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is agricultural with some housing. • The buffer impacts property boundaries but other than those mentioned all buildings are set well back from boundaries.

<u>Location:</u>	From Larcomb substation to Springston substation.
<u>Underlying structures:</u>	697 Weedons Road (S20), council owned land has what looks like sheds that may just be touched by the buffer. 441 Weedons Road (S21), buffer possibly impacts a pool on a residential section.
<u>Underlying land use:</u>	The line follows the Road Reserve, no obvious underlying land use.
<u>Surrounding land use:</u>	• Surrounding land use is predominantly agriculture. • The buffer impacts property boundaries but other than those mentioned all buildings are set well back from boundaries.

<u>Location:</u>	From the corner of Scotts and Plantation Road where the line enters private property to the Hororata substation.
<u>Underlying structures:</u>	Bare land/road reserve
<u>Underlying land use:</u>	Where the line crosses private property the underlying land use is agriculture/empty paddocks.
<u>Surrounding land use:</u>	• The line follows the road reserve for a small distance on Thwaites Road (S22) before re-entering private property and following the inside of the property boundary along Plantation Road. • Properties impacted by the line crossing private property are, 75 Struie Road, 248 Hawkins Road (S23). • 2366 Bealey Road (S24) may have a shed near/under the buffer, the map resolution is low in this property so it is hard to determine (this property is part of the property of 248 Hawkins Road).

<u>Location:</u>	From the Hororata substation to the corner of Ardlui and Sharlands Road.
<u>Underlying structures:</u>	At the corner of Hartnells and Board Roads the line crosses a river/waterbody. 769 Ardlui Road (S25), possibly a water tank/pump shed impacted by buffer.
<u>Underlying land use:</u>	Road reserve.
<u>Surrounding land use:</u>	• Surrounding land use is agriculture. • The buffer crosses the property boundaries the whole way along Ardlui Road but the few properties present have their buildings set back from boundaries.

<u>Location:</u>	From the Hororata substation to the corner of South Two Chain and Sharlands Roads.
<u>Underlying structures:</u>	Shed.
<u>Underlying land use:</u>	Road reserve, agriculture, riverbed.
<u>Surrounding land use:</u>	• Surrounding land use is agriculture, the buffer impacts property boundaries, no buildings other than the one mentioned are of concern. • Ellesmere agricultural on Substation road have the corner of a shed under the buffer (S26). • At the corner of Substation and Derretts Roads the line enters private property and runs just inside the boundary running along the road (S27). • The line crosses a river/stream.

<u>Location:</u>	From the Springston substation where the line enters private property to where this portion of the line ends at Hills road substation.
<u>Underlying structures:</u>	The house and 2 sheds at 96 Days Road are slightly under the buffer (S28). 145 Leeston Road 2 sheds under buffer (S29). 268 Bethels road has a shed under this section of the line (completely covered by buffer) and one shed near the house touched by buffer (S30).
<u>Underlying land use:</u>	The line crosses the Selwyn River and Irwell River.
<u>Surrounding land use:</u>	• 140 Leeston Road the line passes over a pit and possibly sheds or some structure (S31).

	• 709 Selwyn Lake Road may have a shed slightly under the buffer (S32). • 560 Hanmer Road have a shed under the buffer (S33). • 1650 Leeston Road, possibly a shed under the buffer (S34). • The line begins to follow the road reserve on Beethams Road.
--	--

<u>Location:</u>	The portion of line on Brookside and Irwell Road between Buckleys Road and the Portion of line on private property.
<u>Underlying structures:</u>	Road reserve. None.
<u>Underlying land use:</u>	Road reserve.
<u>Surrounding land use:</u>	• Surrounding land use is agriculture with some housing. • The buffer mostly touches boundaries so won't have any impact. On a bend in the road the buffer slightly crosses into private property (paddock).

<u>Location:</u>	The double circuit line from the district boundary to the Springston substation.
<u>Underlying structures:</u>	Explained below.
<u>Underlying land use:</u>	Agriculture, housing, accessory buildings/plantings.
<u>Surrounding land use:</u>	• This line travels across private property. Surrounding land use is predominantly agricultural. The line and buffer impact numerous properties. • Buffer slightly overlaps a poultry shed at 516 Shands Road (S35). • 1/602 Shands Road, multiple buildings under buffer (S36). • 32 Selwyn road 2 buildings under/partially under buffer (S37). • 52 Selwyn Road, tanks at quarry very close to buffer (S38). • 75 Selwyn Road the line crosses approx. 10 buildings, all part of a commercial greenhouse operation (S39). • 592 Robinsons Road the line may partially cover a shed (S40).

APPENDIX 4

AERIAL MAPS

Beethams Road and Station Street



Legend

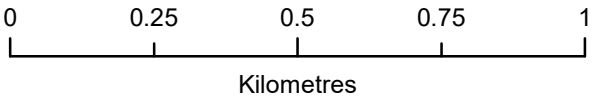
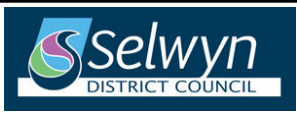
- 33kV Lines
- Line Protection Corridor
- Private Boundaries
- Townships Boundaries

Old Railway Line Leeston



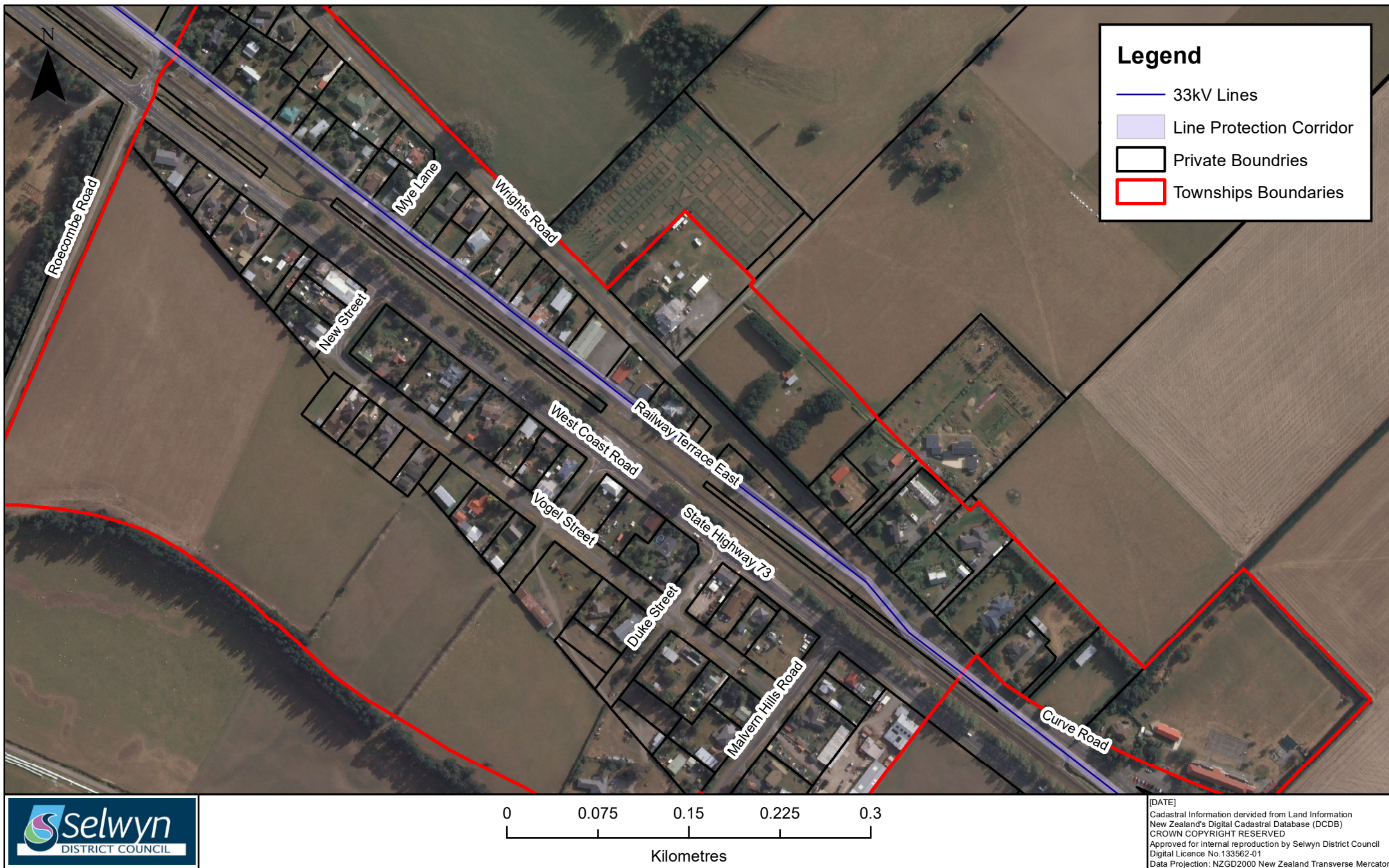
Legend

- 33kV Lines
- Line Protection Corridor
- Private Boundaries
- Townships Boundaries

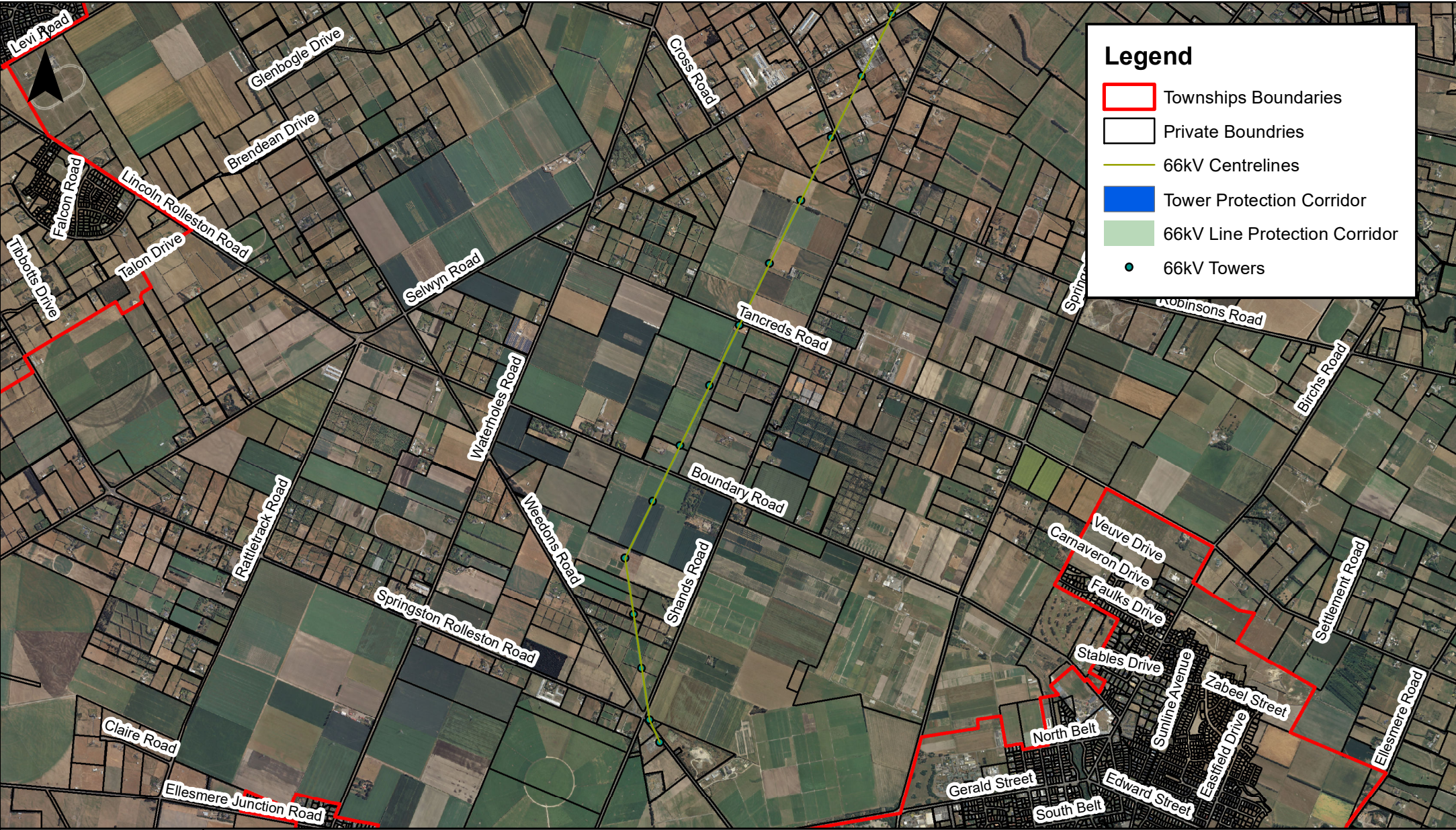


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Sheffield Township

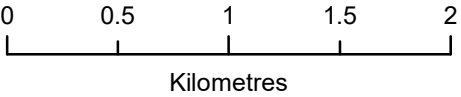


Springston Substation Area



Legend

- Townships Boundaries
- Private Boundaries
- 66kV Centrelines
- Tower Protection Corridor
- 66kV Line Protection Corridor
- 66kV Towers



[DATE]
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APPENDIX 5

ADDERLEY HEAD LEGAL OPINION



**ADDERLEY
HEAD**

ENVIRONMENTAL LAW SPECIALISTS

28 February 2019

Selwyn District Council
PO Box 90
Rolleston 7643

By email: Nicola.Rykers@selwyn.govt.nz

Dear Nicola

DISTRICT PLAN REVIEW - ORION ELECTRICITY CORRIDORS

- 1 You seek our advice on whether:
 - (a) The alleged inadequacy of the NZ Code of Practice for Electrical Safe Distances 2001 ('NZECP' or the 'Code') is an appropriate reason for including additional rules sought by Orion into the District Plan; and
 - (b) The inclusion of protection corridors in the City Plan creates a legal precedent to provide for protection corridors in the notified Selwyn District Plan?

Issue 1:

- 2 Essentially, the adequacy of the NZECP is a live contentious issue between the interested parties (i.e. Orion and the persons on whose land the structures are located as well as possible interest groups who represent them). The issue then, becomes, more a matter as to the process and timing in which the argument of the adequacy of the NZECP takes place.
- 3 We comment on the correct process to follow below, however, first provide a brief background on the NZECP which is helpful in understanding whether the District Plan should incorporate matters covered by the NZECP.

Background to NZECP

- 4 The NZECP sets minimum safe electrical distance requirements for overhead electrical line installations and other associated work to protect people and property from harm or damage from electrical hazards.
- 5 The NZECP was prepared by the Ministry of Consumer Affairs in consultation with a number of other entities, namely, The Building Industry Authority, Transpower NZ Limited, Electricity Engineers' Association of NZ, Institution of Professional Engineers NZ, Tranz Rail Ltd, Telecom NZ Ltd and Telstra Saturn (now Vodafone). The NZECP is a standalone document dealing with specific issues and which has been prepared in consultation with a range of expert entities.

Process to follow

- 6 Orion has alleged that the NZECP is inadequate in that it does not provide for access for operational and maintenance requirements and does not reflect current practice in respect of health and safety. As a result Orion asserts that the District Plan should address those matters that are inadequately (allegedly) covered by the NZECP. In addition, Orion has expressed the view that there is low awareness of the NZECP and the need for property owners to comply with its provisions. Specifically, Orion is seeking additional provisions in the notified District Plan providing for protection corridors.
- 7 Given the Code has been prepared by a range of industry experts, addresses safety distances in relation to transmission lines/conductors and sets national mandatory standards, in our view, in the absence of evidence demonstrating that the NZECP is inadequate, the Council is entitled to rely on and adopt the Code.
- 8 Adopting the NZECP standards does not mean Council cannot include safe distance rules within the notified District Plan. We recommend that Council does include rules relating to safe distances within the notified District Plan and specifically references the NZECP requirements in doing so. Such rules should reflect the distances set out in the Code, rather than providing distances different to the Code to accommodate Orion's concerns.
- 9 Our reason for this is that it would not be appropriate at this stage of the District Plan Review process for Council to advance Orion's position within the District Plan where there are other industry stakeholders and interested parties who might have a different view to Orion on the adequacy of the NZECP – that is, they may consider the NZECP to be adequate in relation to electrical safety distances and maintenance.
- 10 We consider that the argument as to the adequacy of the NZECP is best addressed at public notification stage and the differing views aired within submissions / hearings before determining whether the District Plan rules should go further than the Code requirements/distances.
- 11 This will ensure issues can be correctly identified and then weighed against competing interests (i.e. interests of the public versus interests of Orion as an electricity provider).
- 12 By way of example, maintenance and security of lines will be important to the public to ensure they do not lose electricity to their homes/businesses. However, in order to provide this service and ensure security of lines, Orion may require access to the lines at all hours of the day/night. Access 24/7 could give rise to resource management issues that are not addressed by the NZECP such as noise.
- 13 Further, safe distances to prevent risk to people and electricity supply is likely to be in the interest of all however this could also result in setbacks encroaching on private property, which in turn, could interfere with a person's right to use and enjoy their property in the manner they wish – i.e. effects on amenity.

- 14 Once the issues have been identified and weighed against competing party interests, the questions that then need to be asked are:
- (a) Is the issue covered by the NZECP?
 - (b) Is it a resource management issue?
 - (c) If it is a resource management issue, and it is covered by the NZECP then Council should adopt the Code.
 - (d) If it is a resource management issue and it is not covered by the Code, then Council can plan to address this within the District Plan provisions.

Conclusion/recommendations

- 15 As mentioned the NZECP is a standalone document prepared by industry experts and providing for electrical safety distances. In our view and to keep the District Plan focussed and efficient, Council is entitled to, and should adopt the Code.
- 16 On that basis, we recommend that Council include rules in relation to safety distances within the notified District Plan, where Council considers it appropriate and necessary to do so. The rules should reflect the safety distances provided by the NZECP and should refer to the NZECP requirements.
- 17 If it becomes clear at public notification stage that there are some resource management issues that need to be addressed above what is provided for by the NZECP, or the distances within the NZECP are demonstrated, based on persuasive evidence, to be inadequate, then the Council can seek to address these within the District Plan.
- 18 It is noted that the Code can be revised as required and suggestions for improvement of the Code are welcome. If Orion are particularly concerned about the adequacy of the Code they can, in the interim, contact the Manager, Standards and Safety, Ministry of Consumer Affairs to air their concerns and recommend changes.
- 19 As a preliminary step, we suggest Council engage directly with the Ministry of Consumer Affairs and discuss when the next scheduled review of the NZECP is and what changes the Ministry would be seeking to include at that review stage (if any). It may be that the Ministry has plans to reform the NZECP to include some of the concerns Orion has raised.

Issue 2:

- 20 Turning now to your second query – the District Plan Review process is not a legal process and therefore there is no legal precedent for Council to follow the City Plan's approach in relation to protection corridors.
- 21 Further, district plans sit side by side in the hierarchical plan structure and there is no requirement for a district plan to give effect to or even be consistent with the plan provisions in another district plan. This would result in district plans having to consider and address issues that are not relevant to their district.

- 22 If there are similarities in issues between districts, then considering how another district plan has dealt with the issue (i.e. the City Plan) can be informing as to how and why they have dealt with the issue in a particular way. If the districts were the same, then you would expect a similar outcome for Selwyn.
- 23 However, in our view, looking at it from a 'big picture' perspective, the City and Selwyn districts are very distinct from one another, the City mostly comprising a large metropolitan area and Selwyn being largely rural in nature. As a result the district-wide issues are very different between the two districts.
- 24 Within the City landscape, many of the lines are likely to run through urban, residential areas – the residential density is different and more concentrated with more structures, people and activities and this might impact on safety in terms of separation distances. This situation is quite distinct from Selwyn which is a predominantly rural landscape where lines are largely through or near farms.

Conclusion/recommendations

- 25 There is no legal precedent requiring Council to follow the City Plan approach and include protection corridors in the Selwyn District Plan.
- 26 If issues are similar within districts, considering how other plans have approached these issues is likely to be informing as to how provisions dealing with these issues could be drafted.
- 27 However, given Selwyn District's distinct landscape differences and predominantly rural character when compared to the City's very urban environment, it is likely the issues will be quite different between districts and therefore it may not be appropriate to follow the City Plan's approach in relation to protection corridors.

Yours faithfully
ADDERLEY HEAD



Paul Rogers
Partner

DDI: +64 3 353 1341
E: paul.rogers@adderleyhead.co.nz

Our ref: RPM-038777-297-6-V1

APPENDIX 6

FURTHER INFORMATION PROVIDED BY ORION

Examples of NZECP34 Breaches on Orion's Network

High Voltage Breaches:

Dwelling built under existing high voltage lines.



New shed constructed under existing high voltage power lines.



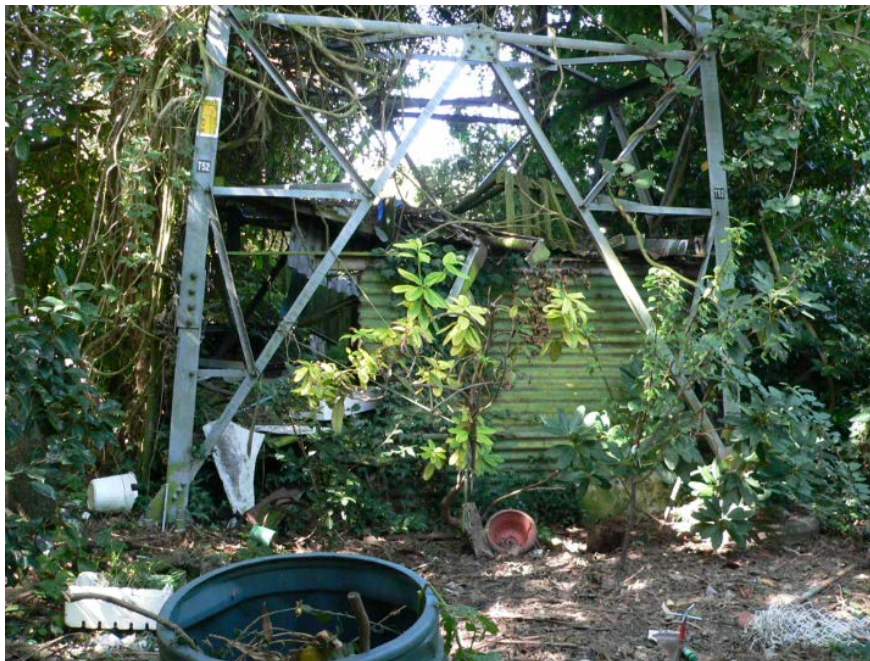
tunnel house built under lines



Other examples of High Voltage line clearances within SDC Area:



Examples of structures built near or within double circuit towers:





Examples of issues with fences near high voltage lines.



Low Voltage Breaches:

Dwelling built under existing low voltage lines



Non Complaint Structure, raised car area built underlines where lines could be touched by persons





Garage and Sleep out construction under existing low voltage lines.





ORION NEW ZEALAND LIMITED

Selwyn District Plan Supporting Document – Corridor Protection

Overview:

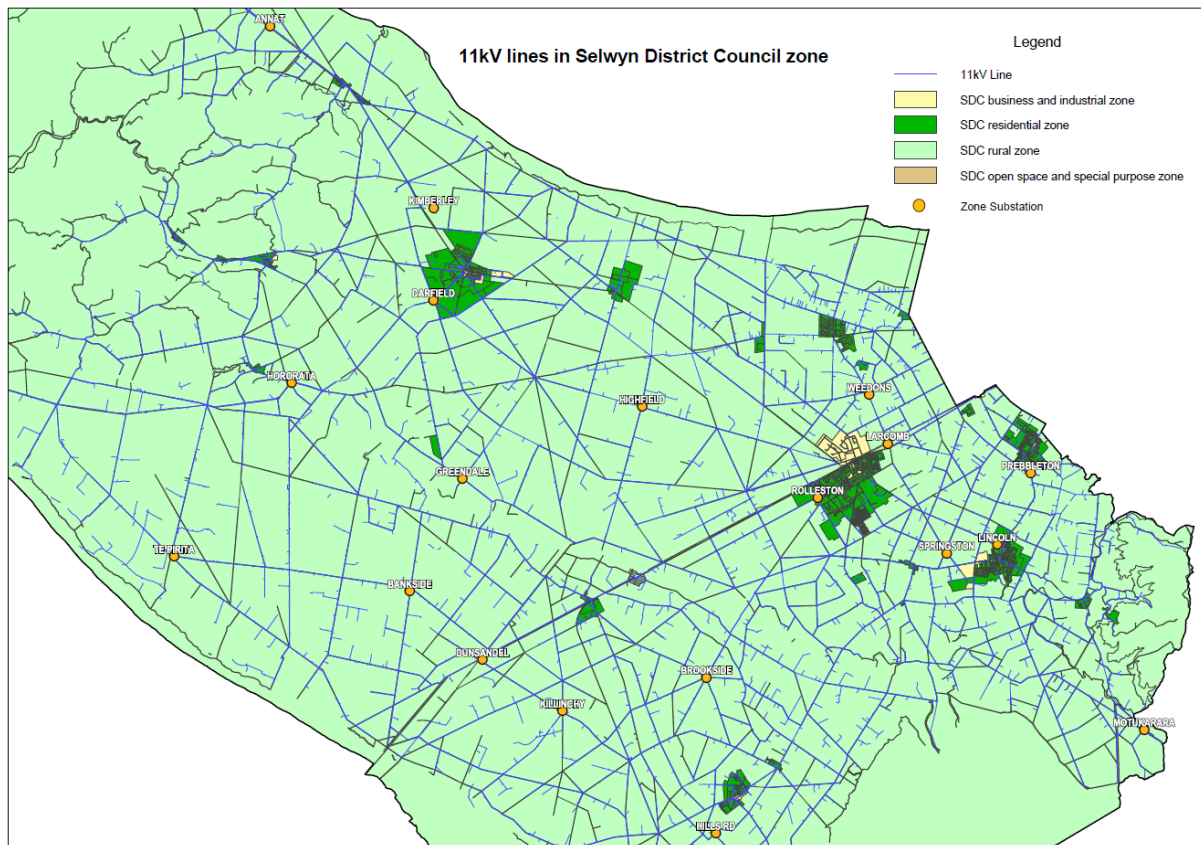
Orion has taken a considered approach in our application for the Selwyn District Council district plan review.

With 4,500km of overhead electricity network in the Selwyn District Council area (refer to Map 1) our application only covers 250km of sub-transmission lines, with the greater majority in the road reserve (refer to Map 2).

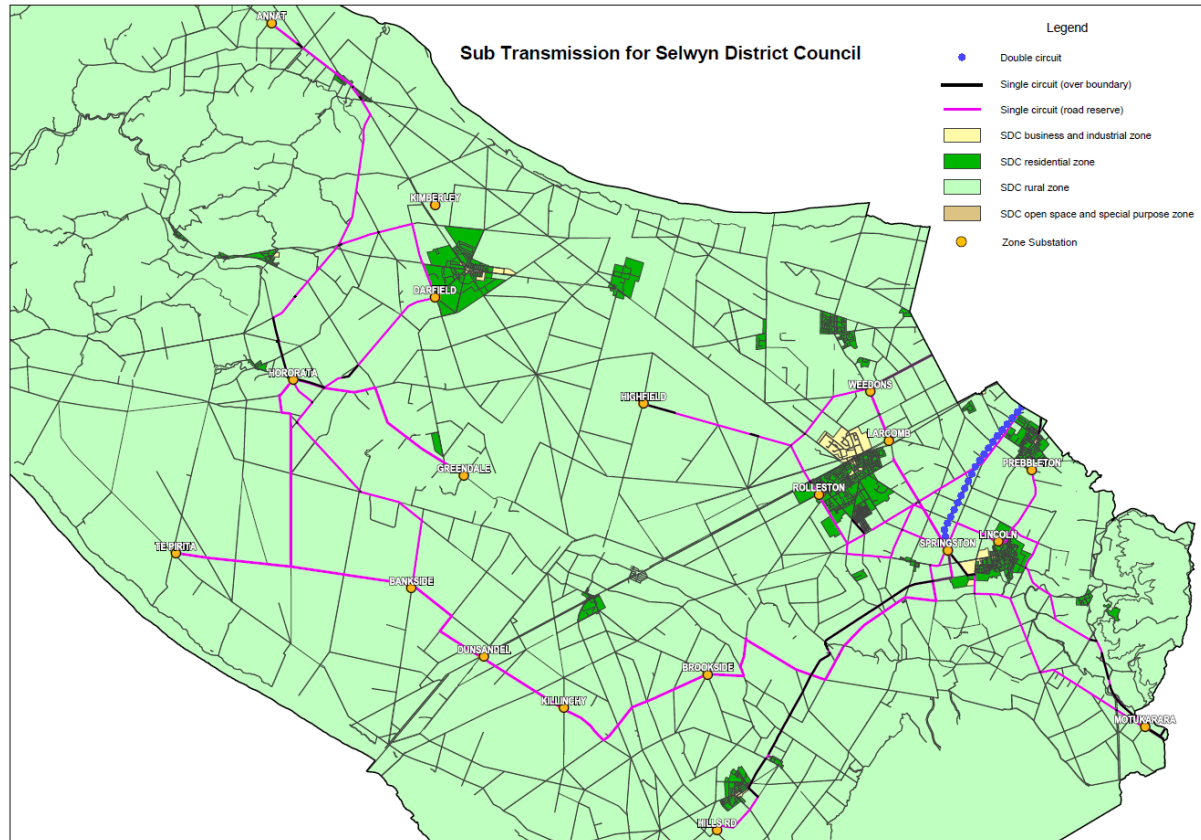
Of the 250km (known as the Islington to Springston line and shown as a double circuit on Map 2) 10 km had legislative protection in the form of the National Policy Statement when the line was owned by Transpower NZ Ltd. As Transpower has sold off its 'spur assets' in 2014 this line was purchased by Orion. For the end user (i.e. electricity customers in the Selwyn District Council area) the transfer of ownership was seamless and the function and criticality of the line did not change, however the status has changed from 'transmission' to 'sub-transmission' and therefore no longer has a 'protected status'.

The remaining 240km of lines in our application is also sub-transmission, however it has always been in the ownership of Orion (or previous incarnations of Orion). The sub-transmission electricity lines (technically known as circuits) operate at 33,000 or 66,000 Volts. These circuits are effectively the arteries of Orion's network as they inter-connect Orion's Zone Substations and allow for the efficient transfer of electricity between and subsequently distributed to the end electricity consumer or customer. Much like the arteries of a human body, if there are any significant issues it can have a severe impact.

Orion acknowledges that all of our assets have a degree of legislative protection in the form of the Electricity Act, Electricity (Safety) Regulations, the NZ Electricity Codes of Practice (NZECP 34 for electrical safe distances) and the Electricity (Hazards from Trees) Regulations. This degree of legislative protection no longer adequately address the changing level of significance of sub-transmission, with the recent developments around Health and Safety as well the push for distributed generation. Orion have considered this in determining which assets to include in this submission. Sub-transmission was therefore set as threshold, as it was deemed to be the appropriate level of cost benefit that warranted being in the 'district plan' because of the significant consequences of breaches. The consequences being in the form of health and safety, operability and cost to landowner to remedy. It should be noted that currently where there is a cost to Orion to mitigate or remedy any consequence, in the first instance it is recovered from the person who caused the breach or failing this it is born across all of Orion's electricity customers.



Map 1



Map 2

ORION NEW ZEALAND LIMITED

Selwyn District Plan Supporting Document – Corridor Protection

Orion owns and operates the electricity distribution network in central Canterbury. As one of the largest electricity distribution networks in New Zealand we cover remote rural areas, regional towns and the city of Christchurch.

Orion is responsible for the operation, maintenance, upgrade and development of its network, which comprises underground cables, overhead lines, substations, transformers and associated structures. These activities are directed by National Industry Codes of Practice and Electricity Network Technical Specification Standards, as well as district and regional planning requirements.

Our network covers 8,000 square kilometres across central Canterbury between the Waimakariri and Rakaia Rivers and from the Canterbury Coast to Arthur's Pass. We deliver electricity to more than 201,000 homes and businesses in Christchurch City and Selwyn District. Orion has the 3rd largest connection base of distribution lines companies in New Zealand. In comparison Mainpower have 39,000 customers, Westpower 13,500 and Electricity Ashburton 19,268.

In the Selwyn District our network consists of both a 66kV and a 33kV sub-transmission system that supplies 22 zone substations from Transpower's Islington, Hororata and Kimberley Grid Exit Points (GXP's). Orion's network is designed with interconnecting sub-transmission between GXP's to allow for resilience should a failure occur on the network. It is designed to meet strong load growth. The distribution system consists of 11kV overhead radial feeders from our zone substations and three small Transpower GXP's at Coleridge, Castle Hill and Arthur's Pass. Growth in the rural townships (Lincoln & Rolleston) and high growth in irrigation loads has meant some sub-transmission has reached its design capacity and we are building additional substations and lines to meet demand.

The double circuit line runs from Islington GXP to Springston GXP's over approximately 10km. These lines are supported by tower structures. This line was previously owned by Transpower and still carries out the same function.

Two rural milk processing plants have a significant impact on our network operations within the Selwyn District. The Synlait Ltd plant located at Dunsandel was commissioned during 2008. Its load required a new zone substation at Dunsandel providing enhanced security. Similarly, the Fonterra Ltd plant at Darfield commissioned during 2012 also required a new zone substation (Kimberley) to provide enhanced security.

Irrigators (agricultural and dairy) are one customer group that significantly impacts on the operation and asset management of our network in the rural area. Irrigation growth over the last 20 years has required substantial reinforcement of our network.

Corridor Protection benefits

The corridor protection we have requested to insert in the Selwyn District plan is to protect Orion's infrastructure and prevent incompatible activities or development near Orion power lines or support structures.

- Safety is paramount; allowing building or some activities near to or underneath the lines may put both people and the electrical supply at risk;
- Orion needs permanent 24/7 access to its lines and associated support structures for on-going operation and maintenance;
- Ensure activities to not pose an operational risk to Orion's infrastructure;
- Ensure activities do not pose an unacceptable risk to electromagnetic field levels.

Christchurch City Plan Effectiveness

The corridor protection we have embedded in the Christchurch City Plan is to protect the safety of landowners and allows Orion access to the lines and associated support structures for on-going operation and maintenance.

Recent subdivision developers have consulted with Orion through the resource consent process to ensure they are meeting the required safe electrical distances with buildings and vegetation. We have given advice at the design stage to ensure safety guidelines are met.

NZEC34 – New Zealand Electrical Code of Practice for Electrical Safe Distances

The purpose of NZEC34 is to protect people, property and mobile plant by providing a physical separation from support structures (towers/poles) and distribution lines. NZEC34 does not consider the operational, maintenance (access) and upgrading requirements of the distribution lines.

NZEC34 was first published in 1993 and amended in 2001. Increased knowledge around Health and Safety requirements has prompted Orion to request further protection from the minimum requirements within NZEC34. Deficiencies include the step and touch potential and conductivity of structures and fences close to structures and overhead lines and underground cables.

Trees within the road reserve

Planting of vegetation within the road reserve has been included to provide awareness to land owners to ensure vegetation planted does not breach the Electricity (Hazards from Trees) Regulations. The government's 2015 infrastructure plan included a review of the effectiveness of the tree regulations and this is timetabled to be carried out in the 2017-19 financial years. The Electricity Network Association (ENA) is encouraging this review to begin as soon as possible, so that more effective ways of managing trees can be out in place.

On the Orion network 10-20% of all unplanned power outages are caused by trees contacting lines. Orion's tree management programme is largely governed by the Electricity (Hazards from Trees) Regulations. This involves monitoring and pruning or removal of trees that threaten to come into contact with overhead lines. This is a significant cost to Orion and land owners. To mitigate the ongoing costs and future power outages we recommend species of shrubs and trees that at full maturity don't grow above 3 metres.

Commerce Commission

The Commerce Commission sets measures for network reliability around the frequency and duration of power outages, and Orion strives to achieve increasingly stringent levels of reliability. Orion's ability to meet these reliability targets is a testament to continued investment in the network through proactive renewal, maintenance and managing vegetation.

Memorandum

Date: 8 February 2019

To: Nicola Rykers - Consultant Planner,
Selwyn District Council

FROM: Jo Appleyard
DIRECT: +64 3 353 0022
MOBILE: +64 27 444 7641
EMAIL: jo.appleyard@chapmantripp.com
PARTNER: Jo Appleyard
REF: 100357050/1299627.1

LEGAL OPINION REGARDING PROPOSED PROTECTIONS FOR ELECTRICITY DISTRIBUTION ASSETS IN SELWYN DISTRICT PLAN

- 1 We act for Orion New Zealand Limited (*Orion*).
- 2 This legal opinion is provided to assist in assessing Orion's proposed rules for electricity distribution protection corridors in the upcoming review of the Selwyn District Plan.
- 3 We address the following matters:
 - 3.1 the status of Orion's sub-transmission assets as regionally significant infrastructure, strategic infrastructure, and critical infrastructure;
 - 3.2 corridor protection provisions as the most appropriate way to give effect to the Canterbury Regional Policy Statement (*CRPS*) provisions regarding strategic and regionally significant infrastructure;
 - 3.3 the interplay between proposed protections for Orion's electricity distribution assets in the Selwyn District Plan Review process and other statutory and regulatory protections currently in place; and
 - 3.4 the effect of the Greater Christchurch Regeneration Act 2016 in this context.

Background

- 4 As noted in the Preferred Option Report to the District Plan Committee, Orion's electricity distribution network covers around 8,000km² in central Canterbury and transports electricity from the National Grid to approximately 201,000 homes and businesses, including to other strategic infrastructure. Orion has approximately 4,500m of overhead lines in the Selwyn District.
- 5 The high voltage 33kV and 66kV sub-transmission lines have an 'arterial' function in the network. It is essential that:

5.1 sensitive activities, buildings and other structures, fences and trees remain a safe distance away from the lines to protect public safety and property; and

5.2 Orion is able to access these lines for maintenance, upgrade and repair.

- 6 Orion is a Lifeline Utility as defined in Schedule 1, Part B of the Civil Defence Emergency Management Act 2002.¹ This means that Orion has specific duties under that Act, including 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.²

Status of Orion's sub-transmission assets

- 7 The 33kV and 66kV sub-transmission assets owned by Orion fall within the definitions of 'regionally significant infrastructure', 'critical infrastructure' and 'strategic infrastructure' in the CRPS.

Regionally significant infrastructure and critical infrastructure

- 8 The CRPS defines 'regionally significant infrastructure' as:

Regionally significant infrastructure is:

...

14) Electricity distribution network

- 9 The CRPS defines 'critical infrastructure' as:

Infrastructure necessary to provide services which, if interrupted, would have a serious effect on the communities within the Region or a wider population, and which would require immediate reinstatement. This includes any structures that support, protect or form part of critical infrastructure. Critical infrastructure includes

...

4) electricity substations, networks and distribution installations, including the electricity distribution network

- 10 Orion's assets are explicitly covered by these definitions.

Strategic infrastructure

- 11 'Strategic infrastructure' is a definition specific to the part of the CRPS governing the Greater Christchurch area. It is:

those necessary facilities, services and installations which are of greater than local importance, and can include infrastructure that is nationally significant. The following are examples of strategic infrastructure:

- *Strategic transport networks*
- *Christchurch International Airport*
- *Rangiora Airfield*
- *Port of Lyttelton*

¹ Schedule 1, Part B lists 'entities carrying on certain businesses' that qualify as lifeline utilities and includes, at (2), "an entity that generates electricity for distribution through a network or distributes electricity through a network."

² Section 60(1).

- Bulk fuel supply infrastructure including terminals, wharf lines and pipelines
- Defence facilities including Burnham Military Camp and West Melton Training Area
- Strategic telecommunications facilities
- The electricity transmission network
- Other strategic network utilities

12 Orion's sub-transmission electricity assets are 'other strategic network utilities' of greater than local importance.

13 As Ms Foote notes in the planning memorandum accompanying this legal opinion, disruption of Orion's sub-transmission lines could compromise the supply of electricity to both household and commercial customers on a wide scale. The integrity of these lines is vital to Orion's role as a Lifeline Utility. Further, the Preferred Option Report records the extent of Orion's network coverage and the significant businesses that it supplies, including the Fonterra and Synlait processing plants. It is notable that portions of these lines were previously owned by Transpower and therefore part of the National Grid electricity transmission network, which is explicitly defined as being of greater than local importance.

Recent confirmation that Orion's assets are strategic infrastructure

14 The issue of the status of sub-transmission lines as 'strategic infrastructure' has been dealt with during the hearings for the Christchurch District Plan. The Independent Hearings Panel confirmed that Orion's 33kV and 66kV lines fall within the definitions of 'regionally significant infrastructure' and 'strategic infrastructure' in the CRPS, as well as the definition of 'strategic infrastructure' in the Christchurch District Plan.³ For example, in the Panel's decision on the Rural Chapter it stated:⁴

In the case of Orion the protection is necessary because we have determined earlier that their transmission lines are included within strategic infrastructure

15 There is also extensive discussion of these matters recorded in the Christchurch Replacement District Plan hearings transcript, including in cross examination of the Federated Farmers representative.⁵

Corridor protection provisions are the most appropriate way to give effect to the CRPS for high-voltage electricity distribution assets

16 Section 75(3) Resource Management Act 1991 (RMA) requires Selwyn District Council to give effect to the CRPS in the district plan. This means the district plan must give effect to the various provisions relating to the avoidance and management

³ Independent Hearings Panel "Decision 28: Subdivision, Development and Earthworks (part) – Stage 2" 15 July 2016, at [31] to [45]; Independent Hearings Panel "Decision 34: Rural – Stage 2" 12 August 2016, at [31].

⁴ At [31].

⁵ Transcript of Proceedings: Christchurch Replacement District Plan Chapter 8 (Stage 2): Subdivision, Development and Earthworks (part), day 1 - 2 November 2015, pp93-101, available at http://www.chchplan.ihp.govt.nz/wp-content/uploads/2015/07/Transcript-IHP-SubdivisionDevelopmentEarthworksPart_02-11-15.pdf; and Transcript of Proceedings: Christchurch Replacement District Plan: Chapter 17: Rural (part), day 2 - 17 November 2015, pp261-271, available at <http://www.chchplan.ihp.govt.nz/wp-content/uploads/2015/07/Transcript-IHP-Rural-PART17-11-15.pdf>.

of reverse sensitivity effects on regionally significant and strategic infrastructure (discussed in Ms Foote's memorandum).

- 17 The Christchurch District Plan and the Hurunui District Plan are also required to give effect to the CRPS and both include corridor protection provisions for the sub-transmission electricity distribution network.⁶ Federated Farmers and Horticulture New Zealand challenged the inclusion of these provisions in both plans but the respective hearings panels ultimately decided that corridor protection for electricity distribution assets was appropriate. Orion provided extensive evidence, including expert planning and economics evidence and large volumes of factual evidence from its Network Assets Manager, to support its position in the Christchurch District Plan hearings on a chapter-by-chapter basis.⁷ It can provide that same substantial evidence base in support of its position with regards to the Selwyn District Plan.
- 18 In light of the above, it is clear that corridor protection provisions have been repeatedly confirmed as the most appropriate way to give effect to the CRPS objectives and policies on strategic infrastructure and regionally significant infrastructure in district plan documents for sub-transmission electricity lines across the Canterbury region.
- 19 It is important to note that the proposed provisions will not affect pre-existing structures or activities. They will simply ensure that future buildings are constructed in a way that is safe and in compliance with the existing regulations.

Interplay between proposed District Plan provisions and existing statutory and non-statutory protections for Orion's assets

- 20 There are several statutory and non-statutory instruments applicable to Orion's electricity distribution assets. However, these instruments are insufficient to properly protect the strategic assets in question and to ensure safety is maintained for people carrying out activities in proximity to the lines, in particular, sensitive activities such as care facilities, schools and residential activities. Provisions in district plans provide important complementary and practical protection.
- 21 The following instruments are relevant to Orion's electricity sub-transmission lines:

⁶ See for example: Christchurch District Plan, Chapter 8 Subdivision, Development and Earthworks, Rule 8.5.1.2 RD6; Chapter 11 Utilities and Energy Policy 11.2.1.5, Policy 11.2.2.2, Chapter 14 Residential, Objective 14.2.3, Policy 14.2.3.1, Rule 14.4.1.5 NC7; Chapter 17 Rural, Rule 17.5.1.1 P1 activity standard b, Rule 17.5.1.5 NC4; Hurunui District Plan, Chapter 3 (rural) Rule 3.4.3 (12); Chapter 4 (settlements), Rule 4.6 (14) and 4.12 (15); Chapter 9 (utilities), Policy 9.9.

⁷ See for example: Statement of Evidence of Shane Charles Watson before the Independent Hearings Panel at Christchurch, Replacement District Plan Chapter 17: Rural (stage 2), 29 October 2015, available at <http://www.chchplan.ihp.govt.nz/wp-content/uploads/2015/07/2340-Orion-Shane-Watson-evidence-Rural-hearing-29-10-15.pdf>; Statement of Evidence of Geoffrey Vernon Butcher before the Independent Hearings Panel at Christchurch, Replacement District Plan Chapter 17: Rural (stage 2), 29 October 2015, available at <http://www.chchplan.ihp.govt.nz/wp-content/uploads/2015/07/2340-Orion-Geoff-Butcher-Rural-Evidence-29-10-15.pdf>; Statement of Evidence of Laura Catherine Buttimore before the Independent Hearings Panel at Christchurch, Replacement District Plan Chapter 17: Rural (stage 2), 29 October 2015, available at <http://www.chchplan.ihp.govt.nz/wp-content/uploads/2015/07/2340-Orion-Laura-Buttimore-Rural-evidence-29-10-15.pdf>.

- 21.1 Electricity Act 1992: this act provides for and governs access rights for electricity distributors and related issues such as responsibility for lines maintenance;
 - 21.2 Electricity (Safety) Regulations 2010: these regulations set standards for safe working practices on electric lines, health and safety, and other general matters;
 - 21.3 Electricity (Hazards from trees) Regulations 2013: these regulations set standards for the control of trees in proximity to electricity lines and allocate responsibility for cutting or trimming trees; and
 - 21.4 New Zealand Electrical Code of Practice for Electrical Safe Distances (NZECP 34:2001) (*the NZECP*): this code sets minimum safe distances for structures in proximity to overhead electricity lines. The corridor protections that Orion proposed are consistent with the distances recommended in the NZECP, although the protections sought for the district plan have been simplified for a non-technical audience.
- 22 The above instruments provide some governance for buildings, sensitive activities, trees and fences in proximity to overhead electricity lines and support structures. But in Orion's experience, this degree of regulation has not been sufficient and Orion frequently encounters breaches of these instruments.
- 22.1 The Electricity Act does not contain provisions preventing the establishment of buildings or incompatible land uses under the lines.
 - 22.2 The Electricity (Safety) Regulations require people carrying out construction, building, excavation or other work near an electric line to maintain safe distances in accordance with the NZECP.⁸ But those regulations are not well-understood or well-implemented by landowners, developers or contractors in Orion's experience;
 - 22.3 The Electricity (Hazards from Trees) Regulations impose obligations with regards to trees only and in Orion's experience are not well understood by landowners;
 - 22.4 The NZECP specifies safe distances between buildings and other structures (both permanent and associated temporary works such as scaffolding), excavation works, and electricity lines. It also covers minimum safety requirements for persons working near exposed live parts of the line. However many developers, landowners and contractors are unaware of the NZECP and enforcement is difficult.⁹ The NZECP also does not provide specific detail for

⁸ Reg 17(1)(a).

⁹ Statement of Evidence of Shane Charles Watson before the Independent Hearings Panel at Christchurch, Replacement District Plan Chapter 17: Rural (stage 2), 29 October 2015, available at <http://www.chchplan.ihp.govt.nz/wp-content/uploads/2015/07/2340-Orion-Shane-Watson-evidence-Rural-hearing-29-10-15.pdf>; Statement of Evidence of Shane Charles Watson before the Independent Hearings Panel at Christchurch, Chapter 11: Utilities, Energy and

safety issues to do with sensitive activities in proximity to high voltage lines. Finally, the NZECP is written in complex and technical language, making it challenging to read and follow;

- 22.5 None of the regulations discussed above contain requirements to engage with or notify electricity distributors of a proposed development. Consequently, Orion has found that in practice the NZECP and other instruments are often ignored, with Orion becoming aware of incompatible development or incompatible temporary works only after it is built or at the point where Orion requires access to the lines in question for upgrades, repairs or maintenance.¹⁰
- 23 Corridor protection for sub-transmission lines in the district plan will assist with public and regulator awareness, the maintenance of public safety, and the protection of strategic and regionally important infrastructure. The proposed rules will provide a clear, simplified point for landowners to understand the applicable regulations where their activities interact with electricity lines or support structures and will ensure that Orion's infrastructure is properly protected in the district planning regime. The proposed provisions will also provide important and complementary requirements to engage with the Council and Orion to reach safe and workable solutions for new structures or activities.

Operation of the Greater Christchurch Regeneration Act 2016

- 24 The Greater Christchurch Regeneration Act, s 60(2) requires that a person exercising powers or performing functions under the RMA must not make a decision or recommendation relating to all or part of greater Christchurch that would be inconsistent with a Regeneration Plan or Recovery Plan (this includes the Land Use Recovery Plan 2013) when preparing, changing, varying or reviewing an RMA document under Schedule 1 (this includes a district plan).
- 25 The Land Use Recovery Plan inserted Chapter 6 into the CRPS. Therefore, along with the requirements in s75(3) RMA to give effect to the CRPS, the Selwyn District Council is also required to ensure that its decision is consistent with Chapter 6 CRPS when reviewing the Selwyn District Plan pursuant to the Greater Christchurch Regeneration Act.

Additional matters

- 26 We briefly address some of the other points of opposition from Federated Farmers and Horticulture New Zealand recorded in the Preferred Option Report:

26.1 The fact that the Christchurch District Plan was developed under special legislation is irrelevant to whether or not the proposed corridor protection

Infrastructure (stage 2), 18 November 2015, available at <http://www.chchplan.ihp.govt.nz/wp-content/uploads/2015/07/2340-Orion-Evidence-of-Shane-Watson-18-11-2015.pdf>.

¹⁰ Statement of Evidence of Shane Charles Watson before the Independent Hearings Panel at Christchurch, Replacement District Plan Chapter 17: Rural (stage 2), 29 October 2015, available at http://www.chchplan.ihp.govt.nz/wp-content/uploads/2015/07/2340-Orion-Shane-Watson_evidence_Rural_hearing-29-10-15.pdf; Statement of Evidence of Shane Charles Watson before the Independent Hearings Panel at Christchurch, Chapter 11: Utilities, Energy and Infrastructure (stage 2), 18 November 2015, available at <http://www.chchplan.ihp.govt.nz/wp-content/uploads/2015/07/2340-Orion-Evidence-of-Shane-Watson-18-11-2015.pdf>.

provisions are the most appropriate way to give effect to the CRPS under section 75(3) RMA. The Christchurch District Plan was developed pursuant to the Canterbury Earthquake (Christchurch Replacement District Plan) Order 2014 which specified that the proposed plan was to be treated as if it was a proposed district plan under Schedule 1 of the RMA, with some limited modifications. The Independent Hearings Panel was tasked with the same evaluation as the Selwyn District Council – namely, whether corridor protection for Orion’s sub-transmission lines is the most appropriate way to give effect to the CRPS. While there were some variations in the process compared to a ‘normal’ district plan review, it is not clear from Federated Farmers and Horticulture New Zealand’s comment which considerations they believe are materially different for the purpose of evaluating corridor protections for sub-transmission lines as between the Christchurch and Selwyn processes;¹¹

- 26.2 The provisions in the Christchurch District Plan were not developed for the Residential chapter and ‘rolled over’ into the rural chapter without appropriate assessment. The rules were tailored and developed specifically in each part of the Christchurch District Plan and were subject to extensive assessment by the Independent Hearings Panel and Council experts.

Jo Appleyard

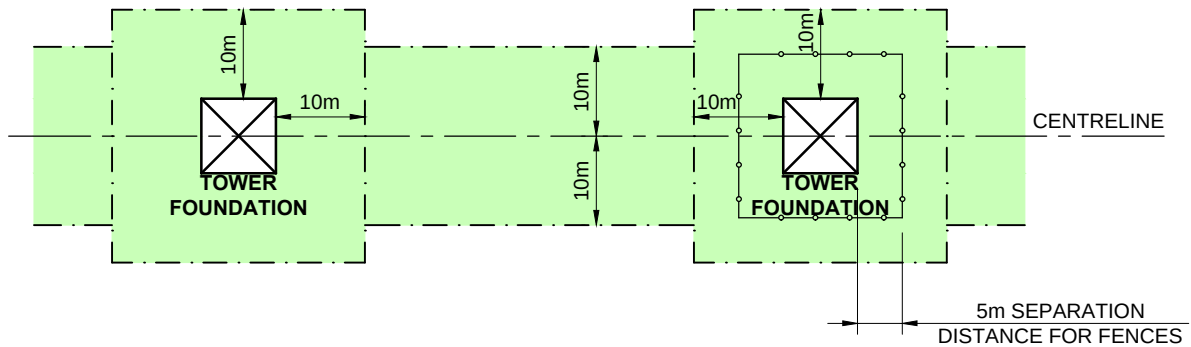
PARTNER

DIRECT: +64 3 353 0022

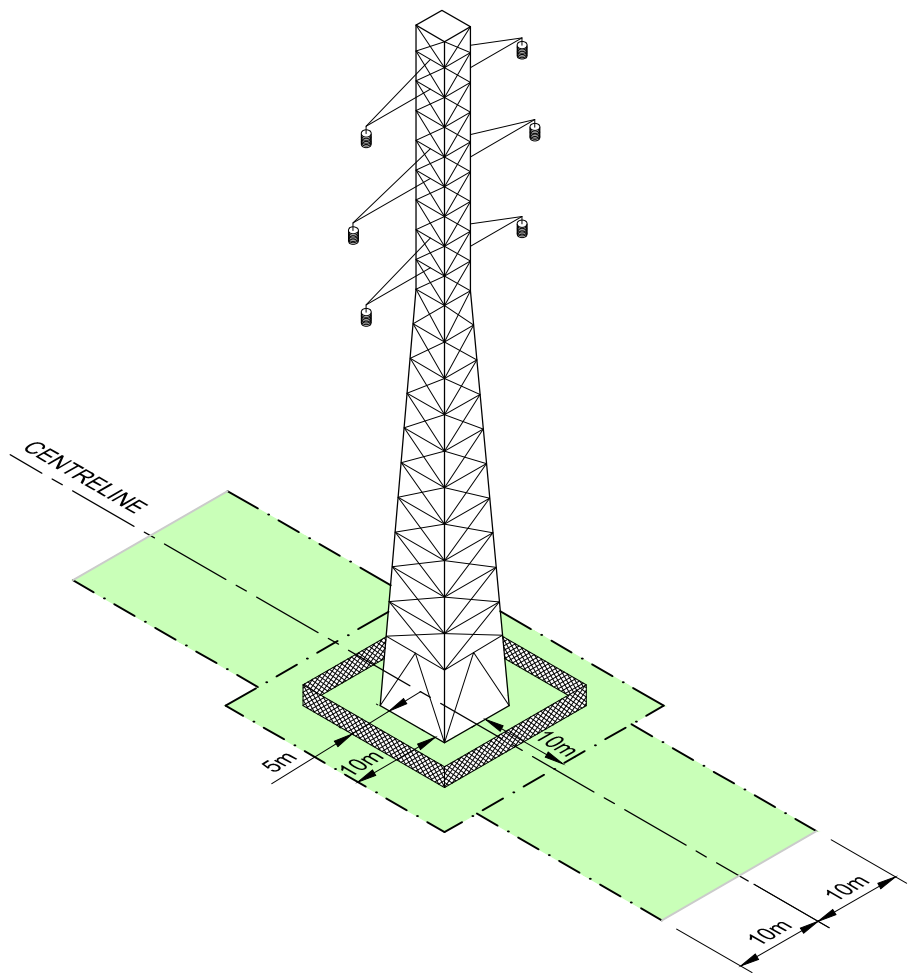
EMAIL: jo.appleyard@chapmantripp.com

¹¹ Canterbury Earthquake (Christchurch Replacement District Plan) Order 2014, cl 5.

DIAGRAM 1A



PLAN - DOUBLE CIRCUIT SUBTRANSMISSION

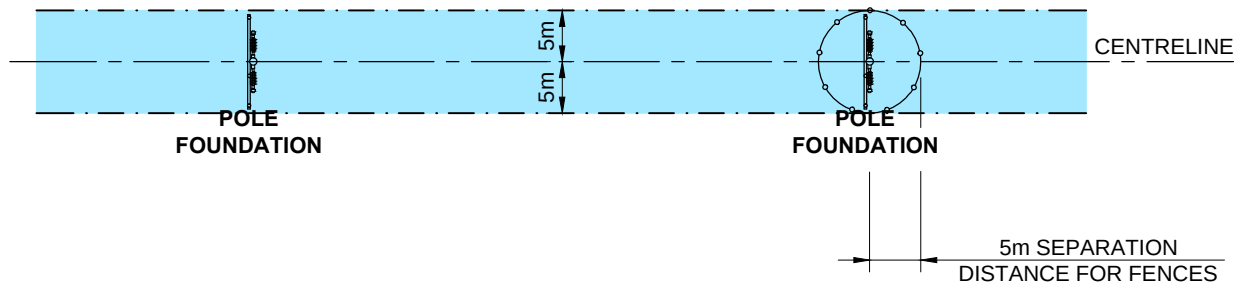


LEGEND

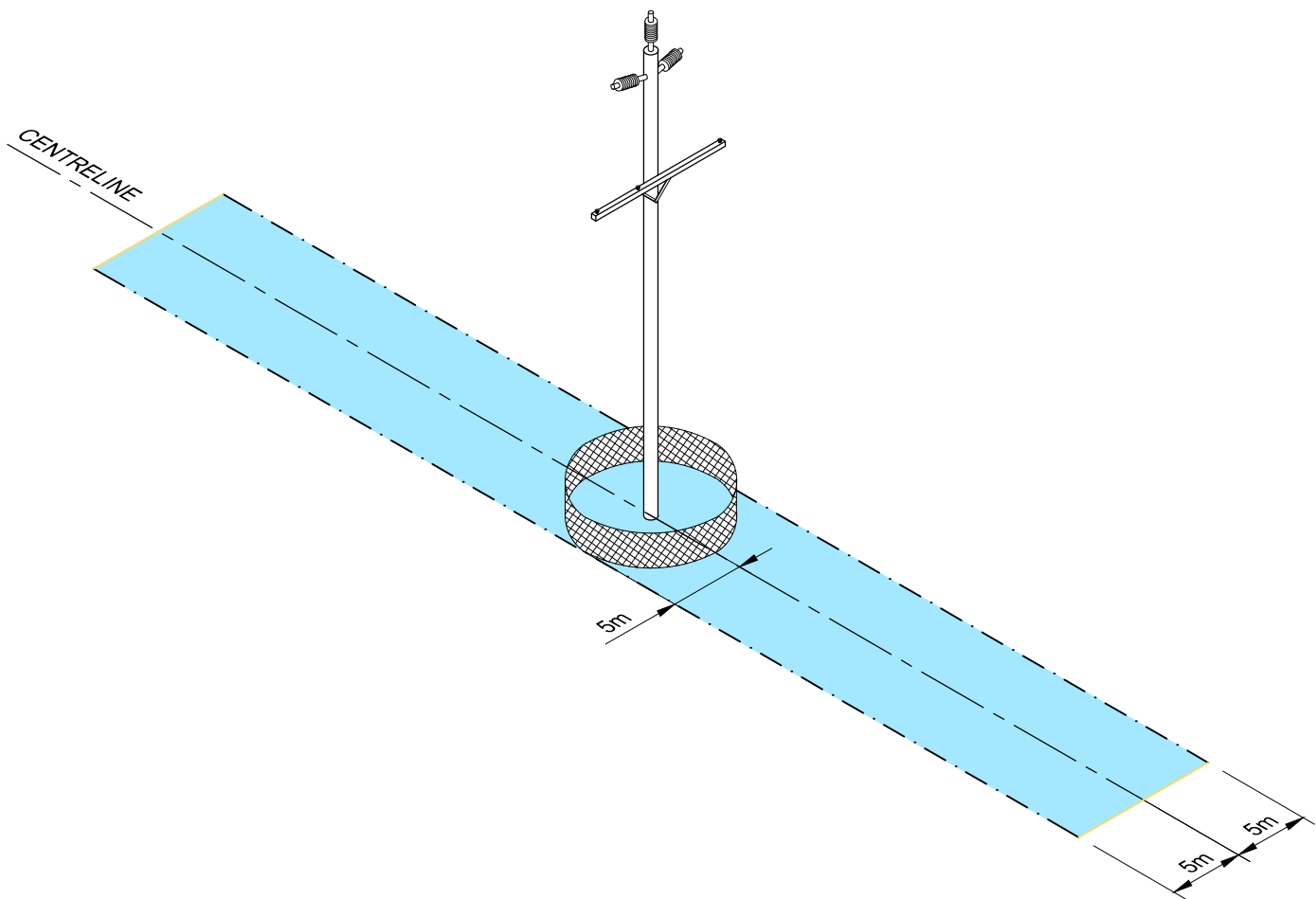
 - CORRIDOR PROTECTION AREA

SCALE N.T.S		 P.O. BOX 13896 CHRISTCHURCH	
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STANDARD CONSTRUCTION DOUBLE CIRCUIT SUBTRANSMISSION CLEARANCES			
ISSUE -	SIZE A4	DRAWING NUMBER SKTS-001A	SHEET 1/1

DIAGRAM 2A



PLAN - SINGLE CIRCUIT SUBTRANSMISSION



LEGEND



- CORRIDOR PROTECTION AREA

SCALE N.T.S	 P.O. BOX 13896 CHRISTCHURCH		
FILE NAME SKTS-002			
STANDARD CONSTRUCTION SINGLE CIRCUIT SUBTRANSMISSION CLEARANCES			
ISSUE -	SIZE A4	DRAWING NUMBER SKTS-002A	SHEET 1/1