

Rural Subdivision: *Proposing an optimal minimum allotment size for Central Otago's rural zone.*

A research report submitted in fulfillment of the requirements for
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Central Otago District Council

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This report is work undertaken by students from the Planning Programme at the University of Otago and should in no way be seen to represent the views of the University of Otago.

Executive Summary

Current trends in Central Otago have seen the sprawl of urban areas into rural land, providing for population growth and demand, but having economic, social, environmental and political implications. The National Policy Statement for Highly Productive Land aims to address some of the issues associated with such growth by restricting development on land under its definition of ‘highly productive’ – land ranked as Land Use Capability (LUC) 1 to 3. Central Otago’s unique environment and land characteristics primarily consist of areas classified between 4 to 6 on the LUC scale, however, meaning that they must be managed and protected through specific policies from the Central Otago District Council (CODC).

The current provisions of the Central Otago District Plan (CODP) include a minimum allotment size of two hectares and an average size of eight hectares which is applied across the majority of the district’s rural land. This has resulted in an influx of rural subdivisions at the minimum size which has had significant consequences for the district.

There is a consensus amongst stakeholders that two hectares is too small to be used productively and too large for a sustainable rural lifestyle property. Recognising this, and the growing consequences of current trends, the CODC provided a brief highlighting the need to update the Central Otago District Plan in a manner which can apply a more appropriate minimum allotment size. From this, the following research aims and objectives were devised for the research:

Research aims and objectives: The aim of this report was to identify an appropriate minimum allotment size to ensure effective management of Central Otago’s rural environment and its resources. To achieve this aim, three research objectives were formulated, these being:

1. To engage with business owners, advocacy group representatives, and community members to understand the key drivers, consequences, and considerations regarding rural subdivisions in Central Otago.
2. To identify key suggestions made by stakeholders and use these to investigate frameworks and methodologies used by other Territorial Authorities to determine appropriate minimum allotment sizes for rural subdivisions.

3. To make recommendations to CODC to how the rural zone can be more effectively manage to mitigate the adverse effects associated with rural subdivisions.

Methods: The study used a mixed-methods approach, employing both qualitative and quantitative methods to achieve the research aim and objectives. The primary research methods used included interviews and a survey questionnaire. Nine semi-structured key informant (KI) interviews were conducted with planners, agriculturalists, and rural advocate group members. The survey questionnaire received 52 responses and gathered the thoughts and opinions of a diverse range of wider community members. These primary methods were supported by secondary data gained through a literature review, policy analysis and goals-achievement matrix (GAM).

Objective 1: To address the first research objective, two separate results and discussion sections were created. One identified the key drivers of current rural subdivision trends and the other the key consequences.

Drivers: The primary results demonstrated that there were various interconnected social, economic, environmental and political factors driving rural subdivision in Central Otago. The results were easily separated into two categories: those driving demand and those incentivising supply. The demand for rural subdivisions was driven by a combination of factors that are interrelated and mutually reinforcing. Essentially, Population growth, influenced primarily by counter-urbanisation, has necessitated an increased supply of housing resulting in the land demarcated for urban use reaching development capacity without the full extent of the population being provided for. When combined with a desire for a rural lifestyle deeply rooted in New Zealand's historical context and the preference of older migrants and locals to live rurally, this study found that the situation in Central Otago was one that sees a convergence of various factors fuelling a substantial demand for rural subdivisions. The supply of rural subdivisions was incentivised by a combination of economic factors and external pressures. The financial gains associated with subdividing land incentivised the supply, as the demand for rural lifestyle living had increased land and subdivision value. Rural landowners, many of whom were influenced by neoliberal pressures, were motivated by the potential profits and viewed subdividing as a rational choice. Additionally, external pressures such as the declining viability and increasing costs of the agricultural sector contributed to incentivising the supply of rural subdivisions. Furthermore, the

ageing population in Central Otago sees landowners considering subdivision as a means to downsize and secure retirement funds. These factors collectively contribute to incentivising the supply of subdivided rural land in Central Otago, shaping the current trends observed in the district.

Consequences: The consequences of the current trends of rural subdivision in Central Otago are evident throughout our findings. Learnings can also be taken from key literature. The primary findings highlighted key impacts related to reverse sensitivity, amenity value, changing land use and the productivity and practicality of the existing size. Furthermore, environmental consequences were acknowledged. There were impacts on a residential and district scale. At a residential scale, reverse sensitivity was the most recurring consequence with a plethora of KIs and survey respondents highlighting their own experiences regarding this. The externalities of agricultural business production negatively impact those living rurally for lifestyle purposes, taking the form of loud noises, unfavourable smells and visual blemishes on the landscape. Consequently, complaints are made by those residents, often resulting in the imposing of restrictions on disruptive activities. These bilateral issues are exacerbated by the current size, commonality and lack of control surrounding two-hectare lifestyle allotments in the district. At a district scale, the impediment of rural subdivisions beyond the urban fringe has had implications for the character and economy of the district. The district's amenity value has been impacted for many and the current minimum allotment is too small to be used productively and is therefore taking significant amounts of land away from production. This research also highlights the advantages associated with the provision of rural lifestyle blocks discussing the fact that they draw people to the region, thereby contributing to population growth and the broader economy. In doing this, the research emphasises the need to facilitate growth in a manner where these benefits can remain, but at the same time, the associated disadvantages can be mitigated.

Objective 2: This objective was achieved by utilising the most common suggestions made by KIs and survey respondents regarding alterations to the existing district plan. These suggestions were categorised into five key themes; directive and strongly worded objectives and policies, a smaller rural lifestyle minimum allotment size, simplified zoning, and protection of the district's valuable land. To assess how these management aspirations were applied in the context of alternative district council plans, a policy analysis was conducted. The councils selected for analysis were

based off primary and secondary research findings and consisted of Dunedin City, Queenstown Lakes, Porirua City, Tasman and Central Hawkes Bay district councils. The findings from this analysis were summarised in a Goals Achievement Matrix (GAM). The GAM revealed that Porirua City and Central Hawkes Bay district councils had the most applicable objectives, policies, and rules for achieving the aspirations determined by our primary research. The policy analysis and GAM clearly illustrated how various management styles are present around New Zealand, while clearly defining which approaches are most applicable to the context of Central Otago.

Objective 3: The results from the key suggestions, policy analysis, and GAM were used to help inform our final research objective and recommendations for council.

Recommendations: Three recommendations have been made to CODC based on the research findings relating to effective management of rural subdivisions:

1. Rural lifestyle zone with a minimum allotment size between half a hectare and one hectare.
2. Rural Productive zone with a minimum allotment size of approximately 5 hectares.
3. Rural General Zone with a minimum allotment size of approximately 20 hectares.

Considerations: Two supporting considerations for CODC have been provided to assist in the implementation of the recommendations:

1. Adopt strongly worded and directive objectives and policies to each of the recommended zones. These should reflect the purpose and nature of the zones intended use.
2. Effectively manage issues surrounding reverse sensitivity through the use of detailed activity lists and matters of discretion.

The report advocates that CODC considers these recommendations when reviewing the rural chapter of the CODP.

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Abbreviations

CHBDC	Central Hawkes Bay District Council
CODC	Central Otago District Council
CODP	Central Otago District Plan
DCC	Dunedin City Council
Hort NZ	Horticulture New Zealand
HPL	Highly Productive Land
LUC	Land Use Capability
LAWA	Land Air Water Aotearoa
LWPRO	Land and Water Regional Plan for Otago
MFE	Ministry for the Environment
NES	National Environmental Standards
NPS	National Policy Statement
NPS-HPL	National Policy Statement for Highly Productive Land
ORC	Otago Regional Policy Statement
PC5	Plan Change Five
PCC	Porirua City Council
POORPS	Partially Operative Otago Regional Policy Statement
PORPS	Proposed Otago Regional Policy Statement 2021
QLDC	Queenstown Lakes District Council
RMA	Resource Management Act 1991
RPS	Regional Policy Statement
TDC	Tasman District Council

1.0. Introduction

Over the past 30 years, the global rate of urban land occupation has grown at twice the rate that the urban population has grown (Angel et al., 2011; Garcia et al., 2014; Seto et al., 2012). Despite urban growth inevitably resulting in urban expansion, a lack of strategic planning across the world has allowed for this growth to occur alongside urban sprawl, resulting in a loss of land which has traditionally been used for agricultural purposes (Al Tarawneh, 2014). The ramifications of this include agricultural land loss which comes with a decrease in food production and security for local populations. Additionally, environmental impacts such as reduced soil and water quality, decreased animal and plant diversity, compromised ecological functions and a loss of natural habitat can occur (Appiah et al., 2014; Curran-Cournane et al., 2023; Debolini et al., 2015; Flynn et al., 2009; Matson et al., 1997; Shi et al., 2012; Wadduwage et al., 2017).

Urban expansion comes in many forms, taking place in large cities, small towns and at varying density levels (Angel et al., 2011; Han, 2010; Lichter et al., 2021). Depending on how it is managed urban growth can therefore happen through redeveloping and intensifying built-up areas or through new ‘greenfield’ development in areas previously used for non-urban purposes (Angel et al., 2011). This research is concerned specifically with that which occurs in small towns, at reduced densities through greenfield development.

Traditionally, urban growth is driven by factors such as immigration and migration, as people often move to urban areas in search of better education, jobs, housing, and social infrastructure (Mlambo, 2018). Rural-urban migration is a key contributor to this type of growth; however, the opposite phenomenon is starting to be observed and reported upon both nationally and globally (Ramachandran, 2021; Wardwell, 1980). Urban-rural migration (also known as counter-urbanisation) is the movement of people from urban areas to rural, or semi-rural areas. This form of migration is driven by a range of factors which differ from rural-urban migration. Where the propensity to move from rural to urban areas is generally perceived to occur at younger ages, the desire migrate urban-rural increases around mid-life and retirement ages (Bairoliya & Miller, 2021; Bures, 1997; Lowe & Speakman, 2006; Lundholm, 2012). While rural-urban migration primarily occurs in search of education, jobs and opportunities, urban-rural migration occurs in search of slower lifestyles and an escape from the busyness of urban life (Costello, 2007).

Urban-rural migration is a key contributor to the growth and expansion of small townships which are the focus of this study. Because of the traditionally rural surroundings of these small towns, expansion often occurs with unforeseen and dramatic consequences. These consequences are exacerbated when planning instruments are not designed to combat the adverse effects of such expansion. The growth of small townships into rural land not only has environmental implications and ramifications for the productivity of land, but also social and economic impacts.

In New Zealand, the primary sector is a significant contributor to the national economy (Cradock-Henry et al., 2019). Urban expansion has created new challenges for this sector which has resulted in the national government introducing the National Policy Statement for Highly Productive Land 2022 (NPS-HPL). The NPS-HPL aims to ensure the availability of the country's most favourable land for fibre and food production, now and for future generations. This policy statement does this through restricting urban development and non-productive rural land use on land which is considered in the higher-echelon of Land Use Capability (LUC) as defined within the NPS-HPL.

In the Central Otago district, the focus of this study, there are several unique characteristics which present challenges when implementing and adopting this national-level direction. The characteristics of most rural land in the district are not considered LUC 1-3 despite being used productively for purposes such as horticulture and viticulture. Because of this, such land is not covered by the NPS-HPL and is instead needing to be managed and protected through specific policies from the Central Otago District Council (CODC). Currently, the Central Otago district is seeing dramatic population growth which is met with urban expansion in the form of greenfield development, particularly due to a high demand for rural lifestyle properties. Current provisions in the Central Otago District Plan (CODP) provide for an average allotment size of eight hectares and a minimum of two hectares. Because of this, there has been an influx of rural subdivisions at this minimum allotment size. This has provided for population growth and demand, but has resulted in economic, social and environmental consequences with key issues being related to land fragmentation, amenity values and reverse sensitivity effects. Two hectares is too small to be used productively, and too large for a sustainable rural lifestyle property. As such, there is an urgent need to update the CODP by implementing a more sustainable minimum allotment size.

1.1. Interpretation of the Brief

A research brief was prepared by CODC which requested a research focus centred around generating a methodology for establishing a new minimum allotment size in the rural zone. A research focus of this nature would ensure the retention of productive soils and rural open spaces while meeting the demand for smaller rural holdings. The brief provided an explanation of the key issues and contexts within which the research is situated and offered the following objectives to guide the direction of the research:

“

- a. *To investigate and document frameworks and methodologies used in other parts of New Zealand and internationally to determine appropriate minimum allotment sizes for rural subdivision.*
- b. *To recommend a possible framework/methodology that would assist in determining what might be an acceptable minimum rural allotment sizes that would work for pastoral (including dryland), horticultural and viticulture activities in Central Otago.*
- c. *The recommended framework/methodology to inform appropriate minimum allotment sizes which should include consideration of buffers for infrastructure required, manage potential reverse sensitivity, worker accommodation and other domestication such as residential activities.*

”

The brief also highlighted the importance of engaging with key stakeholders, comparing the applicability of methodologies used elsewhere in the country and considering relevant provisions of the NPS-HPL.

1.2. Aim and Research Objectives

The research aim and objectives were adapted from the brief developed by the CODC. The information collected using these research objectives can be used to improve understanding of the key drivers and consequences of the current trends in urban expansion and rural subdivision. Engagement with key stakeholders and members of the public uncovered the key aspirations for

managing the rural environment. Findings can also be used to recognise what factors are most important to the Central Otago community, and from this, how strategic policies can be implemented into the CODP which address the consequences of current trends.

The purpose of this research is to provide CODC with a report to inform future changes to the existing strategies for managing the rural environment. Following the brief provided by CODC, the aim of this research is to identify an appropriate minimum allotment size to ensure effective management of the district's rural environment and its resources.

The key objectives used to achieve this aim are:

Research Objective 1: To engage with business owners, advocacy group representatives, and community members to understand the key drivers and consequences regarding rural subdivision in Central Otago.

Research Objective 2: To identify key suggestions made by stakeholders and use these to investigate frameworks and methodologies used by other Territorial Authorities to determine appropriate minimum allotment sizes for rural subdivision.

Research Objective 3: To make recommendations to CODC as to how the rural zone can be more effectively managed to mitigate the adverse effects associated with rural subdivision.

1.3. Research Methods

Chapter 5 of this report includes a full explanation of the methodological approach utilised in this study. The research adopted a mixed-methods approach, utilising both qualitative and quantitative methods. This allowed for data to be compared, contrasted, and used to fill in gaps across the different methods (Kitchin & Tate, 2013). The study utilised primary methods including semi-structured interviews and survey questionnaires. Semi-structured interviews were conducted with Key Informants (KIs) from a variety of significant stakeholder groups within the Central Otago district. Survey questionnaires were distributed online and in person, aiming to gain the broader perspectives of the district's general public. The secondary methods that were used in this study

included a policy analysis of key legislation and planning documents, and a literature review exploring both international and local studies of relevance.

1.4. Report Structure

The report is set out in a series of chapters as follows:

Chapter 1: An introduction that establishes the context and parameters of the research.

Chapter 2: A thorough review of the relevant literature that identifies the implications of past studies in relation to this research and establishes key concepts and themes for this project.

Chapter 3: An examination of the study area that focuses on the history, environment, population, and socio-economic profile of the Central Otago district.

Chapter 4: A review of key legislation and planning documents that relate to this research.

Chapter 5: An overview of the methodological approaches that were used to conduct this research.

Chapter 6: A results and discussion chapter outlining the key findings regarding the drivers of rural subdivision in Central Otago.

Chapter 7: A results and discussion chapter outlining the key findings regarding the consequences of rural subdivision in Central Otago.

Chapter 8: A results and discussion chapter which outlines the key suggestions for managing rural subdivision within Central Otago, a policy analysis, and a Goals-Achievement Matrix (GAM).

Chapter 9: A discussion of the recommendations for CODC.

Chapter 10: A conclusion that summarises the key points and explains how the research aim and objectives have been addressed.

2. Literature Review

This literature review chapter critically examines the social, economic, political, and environmental drivers and consequences of changing rural land uses, subdivisions, and land fragmentation. By reviewing existing research and theories, this chapter aims to provide a comprehensive understanding of the complex interplay between all of these factors. This will provide the foundations for the subsequent chapters of this report, which will apply this understanding to the specifics of the Central Otago district.

2.1. Introduction

The change of rural land-use associated with rural subdivisions, and the resulting implications, became of growing interest to rural geographers throughout the 1970s, gaining international traction in the early 1980s (Grigg, 1981; King 1971, 1977; Tyszkiewicz, 1979). King and Burton (1982), argue that prior to then, changing land tenure had been seen primarily as a matter of “legal, political and economic nature” (p. 1). In the 1970s however, agricultural geographers came to understand and expand upon the role of changing land uses in terms of differing landscapes and forms of rural spatial organisation. Land fragmentation became an international phenomenon and the most geographically-centric aspect of rural land tenure, referring to the structure of farm holdings throughout space (Bentley, 1987; Ilbery, 1984; Keeler & Skuras, 1990; King & Burton, 1982, 1983). The term land fragmentation is used in two distinct ways throughout the literature. In one sense it is used to describe the subdivision of a farm property into smaller units which are not suitable for rational exploitation (King & Burton, 1982). In another sense, it has been used to describe situations whereby one parcel of land is split into several non-contiguous parcels (King & Burton, 1982). For the purpose of this literature review, land fragmentation will refer to its meaning in the first description. In 1960, Farmer referred to this type of land fragmentation simply as subdivision. This reference is not entirely correct as subdivision itself, even within a rural context, does not always result in land fragmentation. However, there is a vast amount of literature indicating that the non-strategic implementation of rural subdivisions significantly contributes to land fragmentation. (Hart et al., 2014; Kebaso, 2017; Songoro, 2020; Watson, 2011).

Land fragmentation in New Zealand is rooted in the 'quarter-acre dream,' a concept deeply ingrained in the country's history since colonial times (Montgomery, 2015). The dream represents the desire for individuals to own their own parcel of land, even if not used for farming, but rather for the enjoyment of a standalone house and a private backyard (Jamieson, 2015). This ideology remains prevalent today, with fragmented land units known as 'lifestyle blocks,' 'hobby farms,' and 'rural amenity blocks' gaining popularity in rural and semi-rural areas. The Real Estate Institution of New Zealand has reported a significant rise in the value of lifestyle properties sold, reaching a record high of \$6.026 billion dollars in 2015 (Watson 2011; Wong, 2016). Typically, a lifestyle property is a rural lot that is primarily residential, larger than an ordinary residential allotment, not primarily used for farming, and valued more highly (Watson, 2011). The sprawl of lifestyle properties is caused by the legal process called a subdivision, which refers to dividing land into smaller sections, encompassing various processes that change boundaries, sizes, and ownership of parcels. (De Luca, 1991).

The creation of a new site does not necessarily have any adverse effects on the economic, social and natural environment, instead it is the subsequent use of the land which can have negative implications. Subdivision can also give rise to the expectation that land can be developed further, resulting in occupiers assuming that they will be able to use the new sites for a variety of activities. There is, therefore, a strong interrelationship between subdivision and land-use activities (Hastings District Council, 2022). As a result, subdivision of farmland in rural areas may raise various social, economic, environmental and political issues (Shaw, 1995). It is important to emphasise here, that whether or not something is perceived as a positive or negative impact of rural subdivision depends upon the perspective of the viewer (Shaw, 1995).

2.2. Drivers

The decision to create rural subdivisions is influenced by a variety of social, economic, environmental, and political factors. To provide a comprehensive analysis, this section will investigate the underlying social, economic, environmental and political drivers behind rural subdivisions, exploring the factors contributing to their emergence and proliferation.

2.2.1. Social Drivers

This literature review section will explore and analyse the key social drivers that encourage the development of rural subdivisions framed in academia. The section will start with fundamental socio-demographic trends such as rural population growth and counter-urbanisation. Then it will delve into niche factors that act as drivers of counter-urbanisation, such as retirement trends, the Covid-19 pandemic, and Arcadian ideals.

2.2.1.1. Population Growth

Population growth has been identified within the literature as a key social driver of an increase in rural subdivision. There is a plethora of research examining the relationship between population growth and land-use transformation (see for example, Agergaard et al., 2019; Han, 2010; Hu et al., 2020; Skog & Steinnes, 2016). Put simply, the consensus among this literature is that increasing populations result in a need to house more people and the inevitable expansion of a township into land that has not traditionally been used for urban purposes. Population growth has a range of drivers of its own, ranging from a natural increase, to immigration and migration (Auger & Poggiale, 1996; Gibson, 1975; Johnson & Lichter, 2008). When examining internal population growth, research primarily tends to focus on rural-to-urban migration, arguing that urban areas generate more economic and educational opportunities in addition to better infrastructure and services (Dufour & Piperataa, 2004; Kettlewell, 2010; Selod & Shilpi, 2021; Zhao, 1999). Despite this, extensive research conducted in various countries located in the Global North has observed the opposite phenomenon. These studies have observed an increase in urban-to-rural migration, resulting in population growth within the contexts of small semi-rural townships (Buckle & Osbaldiston, 2022; Bijiker & Haarsten, 2012; Bosworth, 2010; Halfacree, 2008). Rural population growth often forces towns to expand and sprawl, resulting in the loss of land on the outskirts of town which was once rural but has now been converted into lifestyle subdivisions (Grimsrud, 2011; Halfacree, 2012). The process of population movement from densely populated urban or metropolitan areas to rural or non-urban regions is also known as counter-urbanisation (Phillips, 2010). Therefore, counter-urbanisation may be a significant driver for urban expansion, changing land uses, and increasing rural subdivisions. (Bijker & Haarsten, 2012; Argent & Plummer, 2022). Counter-urbanisation is a multifaceted concept with its own various implications and drivers

discussed in the next sections. Within the contextual scope of this research, counter-urbanisation can be seen as a primary social driver of rural population growth.

2.2.1.2. Retirement Trends and COVID-19 Pandemic

Counter-urbanisation shapes and significantly changes the rural environment, so it is important to understand factors that contribute to it. Across a broad spectrum of scholarly literature, the primary social catalyst behind the emergence of rural subdivisions can be attributed to counter-urbanisation, predominantly driven by elderly individuals and retirees (Stockdale, 2006, 2016; Gkartzios & Scott, 2013; Nel et al., 2019; Stevenson & Nel, 2020; Dilley et al., 2022). The existing body of literature widely concurs that the motivation behind elderly and retiring individuals relocating to rural areas stems from their pursuit of a better quality of life (Hoey, 2010; Eimermann, 2015; Vuin, 2019; Zollet & Qu, 2023). Notably, one intriguing factor highlighted within New Zealand-specific literature is the significance of the natural landscape (Nel et al., 2019). Nel et al.'s (2019) study explores the growth of small towns in New Zealand and reveals that the towns that experienced expansion were either in close proximity to a metropolitan area or boasted an attractive natural environment. The allure of favourable natural environments aligns with research conducted elsewhere. Specifically, a study based in the United States by Cromartie (2010), also found that older people choose to move to rural areas due to considerations related to quality of life, such as scenic landscapes and a sense of connectedness to the land.

Further research by Anderson et al., (2018) examines other driving factors of counter-urbanisation. Anderson et al., (2018) discovered that older migrants were inclined to seek tranquility, then settle down. In contrast, a recent study conducted in New Zealand by Diamond and Jaye (2020) revealed that ageing within one's familiar rural community imparts a sense of continuity and identity that is perhaps valued above other factors. Therefore, retirees were more inclined to retire where they experienced that strong sense of community, rather than leaving their community to seek tranquility. Similar results were observed in a study conducted by Merchant et al. (2006), which emphasised the significance of sharing and mutual support among rural residents as contributors to an enhanced quality of life. Moreover, the literature also highlights additional factors that contribute to the appeal of a rural lifestyle in terms of quality of life. These include lower cost of living, reduced crime rates, and favorable weather conditions (Burnley et al., 2005; Tang & Zolnikov, 2021).

More recently, studies have begun to examine the ramifications of the COVID-19 pandemic in further expediting these counter-urbanisation patterns. Through an analysis of international literature, it is evident that COVID-19 has come with a surge in temporary relocations from cities, increased acquisition of secondary homes, and heightened residential relocations to non-metropolitan rural areas (Colomb & Gallent, 2022; Greinke & Lange, 2022; Tammaru et al., 2023; Willberg et al., 2021). Studies prove, however, that the COVID-19 related counter-urbanisation effects are not evenly distributed throughout smaller town centres. In fact, a study by McManus (2022) indicates that these trends result in certain areas growing rapidly, whilst others have experienced stagnant or decreasing growth trends.

2.2.1.3. Arcadian Ideals

Another driver of counter-urbanisation in New Zealand is the concept of Arcadian ideals, which explains New Zealander's fondness for rural lifestyle properties (Dürr, 2007; Fairburn, 2013; Swaffield & Fairweather, 1998). Arcadian ideals encompass values associated with an idealised rural way of life, romanticising simplicity, harmony, and natural beauty while contrasting them with urban complexities (Swaffield & Fairweather, 1998). These ideals trace back to ancient Greek mythology and have influenced various art forms, literature, and philosophies (Short, 1991).

In New Zealand, these ideals tend to stem from colonial times, with many people originally being attracted to New Zealand as a place to escape from the dense urban landscapes of other countries (Fallon, 2021). Historically, people moving to New Zealand were promised their own parcel of land, regardless of whether it was used for farming, entrenching this ideal into the New Zealand mindset which remains today (Fallon, 2021).

The romanticisation of rural living has resulted in an innate fondness for rural lifestyle properties in New Zealand. The 'quarter-acre dream' is a term often used to explain this ideal throughout the country, particularly in more urban contexts. This term refers to the New Zealand aspiration of owning a detached house on a spacious plot of land with an exclusive backyard (Jamieson, 2015). In recent years, however, New Zealand urban centres have seen an increase in medium-density development and apartment living. This shift can be attributed to urbanisation and the neoliberal turn of New Zealand's housing market, which some argue has caused the quarter-acre dream to fade in proximity to core urban areas (see for example; Fallon, 2021; Loo & Mulla, 2010; Pinchen, 2022).

Nevertheless, a recent study by Bryson (2017), analysing the housing preferences of the New Zealand public, shows that the ideologies behind this ‘dream’ are still prevalent. Essentially, this study found that there is a trend across all housing factors, in which detached houses are rated more favourably and are more sought-after than other types of housing. Because this fondness remains, but access to such properties has become limited near urban centres, connections can be made that this has become a key contributor to counter-urbanisation in New Zealand.

2.2.1.4. Conclusion

In conclusion, this section has explored the social drivers behind rural subdivision. This has included population growth, counter-urbanisation, retirement trends, the COVID-19 pandemic, and the influence of Arcadian ideals. It has emphasised the impact of rural-to-urban migration and counter-urbanisation in relation to population growth. The motivations of elderly individuals and retirees seeking a better quality of life in rural areas, along with the significance of natural landscapes and community continuity, have been discussed. The COVID-19 pandemic has further accelerated counter-urbanisation patterns. The historical aspiration for detached houses on spacious plots of land, influenced by Arcadian ideals, has contributed to the growth of small townships. Overall, this section provides valuable insights into the complex social drivers transforming rural areas into subdivided residential developments.

2.2.2. Economic Drivers

Investigating the economic drivers of rural subdivisions within the existing literature is critical to situating this project within a wider context and history (Hart, 2018). This section of the literature review will analyse and evaluate how the economic drivers of rural subdivision has been framed in academia. This section of the review will establish the role of the presiding economic paradigm, neoliberalism, that serves as the basis for all economic activity, consequently informing the drivers of rural subdivision. This section will then present the recurring economic factors that drive rural subdivision, such as demand for rural lifestyle, land values, and the fluctuating trends in agricultural markets.

2.2.2.1. The Influence of Neoliberalism on Rural Subdivisions

Neoliberalism, the prevailing economic doctrine in the Western world and New Zealand, promotes a free market economy, privatisation of public resources, and reduced government intervention

(Ganti, 2014). It gained prominence in the 1980s with the policies of Reagan and Thatcher (Plehwe, 2016). New Zealand embraced neoliberalism through "Rogernomics" in 1984, transitioning from its previous welfare state model. Neoliberals argue that the market efficiently allocates resources and fosters economic growth, equating it with human development. Needless to say, scholars across the world have criticised the role of neoliberalism in modern society. Bargh (2007) explains how neoliberals argue neoliberalism 'levels the playing field' by providing equal access to the market and the opportunities available within society. Bargh goes on to assert, however, that it has instead hidden the structural inequalities and systemic injustice entrenched within the system.

The market caters to supply and demand, it cannot differentiate between wants and needs and therefore caters to those who have the power and privilege to pay for their wants (Ganti, 2014). In the context of rural subdivision, neoliberalism has shaped the decision-making processes, market dynamics, and land-use patterns (Watson, 2011). One of the key ways in which neoliberalism has influenced rural subdivision is through its emphasis on property rights and market forces (Mäntysalo, 1999). Neoliberal policies tend to prioritise the rights of property owners, allowing them greater freedom to buy, sell, and develop land (Ikeda, 2015; Pennington, 1999). This has facilitated the fragmentation of rural land into smaller parcels for residential or commercial purposes (Watson, 2011). As a result, rural areas have experienced increased land subdivision, leading to the conversion of agricultural land into residential or lifestyle blocks (Igoe, J., & Brockington, 2016; Wallace & Williamson, 2006; Wong, 2016).

Neoliberalism's focus on market forces has also played a role in rural subdivision. The demand for rural residential properties has created market incentives for landowners to subdivide, one example being increased land values (Short, 1991, Swaffield & Fairweather, 1998). This has been particularly evident in areas with desirable landscapes, natural amenities, or proximity to urban centres (Andrew & Dymond, 2013); Swaffield & Fairweather, 1998). According to Turney (1997), this creates competition within the market between those intending to use rural areas for agricultural purposes and those for residential purposes.

In New Zealand subsequent spikes in land prices reflect these trends as the value of rural land increasing exponentially over the past 30 years (Marshall, 2023). In 1990, one hectare of horticultural land was valued at \$22,548 compared to an average of \$44,310 per hectare in 2022

(Turney, 1997; Marshall, 2023). Andrew & Dymond (2013) report that in 2011, 873,000 hectares of land were occupied by 175,000 lifestyle blocks, estimating the average size of a rural lifestyle block as 5 hectares. Each year since 1998, approximately 5800 new lifestyle blocks have been established, resulting in 10% of New Zealand's LUC class 1 and 2 land being occupied by lifestyle blocks (Andrew & Dymond, 2013). This occupation changes the land use of these areas, reducing the available land for commercial primary production.

Furthermore, neoliberalism's influence on deregulation and reduced government intervention has affected the planning and regulation of rural subdivision. In many neoliberal-oriented societies, planning regulations have been relaxed to accommodate market demands and facilitate land development (Lahiff et al., 2007; Wallace & Williamson, 2006). This has made it easier for landowners to subdivide their properties without facing significant regulatory barriers or restrictions (Edelman et al., 1999; Harcourt, 2011; Igoe, J & Brockington, 2016). Watson (2011) uses the Tasman District Plan as an example of the lack of regulatory barriers to subdivision, discussing how this has resulted in the fragmentation of significant farmland.

2.2.2.2. Trends in Horticulture and Agricultural Markets

Trends in horticultural and agricultural markets are highly influential in the process of rural subdivision (Turney, 1997). Kininmonth (2000) contends that as demand for agricultural goods increases, demand for rural subdivision can increase as more businesses move to fill the gap between public rural residential demand and supply. Lang (1999) takes a different stance, postulating the relationship between increasingly globalised food markets and declining agricultural self-sufficiency as national markets opt to import the same goods at a cheaper price. Current New Zealand trends indicate that while agriculture remains the backbone of the country's economy, an ageing population is also looking to expand onto those spaces historically reserved for agricultural land use (Andrew & Dymond, 2013). Given the ample land available within rural New Zealand, this indicates a high demand for the subdivision of rural land.

Kininmonth (2000) claims that when demand for agriculture is up, demand for rural subdivision is up, *ceteris paribus* (all other things constant) and vice versa. The boom in the New Zealand horticultural industry throughout the 1980s (catalysed by the Green Revolution of the mid 1900s), saw demand for rural land increase (Heron & Roche, 1999). As more people moved into rural areas to pursue careers and lifestyles within the agricultural sector, land value increased

accordingly (Curran-Courane et al., 2016). Gude et al., (2006) explains that as a direct result of this increased interest, more landowners in rural areas were inclined to subdivide to meet that demand and capitalise on the heightened value of their land. Productive land was highly regarded, straining areas such as the Franklin District (Turney, 1997), due to advantages such as its topography, productiveness of soil, climate and accessibility of nearby markets etc. (Curran-Courane et al., 2016). Due to increased demand, the minimum economic lot size has increased over time to keep pace of squeezed margins in primary production (Millar, 2010).

Gray & Millsap (2020) outlines how a reduction in subdivision size was proposed to manage increased demand by getting more lots out of the available land. The validity of this idea is challenged by Turney (1997), who asserts that a reduction in lot size will impact the economic viability of land use. Curran-Courane et al., (2016) argues that smaller lots encourage rural residential development encroaching on productive land available for agricultural purposes. Differences in land uses will vary between agricultural and horticultural activity, thus the minimum lot size to maintain business and economic viability will differ (Hall & LeVeen, 1978). Turney (1997) outlines how some horticultural intensive practices may only require 3 to 4 hectares to remain economically viable versus 70 to 300 hectares for pastoral systems to house their animals and facilities for sheep, beef and dairy farming. Minimum lot size, therefore, is a contested issue that requires direction to determine at what minimum size agricultural businesses can maintain profit margins whilst also minimising environmental harm etc. (Turney, 1997).

The Covid-19 pandemic has significantly impacted the current economic state of New Zealand. The World Bank has predicted a global recession for 2023, the effects of which the New Zealand economy is not exempt from (Guénette et al., 2022). The spillover effects of the Covid-19 pandemic have trickled down to the property market (Wang, 2021). In some cases, landowners have been encouraged to downsize by subdividing as they can no longer maintain their business against the rising costs of living, lessened available workers and decreased demand for the prices they supply their service at (Fairlie & Fossen, 2021).

2.2.2.3. Conclusion

The influence of neoliberalism on rural subdivisions is evident in several ways. Neoliberal policies, which prioritize free market principles and reduced government intervention, have shaped decision-making processes, market dynamics, and land-use patterns. The emphasis on property

rights and market forces has facilitated the fragmentation of rural land into smaller parcels for residential or commercial purposes. The demand for rural residential properties, driven by individuals and an aging population seeking a rural lifestyle, has created market incentives for landowners to subdivide their properties. This has resulted in increased land values and competition between agricultural and residential land uses. Furthermore, deregulation and reduced government intervention have made it easier for landowners to subdivide without facing significant regulatory barriers. Additionally, trends in horticulture and agricultural markets contribute to increased demand for rural subdivisions. However, the Covid-19 pandemic has had a significant impact on the current economic state, leading some landowners to downsize through subdivision due to financial challenges. Overall, the influence of neoliberalism on rural subdivisions in New Zealand has reshaped land use, market dynamics, and planning regulations, with implications for agricultural productivity.

2.2.3. Environmental Drivers

This section of the literature review explores the role of environmental factors in shaping land use patterns and their impact on the rise of rural subdivisions. It will examine several key factors including poor soil quality, steep topography, erosion, severe climatic conditions, water scarcity, and vulnerability to natural disasters. The discussion will encompass the effects and challenges associated with these environmental conditions in different regions worldwide, including New Zealand, Europe, China, and the remote rural areas of southern Colorado.

2.2.3.1. Environmental Characteristics, Land Use Changes and Rural Subdivisions

Environmental conditions such as poor-quality soil, steep topography, erosion, climate change, a lack of water and exposure to natural disasters are interconnected factors that may reduce incentives to continue investment in agricultural and horticultural activities. Therefore, environmental conditions and natural disasters can notably influence land use and contribute to the increase of rural subdivisions (Staudenmaier, 2007; Terres et al., 2015; Tan et al., 2006). Throughout the literature, there are several local and international examples of the influence of environmental characteristics on land-use.

One local example includes that discussed by Watson (2011), who identifies that decreasing soil quality on small land lots in New Zealand's Tasman Region has resulted in apple growing

becoming less economically viable. Watson builds upon this, arguing that because little to no productive alternatives exist, changing the land use towards lifestyle properties is incentivised. Wong (2016) gives a similar example within Kapiti Coast's pastoral farming sector. This article discusses how a number of issues including water shortages, the likelihood of future natural disasters, and sea level rise have caused the requirement of extensive drain network modifications. These modifications are costly but necessary to upkeep productive pastureland. These associated costs are another example of the existing environmental pressures to change land use through subdividing (Wong, 2016).

On the international scale, Tan et al. (2006) state that the most important environmental factors in China which drive land subdivisions are steep topography and land degradation. The authors discuss the complexities of these environmental characteristics, stating that both factors can lead to various outcomes across the different regions. For example, when land quality is not homogeneous, the scattering of land parcels in China can reduce the risk of loss from flood, drought, fire, or other perils, and farmers can diversify their cropping mixtures across different growing conditions. When food commodity markets fail, land fragmentation may be beneficial for crop diversification, allowing farmers to grow (non-marketed) subsistence crops (Li & Li, 2017; Tan et al., 2006).

Another international example that exists is situated within the remote rural areas of southern Colorado (Westcoat et al., 2007). These areas are facing climatic challenges including a significant reduction in the replenishment of the Colorado River, declining groundwater levels, water cuts and increasing pressures from hail and winds in Arizona. This has resulted in a decrease of livestock productivity which in turn has incentivised the sale of farmland in the form of subdivisions (Bae & Dall'erba, 2016, Coles & Scott, 2009; Lahmers & Eden, 2018; Larson et al., 2013; Nabhan et al., 2023; Staudenmaier, 2007).

2.2.3.2. Disastrous Events and Land Use Changes

Disastrous events can also skew agricultural markets and subsequently impact demand for lot size (Blanc & Reilly, 2017; Fischer et al., 2005). Kerr et al., (2023) provides a local example of this, asserting that New Zealand's recent devastation caused by Cyclone Gabrielle has placed strain on the agricultural industry. The impact of this cyclone has been severe and has emphasised the need

for policies focusing on financial support for private agricultural and public sectors (Kerr, 2023; Fischer et al., 2005; Panwar & Sen, 2019). These policies do not exist, however, which means that those in financial strife due to the aforementioned natural disaster may see the subdivision of their property as the only financially viable way forward.

Internationally, the literature identifies the impact of climate change in European upland areas on land-use changes (Di Fazio & Modica, 2018; Plieninger et al., 2016; Terres et al., 2015; Van Der Sluis et al., 2019). There is a consensus that an increased rate of extreme climate events such as floods, droughts, fires and changing rainfall patterns have a significant impact on land productivity, causing farmland abandonment and land-used changes in the form of subdivisions (Di Fazio & Modica, 2018; Plieninger et al., 2016; Terres et al., 2015; Van Der Sluis et al., 2019).

2.2.3.3. Conclusion

Environmental conditions and natural disasters have a significant impact on land use and can contribute to an increase in rural subdivisions. Factors such as poor soil quality, steep topography, erosion, severe climatic conditions, water scarcity, and exposure to natural disasters reduce incentives for agricultural and horticultural investments, making alternative land uses more attractive. In some regions, fragmented land use can be beneficial for reducing agricultural losses, however, climate change-related challenges, such as water shortages, extreme weather events, and declining productivity, remain prevalent. Thus, the literature portrays that environmental factors significantly contribute to the drivers of rural subdivision.

2.2.4. Political Drivers

The final subset of drivers of rural subdivision are those which are politically motivated. The ensuing section will outline the political factors highlighted throughout relevant scholarly literature, that influence trends of rural subdivisions.

2.2.4.1. Changes in Subdivision Regulations

A review of historical subdivision regulation indicates that as a minimum allotment size decreases, the demand for residential subdivisions in rural areas increases (Curran-Cournane et al., 2016; Kininmonth, 2000). Turney (1997) evaluates the criteria used when consenting for rural

subdivisions within the Franklin district. Turney states the rural subdivisions, within this context, are influenced by the following four characteristics:

“1) the change in lot sizes and the economic viability of land uses; 2) activity conflict between lifestyle and rural production activities; 3) the value of land for the proposed land use; 4) the costs and benefits associated with subdivision proposals” (Turney, 1997, p.1).

These characteristics are acknowledged by Andrew & Dymond (2013), who agree, but note the accompanying limitations. Andrew et al. highlight that Turney’s evaluation does not account for external influences in consumer demand for subdivision.

Gurran et al., (2014) argues that local councils struggle to deny requests for subdivision developments, due to the capitalist-oriented values of our neoliberal society. Memon (2002) expands on this, arguing this is a shortcoming of planning in New Zealand; the Resource Management Act is not strong enough to stop development for development's sake.

2.2.4.2. Subdivisions as a Political Issue

Authors McLeay (1984) and Adams (1987) expand on the relationship between the neoliberal shift and national housing market, whilst examining the political drivers underpinning the expansion of the housing market. McLeay (1984) undertakes a comparative study of housing as a political issue in England and New Zealand, situating housing within a wider political agenda. Housing is often positioned as a point of contention upon which to campaign for government representation (Han & Shin, 2021). Han and Shin’s 2021 study investigates the role of homeownership on voting behavior and attitudes to government. They found that rises in house prices corresponded with an increase in government popularity as it initiated asset growth for homeowners. Thus, associations with the incumbent government were more likely to be positive. This effect was heightened amongst right-wing government supporters, as the study found them more likely to be homeowners, as well as more likely to take economic conditions into account when voting. Left-wing supporters were found to be less likely to attribute rising house prices as a positive influence of the incumbent government.

Increased subdivision correlates to increased growth within a given region, leading to an increased ratepayer base for local Councils (Gill et al., 2010; Watson, 2011; Wong 2016). This can be a strong incentive for local councils to encourage growth in their plan changes, generating increased

rates for the Council to work with. This aligns with a neoliberal ideology that promotes economic growth above all else. The role of neoliberalism, principally its promotion of privatisation, is perhaps the single most influential trend in the National Housing policy of the 1980s (Adams, 1987). Adam's work explores the implications of the neoliberal shift on the housing market, and the impacts of government controlling the volume of housing (housebuilding) in the economy. Their article discusses how the privatization of the housing market has excluded certain groups from entering the market. As privatization was pushed for by governments as a facet of neoliberalism, the impacts on the market have a political basis.

2.2.4.3. Neoliberalism underpinning political drivers

Inherently political, neoliberalism facilitates the political processes underpinning the push for increased rural subdivision. Globalisation, a key facet of neoliberalism, can be linked as a driver for increased rural development (Woods, 2009). Local politics, therefore, is crucial to engaging with processes of globalisation and guiding the development of rural land (Scoones, 2013). These ideas are grounded in existing literature, namely, Woods' (2009) research in Queenstown. Given the Queenstown Lakes district is directly adjacent to Central Otago, Woods' findings are particularly significant in explaining the political drivers of rural development within the wider area. Woods (2009) contends that land use planning in Queenstown increasingly became an issue for local government as conflict arose between those championing the development of Queenstown as an international tourist destination, and those who maintained an 'environmentalist' standpoint. Woods argues that rapid population growth and increased demand to facilitate international tourists resulted in the development of rural land in the district. By embracing these processes of globalisation, the Queenstown Lakes District Council (QLDC) engendered a conflict, that although regarding a confined area, transcended the districts space and scale, embodying globalisation as a driver of rural development. Following Woods' research of the effects of increased global pressure on rural development in Queenstown in 2008, subsequent burgeoning tourism in the Central Otago district could align with Woods' findings. Additionally, Hu et al., (2020) explores the implications of an increased middle-class desire to reside in rural areas, as is evident in both Queenstown and Central Otago. They examine the ideals of neoliberalism reflected in changing land use, and how a deregulated planning system drives unfettered development on the urban fringe. By acknowledging the role of neoliberalism in local

political re-purposing of rural land, one can understand the contestations and attitudes of local stakeholders attached to the potential reconstitution of rural localities.

2.3. Consequences

Rural subdivision and the growing demand for rural lifestyle living has significant implications across the socio-economic, environmental and political domains within a community, and wider society. Such consequences may fall within each of these societal spheres; however, consequences are interconnected and lead to implications which shape the fabric of communities and the wider rural landscape. The following sections of this Literature Review will outline both the positive and negative socio-economic, environmental and political consequences which result from an increased demand for rural subdivisions.

2.3.1. Socio-Economic Consequences

This section will examine and assess how academia has framed the social and economic consequences of subdividing rural areas for different land uses. Rural subdivisions can have very intertwined social and economic consequences. For example, an increase in rural subdivision may bring changes to the social fabric, which can change the economic dynamics of rural areas (Pardy & Kerr, 1999). Therefore, analysing the social and economic consequences of rural subdivisions is essential to understanding the bigger picture.

2.3.1.1. Reverse Sensitivity and Land Use Changes

Rural subdivisions often give rise to a phenomenon known as reverse sensitivity. Within New Zealand Planning under the RMA, the contextual term reverse sensitivity, is used to describe conflicts or tensions that arise when existing rural activities clash with the expectations and demands of new residents moving into the area (Davidson, 2003; Stewart, 2006). Reverse sensitivity conflicts emerge due to the changing dynamics of land use and the differing perspectives and lifestyles of rural landowners, residents and newcomers (Burnett, 2015; Pardy & Kerr, 1999). As a result, these conflicts can have negative social and economic impacts on those who reside rurally.

Andrew and Dymond (2013) suggest that reverse sensitivity conflicts can occur when new residents, who are accustomed to quiet surroundings or driven by Arcadian ideals, seek a peaceful and picturesque rural lifestyle without fully grasping the realities and complexities of rural life. These authors explain that agricultural and horticultural practices, forestry, or other land-based industries may generate noise, odours, or other environmental impacts which new residents may perceive as nuisances or disruptions to their desired lifestyle. Ross (2020) notes that bird scaring devices, fertilizer smells and even the presence of farm animals can lead to complaints. Furthermore, Curran-Cournane et al.'s (2016) survey of the impacts of land use change in Pukekohe identified significant difficulties faced by productive land users due to new regulations favouring new rural residential properties. An example from this study is the following quotation:

“...In years gone by, a simple task like liming your farm was not difficult, however today liming has to be carried out in the wee hours of the morning. . . if lime dust was to drift onto someone's clothes line there would be merry hell to deal with.” (Curran-Cournane et al., 2016. p. 244).

Farmers face reverse sensitivity pressures to modify their practices, alter their schedules, or invest in costly mitigation measures to address the concerns of new residents (Curran-Cournane et al., 2016). These pressures add financial burdens and reduce the efficiency of agricultural operations, on occasions forcing productive land users to subdivide (Andrew & Dymond, 2013; Hart et al., 2014). Furthermore, restrictions on traditional farming practices caused by reverse sensitivity can hamper the growth and development of the rural economy, threatening food security, limiting job opportunities and reducing the economic vitality of rural communities (Andrew & Dymond, 2013; Hart et al., 2014; Pardy & Kerr, 1999; Ross, 2020).

Findings from Curran-Cournane et al.'s (2016) study also demonstrates the strain that reverse sensitivity can put on community relationships. Existing rural community members may feel alienated or marginalised as the newcomers' demands and complaints overshadow their long-standing practices and traditions. Also, the existing rural landowners may view the new residents as intruders who fail to appreciate the inherent challenges and realities of rural living.

“[It is] Very difficult now due to increased number of neighbours that have no feel for the land. [They have] No understanding of the issues in producing sustainable food crops or agriculture in general.” (Curran-Cournane et al., 2016. p. 244).

As a result, the sense of shared identity and mutual support within the community can be eroded, leading to a breakdown in social bonds, increased animosity, a lack of trust among community members and a loss of community spirit (Curran-Cournane et al., 2016).

2.3.1.2. Aesthetic Values

An increased demand of rural subdivisions for residential lifestyle living also has negative implications on the aesthetic values associated with the rural landscape (Steel, 1999). Many people are drawn to rural areas for their natural beauty and tranquility. However, the increase in large sprawling homes and associated plantings can create a stark contrast with the natural surroundings, often appearing as artificial and out of place (Ryan, 2002). The use of fencing, walls, and other barriers to enclose these properties can further disrupt the continuity and natural flow of the landscape (O'Connell, 1986). Therefore, this can result in decreased aesthetic values and changes to the natural character of the rural landscape.

The visual impact of these developments can be particularly pronounced in areas with unique or iconic landscapes, such as rolling hills, mountains, vineyards, orchards, or coastal landscapes (Upton, 1995). Loss of rural character and amenity is a consequence of rural subdivision and demand for lifestyle living experienced all over the world. In an international study conducted by Gurrán et al. (2006) identifies degraded scenic values as a major consequence resulting from migration from metropolitan centres towards smaller rural settlements in Australia. A local example from the Queenstown Lakes District illustrates how the iconic landscape has suffered from the loss of rural identity due to a high demand for lifestyle properties from international investors (Woods, 2011).

2.3.1.3. Changes in Land Value

Part of the attraction of rural living is the ample space between oneself and their neighbors (Andrew & Dymond, 2013). Minimising the lot size has the potential to result in increased housing density in rural areas, directly impacting rural amenity values (Curran-Cournane et al., 2016). The literature indicates that this is likely to influence land value in rural areas (Curran-Cournane et al., 2016; Kopits et al., 2007). An analysis by Kopits et al. (2007), measures the impacts of surrounding open space on property values within subdivisions. The study examines Calvert County, United States, located along the Western shore of the Chesapeake Bay. The results from this study

determined that larger private allotments increased land value. The study also observed that lifestyle blocks located directly adjacent to open space led to increased amenity values and a resultantly higher land and property value. The results of this study found that the majority of individuals valued the size of their allotment over their nearness to open space. The applicability of such findings to the research within Central Otago is limited due to the differing geographic location, climate, demographics, and study purpose. However, the findings do suggest that lifestyle blocks which limit residential housing clusters and magnify open space will be of higher demand and therefore higher value.

Increasing land values as a result of subdivision demand can result in issues relating to affordability. Following the 1984 Labour Government's adoption of Neoliberalism, the subsequent privatisation of the housing market excluded certain groups from entering the market (Adams, 1987). This becomes clear in the issues of affordability that stem from increased rural subdivision (Boudreaux, 2016). Heimlich and Anderson (2001), explain how high demand for lot sizes within rurally zoned land areas results in large parcels of land that are generally unaffordable to purchase and maintain for the average person. The market for rural lots is therefore restricted to a high socio-economic class, enforcing a geographic disparity of income levels. This can lead to a sense of elitism among those who can afford to live in the countryside and fulfill their 'quarter-acre dream', versus those who live in urban areas (Hofferth & Iceland, 1998).

2.3.1.4. Conclusion

This literature review section has highlighted the intertwined social and economic consequences of rural subdivision for different land-uses. The phenomenon of reverse sensitivity emerges when existing rural activities clash with the expectations of new residents, leading to conflicts that have negative impacts on farmers and existing communities. Moreover, the demand for rural subdivisions for residential lifestyle living can adversely affect the aesthetic values associated with the rural landscape, leading to a loss of natural character and scenic beauty. Changes in land values and affordability issues are also evident as rural subdivisions can increase housing density and limit affordability, creating geographic disparities in income levels. Understanding and analysing these socio-economic consequences are vital for creating thriving and resilient rural communities. This knowledge can inform policymakers, developers, and communities in making informed decisions and promoting sustainable rural development.

2.3.2. Political Consequences

The political consequences of rural subdivision cannot be divorced from the economic implications. Haslam McKenzie and Rowley (2013) argue that due to the role of government in New Zealand's housing market, any increase in a region's housing density is likely to have entangled political and economic consequences. This section will examine the advantages and disadvantages to local authorities that occur as a result of increased rural subdivision.

2.3.2.1. Advantages to Local Authorities

The bulk of the literature indicates that population growth in small rural towns is beneficial to the local economy (Andrew & Dymond, 2013; Curran-Cournane et al., 2016; Daniels, 1989; Henderson, 2002; Turney, 1997). A study undertaken in 1995 by Works Environmental Management and Agriculture New Zealand assessed the costs and benefits of subdivision in rural areas. The study found that one of the main benefits of subdivision is an increase in rates paid to local authorities. An additional benefit identified by this study is the income generated by land use activities (e.g., agricultural industries) that can be reinvested back into local economies.

Additionally, population increase due to amenity migration and lifestyle property purchases may result in a greater demand for area management, planning authorities and political representation (Nemerever & Rogers, 2021). This demand may result in the creation of new electoral districts or the redrawing of existing district boundaries to accommodate the growing population (Knight et al., 1995; Nemerever & Rogers, 2021).

The influx of residents into the rural environment can bring about a shift in political power dynamics (Scala & Johnson, 2017). New residents may have different political preferences and priorities compared to the existing rural population, potentially leading to changes in local politics. This can result in shifts in the balance of power between different interest groups and political parties. Scala and Johnson (2017) illustrate how during the last twenty years in the United States, pockets of relative Democratic strength have emerged in areas experiencing changes to their existing population demographics. The drivers of this growth have been twofold: older adults in search of an attractive place to retire and family-age migrants in pursuit of economic, employment, and recreational opportunities.

2.3.2.2. Disadvantages to Local Authorities

The disadvantages of increasing rural subdivision for local authorities primarily concern their ability to implement infrastructure within developing areas (Cadieux, 2008). Mitigating conflicts between stakeholders with opposing visions for the future of land use management is also disadvantageous to council (Cadieux, 2008).

Rural subdivisions can place increased pressure on local infrastructure and services, such as roads, schools, healthcare facilities, and utilities (Buxton et al., 2011; Edols-Meeves & Knox, 1996). As a result, there may be political debates and discussions regarding the need to invest in and expand these services to accommodate growing populations. Such discussions often involve decisions about funding allocation, taxation, and public spending, which can become politically contentious (Jacquemart, 1998).

Demand for large lot sizes adjacent to urban centres constrains density efforts, fostering urban sprawl and ultimately engendering ongoing conflict between councils and constituents when efforts are made to mitigate such sprawl within district plans (Cadieux, 2008). This can negatively impact public perception and attitudes towards local authorities, convoluting what is often already a strained relationship (Sharp, 1982).

2.3.2.3. Conclusion

In conclusion, the political consequences of rural subdivision are closely intertwined with the economic implications. Increased rural subdivision can bring advantages to local authorities, including population growth, increased revenue, and demand for services. However, it also presents disadvantages such as infrastructure strain, conflicts over land use management, and political debates over funding and public spending. Moreover, the influx of new residents may lead to shifts in political power dynamics and changes in local politics. Overall, the political consequences of rural subdivision are complex and require careful consideration by local authorities.

2.3.3. Environmental Consequences

Bock and Bock (2009) note that rural subdivisions can lead to various environmental consequences which can be both advantageous and disadvantageous. The type and scale of the consequence

depends on various factors, such as the location, size, design, and management of the new subdivision (Kew and Lee, 2013). Careful planning and management can help to minimise these consequences and promote sustainable development, however negative outcomes can occur if the development is planned with little regard for environmental impacts or community needs (Swaffield & Fairweather, 1998). This section will examine the effects on the environment as a result of rising demands for rural subdivisions.

2.3.3.1. Habitat Loss and Fragmentation

According to Robinson et al. (2005), one of the most significant negative consequences of rural subdivision is habitat loss and fragmentation. Landscape fragmentation creates spatially isolated habitats set in patches of other land-use types (Collinge & Forman, 1998). Due to small habitat and population sizes leading to reduced genetic diversity and increased vulnerability to disease and predation, populations in these fragmented habitats have significantly higher chance of extinction (Fahrig, 2003). Natural habitats can also deteriorate, and wildlife populations can get displaced by the construction of residential related infrastructure. Road networks can also damage local biodiversity by causing direct mortality through vehicle collisions, changing patterns of runoff and sedimentation, and providing passages for dispersal of exotic species (Trombulak & Frissell, 2000; Eigenbrod et al., 2008; Odell et al., 2003). Fragmentation associated with rural subdivisions also has the potential to contribute to an increase in exotic species, often which are highly adapted to human presence, leading to further costs on native species (Dale et al., 2005; Odell & Knight 2001).

2.3.3.2. Loss of Productive Soil

High-quality soil and soil biota losses are significant concerns in areas that experience an increase in rural subdivisions. The construction of subdivisions often involves the clearing of large tracts of land, which can result in the removal of topsoil and other important soil components (Blaikie & Brookfield, 2015). The soil environment is likely the most complex biological community. Soil organisms are extremely diverse and contribute to a wide range of ecosystem services that are essential to the sustainable function of natural and managed ecosystems (Barrios, 2007). One of the main reasons for high-quality soil loss from rural subdivisions is the construction process. The heavy equipment used in grading and excavation can cause compaction and erosion of the soil,

leading to a loss of organic matter and nutrients. Additionally, the removal of vegetation and the installation of impervious surfaces like roads and buildings can further contribute to soil degradation (Francis et al., 2012). In many cases, the soil that is removed during the construction process is not replaced, and the remaining soil may be of lower quality. This can have long-term consequences for the health of the soil and the surrounding ecosystem, as well as for the viability of agricultural land uses in the area (Johnson & Lewis, 2007). The consequences associated with a loss in agricultural viability fall under the socio-economic section of this chapter. However, it is important to identify the interconnectedness associated with the consequences of an increased demand for rural subdivisions and lifestyle living. The physical construction of a rural subdivision degrades and alters the existing soil so significantly that the viability of agricultural, horticultural, or viticultural activities returning to the area is significantly diminished (Johnson & Lewis, 2007). Thus, creating long-term economic and social consequences for immediate business owners and the wider community.

2.3.3.3. Water Quality and Availability

Rural subdivision and the loss of high-quality soil can have significant impacts on water quality and availability. As soil is eroded and washed away, it can carry nutrients and other pollutants into nearby waterways. Nutrient pollution can lead to harmful algal blooms, reduced oxygen levels, and other negative impacts on aquatic ecosystems (Francis et al., 2012). In addition to the effects on water, intensified rural land development can lead to increased pressures on the availability of water for residential use (Gallent et al., 2003). Rural lifestyle blocks are often supplied with their water through private schemes and on-site storage infrastructure. However, increased rural water demand places increased pressure on water networks, especially in dry areas where annual rainfall is limited (Edols-Meeves & Knox, 1996; Gude et al., 2006; McComb, 1996).

2.3.3.4. Positive Environmental Impacts

Based on the sections above, it remains clear that rural subdivisions and the demand for lifestyle living has negative consequences on the environment. However, it is worth noting that several studies have identified a range of contradictory positive environmental impacts resulting from rural subdivisions.

When land and productive activities shift to multifunctional land uses, including organic or low-impact agricultural practices, there is a significant reduction in animal effluent and fertilizer run-off (Upton, 1995). By reducing fertilizer run-off, the nutrient load entering water bodies is minimised, thereby improving water quality, and maintaining the balance and functioning of sensitive aquatic ecosystems like wetlands, lakes, rivers, and coastal areas (Kahiluoto et al., 2011; Van Wijnen et al., 2015). Also, reduced fertilizer run-off means cleaner water sources for human consumption and recreational activities (Ayoub, 1999). Improved water quality enhances the aesthetic value of natural landscapes and minimises the risk of waterborne diseases. This makes it safer for people to swim, fish, and engage in other water-related activities, and reduces the burden on the healthcare system (Devlin & Brodie, 2023; Liu & Qiu, 2007). With regard to habitat protection and biodiversity, Haskell et al. (2006) reports that lifestyle developments provide better habitat than some alternate forms of land use, such as intensive forest plantations. While Phillips et al. (2008) also suggests that the micro-scale habitat mosaics of residential landscapes in rural England can support higher species diversity than the surrounding homogenised agricultural landscapes. Finally, Walker et al.'s (2003) analysis of rural landscape patterns in California's Sierra Nevada concluded that the replacement of production-oriented land uses with rural residential uses has led to improvements in environmental quality.

2.3.3.5. Conclusion

This section demonstrates diverse and multi-scalar environmental consequences of rural subdivisions. In some cases, rural subdivision and lifestyle land use may be less harmful to the landscape than agricultural uses, resulting in stewardship benefits. Nevertheless, many others argue that rural subdivisions are inherently inefficient and wasteful, resulting in fragmentation of the landscape and multiple conservation threats. Therefore, it is crucial to carefully consider the long-term impacts posed by rural subdivisions.

2.4. Summary

This literature review chapter has critically examined the drivers and consequences of changing rural land uses, subdivisions, and land fragmentation. At the beginning the document explored the historical context and main concepts of rural subdivisions. Following this the social, economic, environmental, and political drivers behind the emergence of rural subdivisions and their growth

were then discussed along with their implications. The review then investigated the extensive positive and negative social, economic, environmental, and political consequences of rural subdivision. It provided insights into the complex dynamics transforming rural areas into subdivided residential developments, and emphasized the need for careful planning and management to promote sustainable development and address potential challenges. The next chapter will establish the locational specifics of the Central Otago district, including its historical, environmental, and socio-economic context.

3. Context

The following chapter will establish the locational specifics of the study area including the historical, environmental, and socio-economic context within which the research is situated. First, a brief description of the geographical context of Central Otago will be outlined. Following this, the planning framework which governs the Central Otago district will be explored to provide a brief contextual overview. Furthermore, the historical, environmental, and socio-economic information that follows will give insight into the key planning challenges and general context of the district.

3.1. Location of the Central Otago District

As illustrated in Figure 1 and alluded to by its name, the Central Otago district is located in the center of the Otago district in the lower half of New Zealand's South Island. The Central Otago boundary encompasses the main townships of Alexandra, Cromwell, Roxburgh, Clyde and Ranfurly (amongst others), and covers 9,956 square kilometers (Department of Internal Affairs, 2011). Additionally, to these main urban centres, the Central Otago district consists of several smaller rural communities scattered around the diverse landscapes.



Figure 1: Map of the Otago Region of New Zealand and its districts (source: Otago Regional Council, 2022)

3.2. Governance

Central Otago is located within the jurisdiction of the Otago Regional Council (ORC) and CODC. Under the RMA and Local Government Act 2002, the ORC is responsible for managing activities related to soil, water, air and pollution. The CODC, on the other hand, is responsible for managing land use, subdivision, and noise. Chapter 4 of this report will expand on the relevant provisions and plans for managing rural subdivision across the Central Otago district.

3.3. Historical Context

The Central Otago district has a rich but concise historical background consisting of both Māori and Pakeha histories. The first Māori people to arrive in Central Otago were said to have done so in the eleventh century. This is thought to have been the Waitaha tribe of the South Island who arrived in New Zealand on the waka Uruao (Cromwell Museum, 2020). Upon arrival at the mouth of what is now known as the Clutha River, early Māori settlers named it the Mata Au. Living near the coast offered easy access to food sources, building materials and other settlements. However, the Southern Māori explored the central southern half of the South Island, where they established trade routes throughout Central Otago for valuable resources such as pounamu and other minerals. Early Māori settlers also developed the Nevis Valley route through Central Otago which served as the most convenient passage, connecting the valley basin systems to the Southland plains, Te Anau, and Manapouri (Cromwell Museum, 2020). Central Otago historically served as a valuable hunting ground for early Māori, where they hunted the giant moa prior to its extinction in the sixteenth century. To add, the waters of the Clutha/Mata Au River, which runs through the Central Otago district, served as an important source of māhinga kai (Kāi Tahu Ki Otago, 2005).

The European history of the area is more recent. Otago was founded in 1848 by Scottish settlers who initially clustered in Coastal Otago in the port and city of Dunedin (Hocken, 2011). The first significant non-Māori people who settled in Central Otago did so in the 1860s following the discovery of gold at Gabriel's Gully close to Lawrence (Stephenson et al., 2004). Succeeding this discovery was the gold rush, which led to a rapid influx of miners from around the world to Central Otago and the subsequent expansion of the district. The Otago district's population quadrupled between 1861 and 1864, with many of these individuals settling in Central Otago to search for

gold (McLintock, 1966). The population growth of this period was accompanied by industry growth and diversification. As residents began to recognise the value of Central Otago's land and climate for farming livestock and growing fruit, the agricultural industry gained popularity. By the early 1900s the gold rush was over, and many people left, leaving ghost towns without any inhabitants (Collins, 2021). Despite this, many of the agricultural sectors remained intact and grew with the lack of gold in the district. Many miners turned to working the land instead of mining it and the water races which once served useful for sluicing were adapted to be used for irrigation (Central Otago, 2023).

The Central Otago district has a concise human history, and for an extended period there was minimal human settlement. Despite this, the natural resources of the district have been historically valued by both Māori and Pākehā for various reasons throughout time. Central Otago's land proved valuable for early Māori settlers as a hunting ground and its waters valuable for mahinga kai. For European settlers, the district exploded with the presence of gold and has continued to be valued for agricultural endeavors.

3.4. Environmental Context

3.4.1. National Environmental Context

Aotearoa, New Zealand boasts a diverse landscape consisting of mountains, coasts, lakes, rivers, native forests, and farmlands, each containing unique native flora and fauna. The beauty, variety, and accessibility of these natural features are fundamental to New Zealand's identity and draw tourists to the country. However, the country's natural environment is currently facing significant pressure from human activities and climate change. The Ministry for the Environment and Stats NZ (2023) report high levels of nitrogen, phosphorus, and E.coli in New Zealand's rivers, lakes, and streams. Furthermore, the country is experiencing loss and continued degradation of important wetland ecosystems, along with continued threats of invasive species to rare ecosystems and native biodiversity. Moreover, soil and air quality often fail to meet target ranges, and erosion, development, and land fragmentation are leading to soil loss.

Soil quality is a critical issue for New Zealand's environment and economy (Houlbrooke et al., 2021). Healthy soil is essential for supporting agriculture, forestry, and other primary industries

that form a significant part of the country's economy. However, ongoing soil erosion, development, and fragmentation have resulted in soil loss, reducing its quality and making it more vulnerable to degradation (Grinlinton, 2019; North et al., 2022). This issue is compounded by the use of fertilizers and other agricultural chemicals, which can further degrade soil quality and lead to runoff and contamination of nearby water sources (Pahalvi, 2021). Additionally, climate change is exacerbating soil quality issues by altering rainfall patterns, causing more frequent droughts and flooding, and increasing soil erosion (Ministry for the Environment & Stats NZ, 2023). These challenges highlight the need for careful management and protection of New Zealand's soil resources to ensure the sustainability of the country's environment and economy.

3.4.2. Local Environmental Context

The Central Otago district is known for its diverse and unique natural features. The landscape consists of alpine mountains, drylands, schist mountains, fertile plains, and tussock grasslands. The district is also home to the Clutha River, which is the second-longest river in New Zealand, along with several other smaller tributaries. Central Otago is also known for its vineyards, orchards, and farming communities. The soil in Central Otago is predominantly schist, which is a unique and complex soil type that is challenging for agriculture (Leamy et al., 1974). The district has low rainfall and high evaporation rates, resulting in dry and dusty soil (Radcliffe & Cossens, 1974). Despite these challenges, the district has a thriving agriculture industry, including viticulture, horticulture, and pastoral farming.

The NPS-HPL provides national direction on improving and consistently managing New Zealand's productive land. Under the NPS-HPL, land is rated in terms of productivity using the LUC system. The LUC system considers factors such as rock type, soil, climate, past land use, erosion potential and vegetation when classifying land on a scale from one to eight (Maanaki Whenua Landcare Research, n.d.). Land with a higher productive capacity is ranked closer to one, any land classed as LUC 1 to 3 is considered 'highly productive' and therefore falls under the jurisdiction of the NPS-HPL. Central Otago's land is unique when considered against the LUC scale. The district's rural environment has sparse and limited pockets of land classified as LUC 1 to 3, therefore there is limited land that is protected and controlled by the policies of the NPS-HPL. However, this does not mean Central Otago lacks productive land. The Central Otago district is largely comprised of land classified as LUC 4 to 6. When combined with the district's

environmental characteristics, this creates valuable soils for horticulture and viticulture activities. Additionally, Central Otago also has large areas suitable for pasture which allow for effective cattle and sheep farming. The controls and provisions of the NPS-HPL will be covered in further detail in Chapter 4 of this report.

Urban expansion and rural land fragmentation are significant environmental issues across Central Otago as they are beginning to threaten the availability of valuable productive land. Changing land uses, incentivised by financial gains, population growth and changing demands have begun to result in a trend of subdividing land. The result is large areas of the rural environment, previously utilised for primary production activities, now consisting of smaller rural residential holdings and lifestyle developments. This trend can have adverse effects on the districts rural environment, leading to degradation of the key primary industries, amenity values, and the environmental values inherent to Central Otago's rural areas. The Central Otago district is therefore faced with a challenge in effectively managing the demand for rural residential allotments, whilst protecting the agricultural capabilities and amenity values of the rural environment.

3.5. Socio-economic Context

According to CODC (2020), the Central Otago district had an estimated population of 23,100 people as of June 2019, however, the area's population is growing rapidly. The population growth rate between the 2013 and 2018 Census was 21.3 per cent, a number that exceeds that of New Zealand as a whole. In addition, Statistics New Zealand projection models predict a population growth of over 30 per cent in Central Otago between 2018 and 2043 (CODC, 2020). This population growth is being driven by a combination of factors, including immigration and migration and the location being viewed as a desirable spot to retire.

The population of the Central Otago district is predominantly European, with around 90 per cent of residents identifying as such (CODC, 2020). The Māori population in the district is lower than the national average, at just under eight per cent (CODC, 2020). The district also has a significant number of residents born overseas, particularly from the United Kingdom and Australia, which suggests that the area is popular with both tourists and those seeking a new life in New Zealand.

Tourism is a key industry in the district and contributes significantly to the local economy. The Central Otago district is known for its stunning natural beauty, outdoor recreational opportunities, and historic sites, all of which attract a large number of domestic and international visitors. The district's tourism sector is growing rapidly and in 2021 was awarded first out of 31 New Zealand districts for growth in total visitor spending over the previous year (Rushbrook, 2022). Despite this, the tourism sector in Central Otago is heavily reliant on that of the neighboring and popular Queenstown Lakes District which is one of the country's primary tourist destinations (Rushbrook, 2022).

In addition to tourism, wine production is another important industry in the Central Otago district. The district's unique climate, which is characterised by hot, dry summers and cold winters, makes it particularly well-suited for the production of Pinot Noir, which is the district's flagship varietal. The district is home to more than 65 wineries and vineyards, which produce some of New Zealand's most highly regarded wines (Central Otago, n. d.). Wine tourism is also a growing industry in the district, with visitors drawn to the area's vineyards, cellar doors, and tasting rooms.

Central Otago's diverse climate and fertile soils create favourable conditions for growing a wide variety of fruits for domestic consumption and international markets. Such industries are a significant contributor to the district's economy (Wills, 2014). GDP in the horticulture sector was \$53.8m in Central Otago for 2022, compared to \$1613m for New Zealand as a whole, or 3.1 per cent of national activity (Infometrics, 2022). Stone fruit, including cherries, apricots, peaches, nectarines, and plums, are among the primary crops cultivated in Central Otago. They are harvested between December and March, and apples from March to July (Goodisson, 2022).

The horticulture industry in Central Otago differs from traditional agriculture in several ways. Firstly, horticulture focuses on the cultivation of high-value niche crops like fruits and berries, whereas traditional agriculture often involves large-scale production of staple crops like grains and livestock. Horticultural practices require specialized knowledge and expertise, as they involve more intensive management, precision in crop production, and attention to detail to ensure optimal yield and quality (Goodisson, 2022; Lo et al., 2022).

Moreover, the horticulture industry in Central Otago is heavily reliant on seasonal workers. The cultivation and harvesting of fruits often require a significant amount of labor, particularly during

peak seasons. Many seasonal workers come from overseas under various work schemes, such as the Recognized Seasonal Employer (RSE) program, which enables Pacific Islanders to work in New Zealand's horticultural and viticultural industries (Calnitsky, 2016; Ramasamy et al., 2019).

Both tourism, horticulture and wine production are significant employers in the Central Otago district and contribute significantly to the local economy. The growth of these industries has also helped to create new businesses and job opportunities, particularly in the hospitality, retail, and transportation sectors (CODC, 2020). However, these industries also present challenges, particularly in terms of managing visitor numbers and maintaining the district's unique character and natural beauty. As such, the district is actively working to balance economic growth with environmental sustainability and social responsibility, in order to ensure the long-term health and prosperity of the district.

The Central Otago district is also home to a number of small towns and rural communities, each with their own unique socio-economic characteristics. Many of these communities have experienced significant changes in recent years with the decline of traditional industries, such as farming and mining and the expansion of many townships in response to rapid population growth.

Overall, the socio-economic context of the Central Otago district is complex and multifaceted, driven by a range of factors, including population growth, changing demographics, and shifts in industry and employment patterns. These factors have created both opportunities and challenges for communities and will continue to shape the district's development in the years to come.

3.6. Summary

This chapter has established the locational specifics of the Central Otago district, including its historical, environmental, and socio-economic context. The district, located in the middle of the Otago Region in New Zealand's South Island, has a rich but concise historical background consisting of both Māori and Pākehā histories. Early Māori settlers valued the land and waters of Central Otago for hunting and food sources, whereas European settlers arrived during the gold rush era and later turned to agriculture. The environmental context of the Central Otago district is part of the broader national context of New Zealand, where the natural environment is facing significant pressure from human activities and climate change, including issues related to soil

quality and land fragmentation. The socio-economic context of the Central Otago district plays a significant role in shaping the research area. The district has a relatively small population compared to other districts in New Zealand, with a mix of rural and urban areas. The main economic activities in Central Otago include agriculture, horticulture, viticulture, and tourism. Understanding the historical, environmental, and socio-economic context of the Central Otago district is essential for comprehending the implications of the research conducted in the following chapters.

4. Policy Context

This chapter provides a contextual account of the existing national, regional and district policy and planning frameworks which are applicable to the Central Otago district. The documents examined in this chapter are relevant to the overall issue that is driving this research, the loss of productive land due to rural subdivision. The chapter will begin by examining the national context through an analysis of the RMA and NPS-HPL. Following this, the relevant regional and local planning documents will be analysed with a focus on the provisions most relevant to this study.

4.1. National Planning Context

4.1.1. Resource Management Act 1991

The RMA is the leading piece of environmental legislation in New Zealand. This act regulates the management of all air, land, and water resources across the country by characterising the duties and responsibilities of regional and territorial authorities. The RMA, although largely concerned with the preservation and protection of the natural environment, also seeks to enable development and growth within the socio-cultural and economic components of society (Warnock & Baker-Galloway, 2014). This broad concept is summarised by the overall purpose of the Act, which is to promote the sustainable management of natural and physical resources. Sustainable management is clearly defined within Section 5 of the RMA under the following definition:

Managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enable people and communities to provide for their social, economic, and cultural well-being and for their health and safety while –

- a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
- b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
- c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment.*

This definition broadly indicates the importance of safeguarding the life-supporting capacity of soil. However, beyond this, the RMA provides little to no specific direction or guidance on how

productive land should be managed by regional and territorial authorities. As a result, councils from around the country have adopted a variety of approaches and methods for managing productive land, each with varying degrees of success.

The lack of directive discourse within the RMA regarding important natural resources, such as soil and productive land, often requires further national direction. National directives such as National Policy Statements (NPS) and National Environmental Standards (NES) are two tools provided by the RMA which provide regional and territorial authorities with a clearer framework for managing important natural resources. The NPS of most relevance to productive land and rural subdivision is the NPS-HPL. Briefly introduced in the previous chapter, the following section will detail the provisions and policies of the NPS-HPL.

4.1.2. National Policy Statement for Highly Productive Land 2022

“Ko au te whenua, The land defines my quality of life.

Ko te whenua, ko au I am the whenua, the whenua is me”

(The Ministry for the Environment & Stats NZ, 2018)

The quote above has been taken from the Ministry for the Environment and Stats New Zealand *Our Land 2018* report from which the NPS-HPL was created. This quote represents the overall message portrayed by the report, that land and soil are, and should be treated as, one of our most treasured and protected assets. The environmental reporting series began in 2015 and has since produced the 2018 and 2021 *Our Land* reports. The overall aim of the reporting series is to provide an overview of the state of the environment and how this is changing over time. The reports have also acted as supportive evidence for decision-making regarding land, soil, biodiversity, and ecosystems.

A brief summary of the relevant findings from the *Our Land 2018* report identifies its focus on three key aspects:

- 1) There have been significant shifts in the way land is utilised in the past two decades, including:

- a) Expanding urban areas
 - b) Reduced land area used for agricultural production
 - c) Increased dairy farming
 - d) Farming intensification
- 2) Intensification of agriculture and erosion are negatively affecting the quantity and quality of soil;
 - 3) Indigenous biodiversity and ecosystems are under threat.

The findings from this report, outlined above, highlighted that policy and legislation at the time were performing poorly in terms of ensuring the adequate protection of land and soil. Further investigation found there is a lack of clarity within the RMA on how to manage highly productive land (HPL), resulting in inconsistent levels of consideration and protection across the country. In response to these revelations, the NPS-HPL was created and introduced into the New Zealand policy framework. The objective of the NPS-HPL is to ensure that HPL is protected for use in land-based primary production, both now and for future generations.

As mentioned in Chapter 3, the NPS-HPL provides guidance and controls for land that is classified on the LUC scale as class 1, 2 and 3. Along with the overall objective, the NPS-HPL has nine key policies which guide its regional and territorial implementation. These are outlined in Table 1 below.

Table 1: The nine policies of the National Policy Statement for Highly Productive Land

Policy 1	Highly productive land is recognised as a resource with finite characteristics and long-term values for land-based primary production.
Policy 2	The identification and management of highly productive land is undertaken in an integrated way that considers the interaction with freshwater management and urban development.
Policy 3	Highly productive land is mapped and included in regional policy statements and district plans.
Policy 4	The use of highly productive land for land-based primary production is prioritised and supported.
Policy 5	The urban rezoning of highly productive land is avoided, except as provided in this National Policy Statement.

Policy 6	The rezoning and development of highly productive land as rural lifestyle is avoided, except as provided in this National Policy Statement.
Policy 7	The subdivision of highly productive land is avoided, except as provided in this National Policy Statement.
Policy 8	Highly productive land is protected from inappropriate use and development.
Policy 9	Reverse sensitivity effects are managed so as not to constrain land-based primary production activities on highly productive land.

Part three of the NPS-HPL provides further detail in how regional and territorial authorities must give effect to its objectives and policies. The nature of this advice varies between directive language and in-direct instructions. This allows regional and territorial authorities space to interpret and apply the policy statement in a way that is best suited to the characteristics of their region or district. One example of this falls under Part 3, Clause 3.4, titled mapping of HPL. This Clause requires that each regional council must produce a map that displays the location of HPL across the region. For the purpose of this map HPL is any land which meets the following criteria:

- (a) Is in a general rural zone or rural production zone; and
- (b) Is predominantly LUC 1, 2, or 3 land; and
- (c) Forms a large and geographically cohesive area.

Under this Clause, regional councils are additionally able to include land which does not meet these criteria if it is, or has the potential to be, utilised for highly productive purposes. Including this in the NPS is an acknowledgment that land that is not included as LUC 1, 2 or 3 can still be considered highly productive. This is particularly relevant to the context of Central Otago which has a plethora of land which would not be considered LUC 1 to 3, but which is perfectly suited to the production of stone fruits or grapes. By recognising this, the NPS-HPL acknowledges the environmental, social and economic importance of such land to a particular region. Once the regional council has mapped the HPL based on their particular classification, all proposed regional policy statements (RPSs) and district plans must be updated to reflect any changes.

Finally, Part 4 states that every local authority must “give effect” to the NPS-HPL as of the 17th of October 2022. This statement sets a binding obligation for regional and territorial authorities to implement the policy and direction outlined within the policy statement. The application of the

NPS-HPL within the Otago Regional Council and the Central Otago District Council Planning Frameworks is explored below.

4.2. Regional Policy and Plans

4.2.1. Otago Regional Policy Statement

Section 59 of the RMA states that it is a legislative requirement that all Regional Councils prepare a regional policy statement (RPS). The ORC is currently functioning under two policy statements, the Partially Operative Otago Regional Policy Statement 2019 (POORPS) and the Proposed Otago Regional Policy Statement 2021 (PORPS). The purpose of an RPS is to provide an all-encompassing policy framework which recognises the critical resource management issues, while also providing policies and methods for achieving sustainable and integrated management of the regions resources (Environment Guide, 2021). The resource management issues relevant to the Otago region include issues related to the environment, economy, recreation, communities, and heritage (ORC, 2019; ORC, 2021). Otago’s RPSs provide insight into how national directions such as the NPS-HPL is to be applied within the Otago Region (ORC, 2019; ORC, 2021).

At present, the PORPS is not yet operative and is currently subject to a public hearing process, however, it is likely that its objectives and policies will remain similar. As such, the key policies and objectives relating to HPL within both the PORPS and POORPS are documented in Table 2 below. It is important to note that the POORPS refers to HPL as significant soil.

Table 2: Relevant objectives and policies of the Otago RPSs with regard to highly productive land

Provision	Detail
Partially Operative Otago Regional Policy Statement 2019	
Objective 3.2	Otago’s significant and highly-valued natural resources are identified and protected, or enhanced where degraded.
Policy 3.2.17	Identify areas of soil that are significant using the following criteria:

	<ul style="list-style-type: none"> (1) Land classified as land use capability I, II, IIe in accordance with the New Zealand Land Resource Inventory; (2) Degree of significance for primary production; (3) Significance for providing contaminant buffering or filtering services; (4) Significance for providing water storage or flow retention services; (5) Degree of rarity.
Policy 3.2.18	<p>Manage areas of significant soil, by all of the following:</p> <ul style="list-style-type: none"> (1) Maintaining those values that make the soil significant; (2) Recognising that loss of significant soil to urban development may occur in accordance with any future development strategy; (3) Controlling the adverse effects of pest species, preventing their introduction and reducing their spread.
Objective 4.5	Urban growth and development is well designed, occurs in a strategic and coordinated way, and integrates effectively with adjoining urban and rural environments
Policy 4.5.1	<p>Provide for urban growth and development in a strategic and coordinated way, including by:</p> <ul style="list-style-type: none"> f) Having particular regard to: <ul style="list-style-type: none"> I. Providing for rural production activities by minimising adverse effects on significant soils and activities which sustain food production
Objective 5.3	Sufficient land is managed and protected for economic production
Policy 5.3.1	<p>Manage activities in rural areas, to support the region’s economy and communities, by:</p> <ul style="list-style-type: none"> (1) Enabling primary production and other rural activities that support that production; (2) Providing for mineral exploration, extraction and processing; (3) Minimising the loss of significant soils;

	<p>(4) Restricting the establishment of incompatible activities in rural areas that are likely to lead to reverse sensitivity effects;</p> <p>(5) Minimising the subdivision of productive rural land into smaller lots that may result in a loss of its productive capacity or productive efficiency;</p> <p>(6) Providing for other activities that have a functional need to locate in rural areas.</p>
Proposed Otago Regional Policy Statement 2021	
LF-LS-O11	The life supporting capacity of Otago’s soil resources is safeguarded and the availability and productive capacity of highly productive land for primary production is maintained now and for future generations.
LF-LS-O12	The use of land in Otago maintains soil quality and contributes to achieving environmental outcomes for freshwater.
Lf-LS-P16	Recognise that maintaining soil quality requires the integrated management of land and freshwater resources including the interconnections between soil health, vegetation cover and water quality and quantity.
LF-LS-P17	<p>Main the mauri, health and productive potential of soils by managing the use and development of land in a way that is suited to the natural soil characteristics and that sustains healthy:</p> <p>(1) Soil biological activity and biodiversity, (2) Soil structure, and (3) Soil fertility.</p>
LF0LS-P18	<p>Minimise soil erosion, and the associated risk of sedimentation in water bodies, resulting from land use activities by:</p> <p>(1) Implementing effective management practices to retain topsoil in-situ and minimise the potential for soil to be discharged to water bodies, including by controlling the timing, duration, scale, and location of soil exposure, (2) Maintaining the vegetation cover on erosion-prone land, and</p>

	(3) Promoting activities that enhance soil retention.
LF-LS-P19	<p>Maintain the availability and productive capacity of highly productive land by:</p> <ul style="list-style-type: none"> (1) Identifying highly productive land based on the following criteria: <ul style="list-style-type: none"> a. The capability and versatility of the land to support primary production based on the Land Use Capability classification system, b. The suitability of the climate for primary production, particularly crop production, and c. The size and cohesiveness of the area of land for use of primary production, and (2) Prioritising the use of highly productive land for primary production ahead of other land uses, and (3) Managing urban development in rural areas, including rural lifestyle and rural residential areas in accordance with UFD-P4, UFD-P7, and UFD-P8.
LF-LS-P20	<p>Promote changes in land use of land management practices that improve:</p> <ul style="list-style-type: none"> (1) The sustainability and efficiency of water use, (2) Resilience to the impacts of climate change, or (3) The health and quality of soil.

In relation to the objectives and policies laid out in Table 2, ORC states that:

“The policies require managing the use and development of land and fresh water to maintain soil values, recognising that soil can be valued for its productive use and those values should be maintained”.

The use of the word ‘values’ within ORC’s explanation gives recognition to the idea that soil health is a vital part of the region’s wider ecological health, human health, and economic resilience. This therefore connects the objectives and policies of the PORPS to the findings and outcomes of the *Our Land* 2018 report and the NPS-HPL. The focus on land and soil within the *Our Land* reporting series is due to the significance of these resources on the country’s economy, health, culture, and

recreation (The Ministry for the Environment & Stats NZ, 2021). Both the proposed and partially operative RPSs state the need to identify HPL within the region.

4.3. District Policy and Plans

4.3.1. Central Otago District Plan

The CODP was made operative on the 1st of April 2008. The CODC can both initiate and approve plan changes which allow the plan to be dynamic and appropriately evolve. Changes can be made to give effect to higher level planning documents and new knowledge. This review will focus on the sections of the CODP that are relevant to HPL and the main threats it is currently facing. This includes subdivision, urban expansion, and rezoning for rural lifestyle and urban zones. It is important to note that as the CODP became operative in 2008, as this was prior to the enactment of the NPS-HPL the provisions within the plan do not specifically mention HPL as a resource. However, there is clear consideration for soils and valuable land which this policy review will cover.

4.3.1.1. Objectives and Policies

Section 4: Rural Resource Area, comprises the objectives, policies, and rules affecting the districts rural environment. The district plan recognises a range of activities which occur within the rural environment and the main reasons why they do. The activities most relevant to this research include:

1. Reliance upon the resources of the rural area:
 - a. Farming
 - b. Horticulture
 - c. Viticulture
2. Proximity to activities which are reliant upon rural resources:
 - a. Pack houses
 - b. Factory
3. Require large open space to avoid reverse sensitivity:
 - a. Transport yard
4. Rural lifestyle activities

Section 4 also identifies the main issues affecting the Rural Resource Area before outlining the relevant objectives and policies. The objectives and policies most pertinent to this study are outlined in Table 3 below.

Table 3: Relevant issues, objectives, and policies within Section 4 Rural Resource Area of the CODC District Plan

Provision	Detail
Objective 4.3.7	To maintain the life-supporting capacity of the District’s soil resource to ensure that the needs of present and future generations are met.
Objective 4.3.9	To recognise and provide for an appropriately located development which integrates farming, horticulture, recreational, visitor, residential and lifestyle development and supporting infrastructure in a sustainable manner, but avoids, remedies or mitigates potential adverse effects on: <ul style="list-style-type: none"> (a) landscape and amenity values of the rural environment; (b) natural and physical resources including soils, water, and groundwater resources, and existing viticultural areas; (c) existing lifestyle amenities; (d) core infrastructural resources; (e) the functionary of urban areas.
Objective 4.3.10	Within the Rural Resource Area (5), provide for a range of rural living opportunities on lots of varied sizes and shapes, integrated with rural productive uses and recreational opportunities, and in a way that maintains the values of the Outstanding Natural Landscape, maintains the values of the Significant Natural Landscape, provides for rural amenity, is appropriately serviced, and manages potential effects on surrounding rural areas.
Policy 4.4.6	To ensure that the location, construction, and/or operation of land use activities and subdivision make adequate provision for the protection of the soil resource by avoiding, remedying, or mitigating the adverse effects of practices which may cause: <ul style="list-style-type: none"> (a) erosion, instability, or loss of topsoil; (b) loss of nutrient or incidence of soil contamination; (c) loss of soils with special qualities; (d) a reduction in vegetation cover and moisture holding capacity, and (e) soil compaction.
Policy 4.4.10	To ensure that the subdivision and use of land in the Rural Resource Area avoids, remedies, or mitigates adverse effects on: <ul style="list-style-type: none"> (a) The open space, landscape and natural character amenity values of the rural environment in particular the hills and ranges, (b) The natural character and values of the District’s wetlands, lakes, rivers and their margins, (c) The production and amenity values of neighbouring properties,

	<ul style="list-style-type: none"> (d) The safety and efficiency of the roading network, (e) The loss of soils with special qualities, (f) The ecological values of significant indigenous vegetation and significant habitats of indigenous fauna, (g) The heritage and cultural values of the District, (h) The water quality of the District’s surface and groundwater resources, and (i) Public access to or along the rivers and lakes of the District, particularly through the use of minimum (and average) allotment sizes.
Policy 4.4.11	To provide for subdivision for boundary adjustments, surplus buildings, reserves, the retention or enhancement of heritage values, utilities, public facilities, and other purposes that do not meet minimum area requirements provided significant adverse effects on the environment are avoided, remedied or mitigated.
Policy 4.4.18 (summarised)	<p>Integrated Rural Lifestyle Subdivision and Development within Rural Resource Area (5). To provide for rural lifestyle subdivision and development while avoiding, remedying, or mitigating adverse effects on the environment by...</p> <ul style="list-style-type: none"> (a) Integrating a range of complementary activities within the rural setting, including: <ul style="list-style-type: none"> a. Rural living b. Farming and agriculture c. Horticulture d. Recreation and open space (b) Adhering to minimum and average allotment sizes for subdivision (c) Maintaining the productive potential of the Rural Lifestyle Production Area through ensuring that the allotment sizes and location of residential activity within the Rural Lifestyle Production Area do not prevent or significantly inhibit its productive use; (d) Ensuring the Rural Lifestyle Production Area is used for productive purposes alongside providing for rural living by requiring 50% of each allotment to be planted for productive purposes prior to the establishment of residential activity;

As presented in Table 3, Section 4 clearly identifies the importance of the soil in terms of the environmental, economic, and social benefits it brings to the district. The CODP is clear in its requirement that these soils must be protected and preserved, as outlined in Policy 4.4.6. Table 3 also includes policies that are significant to the research in a wider sense. These provide clarity on the council’s perspective regarding rural lifestyle living, the importance of minimum allotment sizes, and subdivision in general. Examples of this include Policies 4.4.10, 4.4.11, and 4.4.18.

Policies of this nature are important to this research as such activities are threatening the quantity and quality of productive land across the country.

Section 6: Urban Areas, identifies one issue of relevance, namely, Issue 6.2.10 ‘The Effects of Land Use on adjoining Rural Areas’. This issue reads:

‘the adverse effects of land use activities within urban areas on adjoining rural areas need to be avoided, remedied, or mitigated. Urban land use activities may... ..create situations where effects of existing primary production and residential activities come into conflict’ (CODC, 2008a, p.6:5).

An analysis and review of the objectives, policies, and rules which fall under the plans Urban Zone are beyond the scope of this project and will not be explored in any further detail. By including Issue 6.2.10 it is recognised that CODC acknowledges the effects that urban areas have on adjoining rural activities.

Section 10: Rural Settlements has three objectives and five policies, however, just one of each is relevant to this study. The relevant objective and policy are presented in Table 4 below.

Table 4: Relevant policy within Section 10 Rural Settlements of the CODC District Plan

Provision	Detail
Objective 10.1.1	To maintain and enhance the amenity values of the rural settlements to ensure that they remain pleasant places in which to live while enabling a wide range of activities to be conducted.
Policy 10.2.1	To enable a wide range of activities to be conducted within rural settlements while ensuring that such activities do not compromise the existing environmental quality of these areas.

The provisions presented in Table 4 acknowledge that it is important to recognise and provide for a wide range of activities within the rural environment. Section 10 and specifically Policy 10.2.1 acknowledge this while ensuring such activities do not compromise the quality and amenity of the environment. This research focuses primarily on the Rural Resource Area zones of the district plan; however, it acknowledges the existing policies that are in place for other rural zones. Productive land is not confined to the rural productive zones and policies such as those in Table 4 help to protect the land and soil quality beyond this zone.

Finally, Section 16: Subdivision, highlights the provisions related to one of the most significant threats facing productive land across New Zealand. Table 5 below identifies the key objectives and policies that relate directly to the interaction of subdivisions and productive land.

Table 5: Relevant issues and objectives within Section 16 Subdivision of the CODC District Plan

Provision	Detail
Objective 16.3.4	To ensure, where appropriate, that amenity values of the District created by the open space, landscape and natural character values, and areas of significant indigenous vegetation, significant habitat of statutorily managed sports fish and game are not adversely affected by subdivision.
Objective 16.3.5	To ensure that subdivision does not facilitate development that may compromise the life-supporting capacity of the District’s water and soil resources.

As presented in Table 5, there are two objectives of most relevance to this research. These both aim to mitigate the adverse effects of subdivision in the region. Objective 16.3.4 outlines the need to protect the amenity values of the district and its habitats. Alternatively, Objective 16.3.5 ensures the protection of the district’s water and soil resources. The inclusion of these objectives is recognition of the adverse effects that are commonly associated with subdivisions and it highlights the need to show caution when implementing such developments.

4.3.1.2. Minimum Allotment Size

This research is primarily focused on Central Otago’s Rural zones. Central Otago’s rural environment is separated into separate zones, each with their own minimum allotment size based on the characteristics and nature of the activities intended to occur there. The minimum allotment sizes within the Rural zones of the CODP are outlined in Table 6 below.

Table 6: Minimum allotment sizes within the Central Otago District Plan's rural chapter

Rural Resource Allotment Area	
Rural Zone	Average of no less than 8 hectares and a minimum allotment area of no less than 2 hectares
Rural Residential (RR)	Average allotment size no less than 2 hectares

Rural Resource Area (1) (RuRA(1))	10 hectares provided that the average area is 25 hectares
Rural Resource Area (2) (RuRA(2))	Minimum area of 1 hectare within which land can be further subdivided to create allotments and units as follows: (a) For residential purposes – sufficient area to meet open space and bulk and location rules. (b) For travellers accommodation – minimum area 2000m ² with sufficient area to meet open space and bulk and location rules.
Rural Resource Area (3) (RuRA(3))	Minimum area of 1500m ² and maximum area of 3000m ² to contain each of the identified building platforms 1-3, 5-7, 13-17 and for the recreational area shown as 60 on the concept plan attached as Schedule 19.20. Provide elsewhere in the Rural Resource Area (3) for a minimum allotment area of 4 hectares.
Rural Resource Area (4) (RuRA(4))	Any subdivision consent application shall be accordance with a development concept plan incorporated in a consent granted under Rule 4.7.3(ix).
Rural Resource Area (5) (RuRA(5))	Any subdivision consent application shall provide allotment areas for rural lifestyle allotments in each Rural Lifestyle Area on the Structure Plan in Schedule 19.23 in accordance with the minimum allotment sizes identified below.
Rural Lifestyle Allotment Areas	
Rural Lifestyle Area 1	Minimum 1500m ² Maximum 3000m ² Minimum average 2000m ²
Rural Lifestyle Area 2	Minimum 3000m ²
Rural Lifestyle Area 3	Minimum 4000m ²
Rural Lifestyle Area 4	Minimum 8000m ²
Rural Lifestyle Area 5	Minimum 3 hectares
Rural Lifestyle Area 6	To be held as one allotment
Rural Lifestyle Production Area	Minimum 4 hectares, with the exception of the land to the east of the main access road, which shall be held as a single allotment.

Table 6 showcases the complexities within the CODP’s management of the rural environment. The table identifies 14 different rural zones, each with a different minimum allotment size. It is

important to note that the primary allotment size, applicable across the majority of the rural zone, is that expressed in the first row of the table. Each of the other zones are site specific areas with unique characteristics that differentiate them from the straight rural zone.

4.4. Summary

This chapter has outlined the contextual background of the current national, regional, and territorial level planning documents. The documents outlined within this chapter are shaping and guiding the evolution of the CODC's planning framework for managing and protecting the district's HPL and soil resources. The NPS-HPL became operative in October 2022 and is aimed at enforcing more severe regulations for the management of HPL. As the NPS-HPL is a relatively new piece of planning legislation, the ORC and CODC will be required to reflect the new standard of management that the NPS enforces. It is anticipated that HPL will be mapped in a way that is specific to the region's environmental, economic, social, and cultural characteristics. This map should then guide the objectives, policy, and rule changes in the CODP. In the meantime, however, it is essential that the current plan is updated and modernised to protect all of the district's valuable land, before specifically productive areas are identified. The protection of such land can be achieved most efficiently through updating the minimum allotment sizes that are applicable across the district's rural environment. When doing this, however, it is essential to acknowledge and give effect to all the higher-level planning documents which have been presented in this chapter.

The following chapter will describe the method that this research adopts to make recommendations regarding the aforementioned points and address this study's aim and objectives.

5. Methodology

This chapter will discuss the methods employed to address the research aim and objectives. To gather a broad range of perspectives, a mixed-methods approach involving qualitative and quantitative data was used. The collection of primary data involved conducting semi-structured interviews with KIs and distributing surveys to the public residing in the Central Otago district. Secondary data was obtained by examining relevant literature, conducting a policy analysis of existing planning approaches and the construction of a GAM.

The forthcoming methods chapter will provide an overview of the research's theoretical framework and design, as well as the primary and secondary research methods employed. Additionally, it will delve into a discussion on the ethical considerations, positionality, and the overarching limitations of this study.

5.1. Research Approach

In the realm of research, it is very important to establish a philosophical framework that serves as a base for the entire endeavor. The chosen research paradigm plays a pivotal role in shaping the research trajectory and methodologies. Given the inherent influence of these paradigms on the study's foundation, careful consideration must be given when selecting a guiding philosophy that optimally aligns with the research topic. Doing so not only facilitates a comprehensive exploration of the subject matter, but also safeguards against potential misinterpretation of the research findings (Aitken & Valentine, 2014). The present research focuses on determining an appropriate minimum allotment size for Central Otago's Rural zones to ensure effective management of the district's rural environment and its resources. To achieve this study aim, a combination of two research paradigms will be utilised, consisting of both quantitative (statistical data analysis) and qualitative (interpretivist) methods.

Quantitative research typically revolves around inquiries related to scale, often asking questions like "how much?" Or "how often?" This research method relies on statistical analysis to convert data into numerical form, allowing for the development of mathematical models and predictions.

By employing statistical techniques, researchers are able to draw meaningful conclusions from the data collected during their study (Lindsay, 2006).

The interpretivist approach, also known as the interpretive or qualitative approach, is a philosophical stance in social sciences and humanities research that emphasises understanding the subjective meanings and experiences of individuals. It seeks to uncover the complex and nuanced aspects of human behavior, social interactions, and cultural phenomena (Walmsley & Lewis, 2014). At the core of the interpretivist approach is the notion of multiple truths and realities, which are shaped by individual lived experiences, values, and cultural contexts. It recognises that people assign meanings to their experiences and actions, and that these meanings must be explored and understood within their specific social and cultural contexts. Consequently, reality is seen as context-dependent, making interpretivist research particularly suited for investigations conducted at a local level (Geertz, 2008; Rose 1997). As a result, the outcomes of interpretivist research do not aim to establish universally applicable theories but rather offer comprehensive and contextually situated understandings (Robbins & Krueger, 2000).

5.2. Research Design

The research project was designed to meet the objectives outlined in the brief provided by the CODC. By engaging in additional conversations with the CODC and thoroughly analysing relevant local government documents, a more comprehensive understanding was obtained regarding the research's aim and objectives. In this study, a mixed-methods approach has been employed by the researchers, utilising both qualitative and quantitative methods and combining various data collection techniques. The primary data was obtained through conducting interviews with KIs and administering a survey questionnaire. Furthermore, secondary data was gathered through a comprehensive literature review and a close analysis of relevant policies. These methods will be covered in-depth in the next section of this chapter.

5.3. Research Methods and Data Analysis

5.3.1. Primary Research Methods

5.3.1.1. Semi Structured Interviews

KIs were selected based upon their relevant expertise in the planning, agriculture and advocacy fields. All KIs had a wide array of experience ranging from working in the agricultural industry, to planners and consultants. All nine interviews were arranged through email or phone conversations in order to find suitable times to meet. The majority of the interviews were conducted in person during the designated field week between the 1st and 5th of May. However, due to a portion of the participants being located across the district, Zoom and phone interviews were also conducted. Where KIs were unavailable during the field week, interviews were arranged and conducted during the following week, the 8th to the 12th of May.

Prior to commencing each interview, KIs were provided with an information sheet. The information sheet provided a comprehensive overview of the research objectives, the nature of the data to be collected, the intended use of the data, the interview process, and how they could withdraw from the project if desired. Additionally, all KIs signed a consent form indicating their agreement or non-agreement with being recorded, and whether it was suitable for the researchers to use the informants' identities. Maintaining utmost respect for privacy was of paramount importance to the researchers, and they made every effort to uphold this principle to the best of their abilities.

The interviews followed a semi-structured format, involving a predefined list of questions that were developed prior to the meetings and approved by the University of Otago Human Ethics Committee (refer to Appendix A). These questions were carefully written by the researchers to align with the research aims and address the key objectives effectively. Also, the semi-structured nature of the interviews allowed for each conversation to be free flowing, natural and dynamic, enabling informants to share unique insights based on their individual experiences and expertise. If an informant felt uneasy or hesitant about answering a particular question or continuing with the interview, they were assured of their right to decline or discontinue their participation.

5.3.1.2. Questionnaire Survey

Survey questionnaires were distributed online and in person, aiming to gain the broader perspectives of a wide range of stakeholders from the district. The survey was undertaken by participants online through invitations sent out on the 1st of May 2023 to various Central Otago Facebook Community Groups (Appendix B) and was accessible for four weeks. Additionally, during the field trip in person survey participants were approached by researchers in public areas around Cromwell and Alexandra. The survey consisted of multi-choice, ranking and open-ended questions. The survey questions were separated into two sections based on whether a respondent resided in a rural or urban area. This ensured the questionnaire was best suited to each individual respondent.

5.3.1.3. Data Analysis

The KI interviews were conducted in a semi-structured format and recorded for analysis. Subsequently, the audio recordings were transcribed in Microsoft Word to facilitate the analysis process. Following transcription, a coding process was employed to organise the data, ensuring its value and establishing connections among participants' responses (Harding, 2015). The raw data from the transcribed interviews was sorted into the data presented in the final report, by breaking it down on Excel into manageable textual themes. These themes are presented in Table 7 below.

Table 7: Key themes which emerged from the transcribed interviews

Themes
Social Drivers
Economic Drivers
Environmental Drivers
Social Consequences
Economic Consequences
Environmental Consequences
Suggestions
Considerations

This categorisation enabled the researchers to comprehend how experts from diverse backgrounds evaluated the current issues associated with the loss of valuable agricultural land in Central Otago. This also included their definitions of potential solutions and their attitudes and perspectives towards establishing a minimum allotment size. The data was subsequently analysed by various

team members and utilised to compose the results section of the report and inform the recommendations.

Because the survey questionnaire produced both qualitative and quantitative results, the analysis process was two-fold. The raw qualitative data from the survey was coded by theme in the same manner as the KI interviews. This allowed for the alignment of results obtained across both methods to corroborate specific findings with a greater level of accuracy. The raw quantitative data from the survey was exported into Excel and turned into a more presentable format. This included the creation of pie, line and bar graphs, along with word clouds in order to present the data in a communicable manner.

5.3.2. Secondary Research Methods

5.3.2.1. Literature Review

A review of the existing literature was conducted to help define the wider context of the research and situate the findings within a large theoretical context (Leite et al., 2019). The purpose of this review was to aid the researchers in identifying the major debates and themes present in the literature (Rowley & Slack, 2004). This was accomplished through the examination of a variety of academic journal articles and books. The research scope was determined and clarified through the identification and analysis of historic and contemporary issues relating to rural subdivision.

For this research, the literature review provided a detailed examination of the key drivers and consequences of rural subdivision. Both international and local literature was considered and from this, four key themes emerged which guided the structure for the primary data results. These themes consisted of environmental, economic, social, and political drivers and consequences.

5.3.2.2. Policy Analysis and Goals-Achievement Matrix

The research also utilised policy analysis methods. It is important to note that although the policy being analysed through this method is secondary data, the direction of analysis is informed and guided by primary data results. Policy analysis can be approached and achieved in several ways, with many scholars adopting various definitions for the method (Blum & Brans, 2017; Dror, 1983; MacRae & Wilde, 1979). For the purpose of applying a definition to this research context, policy

analysis can be defined as using reason and evidence to select the best policy amongst several alternatives (MacRae & Wilde, 1979).

A GAM method is then utilised to evaluate and summarise the findings obtained through the policy analysis. This method of analysis is typically used for evaluating planning strategies in terms of their ability to achieve a set of criteria derived from community engagement (Sager, 1981). The use of a GAM in this research applied local and professional planning aspirations to the existing strategies of various district plans (Hill, 1968; Sager, 1981).

5.4. Ethics and Positionality

In any research, particularly qualitative studies, the positionality of the researchers plays a significant role in interpreting and comprehending the results (Wilson & Darling, 2020). This study is being conducted by a team of five postgraduate students enrolled in the Master of Planning Programme at the University of Otago. Each member of the group comes from different social, cultural and gendered backgrounds and brings a unique set of geographic, ecologic and educational backgrounds. As a result, the researchers were able to incorporate diverse perspectives, ensuring a balanced, open-minded approach and mitigating potential biases throughout the project. Likewise, the researchers' positionality was shaped by their shared objective of promoting sustainable outcomes that enhance the rural and urban environment for local communities and intention to remain neutral throughout the research process.

As the present study was conducted in a qualitative manner and involved active human participation, ethical implications required careful consideration throughout the research process. The researchers have adopted an ethical research design and followed the ethical standards of the University of Otago and New Zealand Planning Institute's code of conducts. As mentioned previously, ethical approval from the University of Otago Human Ethics Committee was gained prior to the commencement of primary research. This process involved submitting an Ethics B application (refer to Appendix C) for the approved research, which was then reviewed and audited by the Head of Department and the Ethics Committee. Ethics B applications deal with low-risk research and provide a comprehensive overview of the research methods, data collection procedures, and the intended participant demographics. Ethics B applications also include a

consent form that clearly outlines the project's objectives, data collection methods, data storage protocols, informant recruitment criteria, and an outline of the semi-structured interview and survey.

As per the ethics approval procedure, prior to interviews the potential informants were sent information sheets which outlined their rights and responsibilities as research participants. Information sheets also specify a participant's right to withdraw from the interview or decline to answer any question should they feel uncomfortable at any point (refer to Appendix D). Also, prior to commencing the interview, permission was obtained to audio record the session as each KI signed a consent form providing their written consent (refer to Appendix E). Furthermore, KIs were explicitly reminded of the right to decline answering any question and stop the interview at any time (refer to Appendix E).

As this research required KIs to share their personal perspectives and lived experiences, the best efforts were made by the researchers to ensure anonymity for all informants. This was undertaken with the aim of minimising the potential risks and safeguarding the well-being of the participants. Also, during interviews researchers remained neutral and put aside any preconceptions. However, the informants acknowledged that the research findings are subject to interpretation by the researchers.

5.5. Limitations

First, the field trip was limited by time and human resources constraints. The team of researchers had only one driver available. Central Otago district is relatively large, so the team couldn't conduct in-person interviews and surveys in remote parts of the district. Resulting in primary data results that favoured participants around the Cromwell and Alexandra areas.

The second constraint was the conduction of surveys. Although several surveys were conducted in person, the majority of survey responses were received through online Facebook groups. However, social media often does not represent all demographic and social groups. Therefore, collecting generalised results from an online random sample can be problematic (Andrade, 2020).

Finally, the range of KIs who participated in the research were limited to the horticulture, viticulture, and planning fields. This was inefficient for addressing wider issues related to pastoral farming, construction, and real estate development. Such stakeholders could have added valuable insight into additional issues relating to rural subdivision and rural lifestyle development.

5.6. Summary

This chapter has discussed the interpretivist approach and the research methods employed. By adopting an interpretivist perspective, the study acknowledges that knowledge and experiences related to rural subdivision topics are socially constructed and context dependent. This approach has shaped various aspects of the research, including semi-structured interviews, survey questionnaire, data analysis, ethical considerations, researcher positionality, and study limitations. Nine KIs with relevant expertise were interviewed, while a survey was distributed online and in person to gather perspectives from a wide range of stakeholders. The collected data underwent transcription, coding, and thematic organisation. Quantitative survey data was analysed and turned into graphs and figures. Secondary research methods included a literature review and policy analysis, guided by the primary data. A GAM was used to evaluate policy analysis findings. The research design followed ethical standards, ensuring participant rights and confidentiality. The researchers remained neutral and considered diverse perspectives throughout the study. The research findings and discussion will be presented in the following chapters.

6. Drivers – Results and Discussion

This chapter will present and discuss the key findings from the primary research in a manner specifically designed to address the driver's aspect of Research Objective 1: To engage with business owners, advocacy group representatives, and community members to understand the key drivers and consequences regarding rural subdivision in Central Otago. The key results displayed in this chapter are separated under the themes of social, economic, environmental, and political drivers. However, the discussions which follow, take a more holistic view, outlining the fact that each of these factors are interconnected in creating the existing trends of rural subdivision across the Central Otago district.

6.1. Results – The Drivers of Rural Subdivision in Central Otago

6.1.1. Social Drivers

The key social drivers highlighted within the primary research include changing demographics, migration and population growth, and an increase in demand for a rural lifestyle.

Both the interviews and survey responses outlined how changing demographics are contributing to creating trends of rural subdivision in Central Otago. This comment from the survey effectively conveys the consensus shared across a range of different stakeholders:

“The people coming into central are of a different demographic. They are older and wealthier. These are the people that are buying these large subdivisions and these people don't realise the reality of rural living” (Survey Respondent).

Several comments from KI interviews support this view. These are expressed in

Table 8: Interview quotes related to the influence of changing demographics

Key Informant	Quote
KI 7	<p><i>"I mean people talk about... wealthy people retiring and, you know, buying... I think there's a lot of people from Auckland who sold their \$2 million Mount Eden property and can now buy a small lifestyle block and build a million-dollar mansion on it and feel good about it. So, there is a demand out there for sections but some of that could be met by intensification in the existing town".</i></p>
KI 4	<p><i>"For a lot of people, you live in the city and it's all pretty busy, you go through your life and then you're ready to go to Central and live on a lifestyle block, lots of people want that"</i></p>
KI 6	<p><i>"The people that are moving in come from a slightly different demographic"</i></p>

The statements expressed in Table 8, portray that an influx of residents can be attributed to an older, high-income demographic moving to the district to pursue a relaxed retirement. KI 7 builds upon this idea, discussing the fact this wealthier demographic are the only ones who can afford rural lifestyle properties:

"there's no way that's going to be affordable housing straight off the bat, those blocks will be probably half a million dollars or more when all the development costs go on as well. So it's not like it's affordable housing. So, you know, what are we trying to cater to?"

This idea links into the theme of migration and population growth which are other factors which the interviews and survey portray as key drivers of rural subdivision trends. Out of the nine KIs, eight mentioned population growth of their own accord (KI's 1, 2, 3, 5, 6, 7, 8, 9), and out of the survey responses, 83 per cent recognised challenges related to the growth of communities and townships. The quotes in

Table 8, above, allude to the role that older migrants play in this growth, however, others mention an influx of workers in many areas including the *“orchards and vineyards... the construction industry and the roading and all those sorts of industries...”* (quote from KI 7, similarly mentioned by KI’s 1, 3 & 5).

There is a consensus that *“people have got to live somewhere, and at the moment, there is a lack of accommodation”* (KI 7) amongst stakeholders in Central Otago. A growing population is not being met by the provision of land for development purposes. Towns are filling up, meaning that rural land must be used to provide for this increase in population. This idea is represented in comments by two of the survey respondents in Figure 2 below:

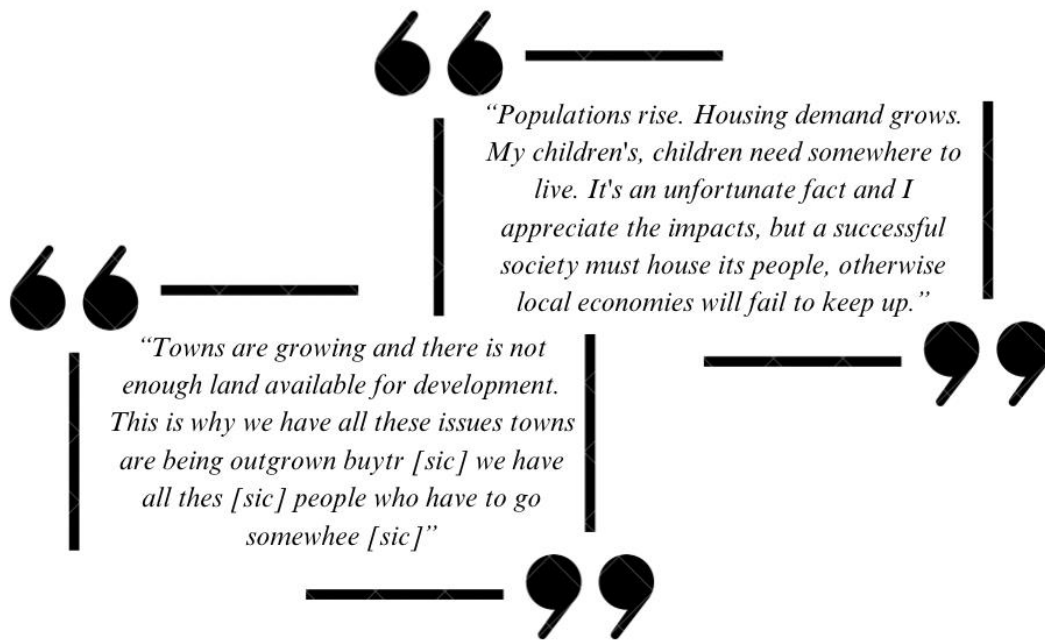


Figure 2: Survey respondent quotes related to growing populations and developable land

The lack of land available for development is clearly portrayed as a contributor to current trends in rural subdivision. However, the demand for rural lifestyle properties and the perceived benefits of rural living are also highlighted throughout the primary findings of this research.

Table 9 outlines a series of KI and survey quotes related to this idea:

Table 9: Statements related to the attraction of, or demand for, a rural lifestyle in Central Otago

Key Informant	Quote
Survey Respondent	<i>“How wonderful it would be to live rural and have the ability to grow trees, plant vegetables to feed your family and be able to have conversation without the neighbours listening. A rural subdivision would be great for children and mental health. That is why it's so important to allow people to have a choice!!”</i>
Survey Respondent	<i>“We enjoy the peace and tranquility of rural environments, the slower pace of life, the connection with nature”.</i>
KI 4	<i>“I'm looking at buying a site myself, in Bannockburn, I want to go there and have a lifestyle block, and lots of people do.”</i>
KI 7	<i>“... most people think, oh, It would be lovely to live out amongst the vines”.</i>
KI 5	<i>“a lot of people are looking for lifestyle blocks... But lifestyle people just want a ground around them and not seeing neighbours and have space to put extra stuff”.</i>
KI 6	<i>“Well, I think Just from what I've seen, and it more comes from friends and stuff, they actually quite like that rural lifestyle”.</i>

Quotes in

Table 9 show that there is a huge demand for a rural lifestyle in Central Otago. The first quote from a survey respondent shows the perspective of someone who may seek this type of lifestyle. This quote emphasises the attraction of a substantial allotment size in enabling food to be grown on-site and the advantages that such an allotment has for privacy and as an environment to bring up children in. The other survey respondent discusses what they value about rural living, highlighting the peacefulness, slower pace of life and the connection to nature that such a lifestyle enables. The KIs in

Table 9 discuss the breadth of demand and attraction of rural lifestyle properties, with KI 4 even mentioning that they are looking at purchasing such a property themselves.

The draw of a rural lifestyle is supported further within the survey responses. When asked what they enjoyed most about the rural environment, the Central Otago public primarily enjoyed factors such as its peace and quiet. The following word cloud is an expression of these survey responses (Figure 3).



Figure 3: Word cloud presenting key recurring contributions to making the rural environment enjoyable in Central Otago

As illustrated in Figure 3 some people also alluded to the role that amenity value had in making the rural environment of Central Otago attractive. Factors such as the “landscape”, “views” and “scenery” were all highlighted in these survey responses.

6.1.2. Economic Drivers

In addition to social factors driving rural subdivision trends, the primary findings also portray that economic factors contribute significantly. The key economic drivers found across both the interviews and the survey include increasing land value, the cost of being in the primary industry and retirement.

The value of rural land in Central Otago is high. Interviews with various business owners and planners portrayed that if land is going to be sold, it is often worth more as subdivided allotments (KI’s 3, 5, 6, 7, 8, 9). KI 5 stated that “*The land is so expensive, so it makes sense to subdivide.*”

This is supported by the survey responses. When those who lived rurally were asked whether they planned to subdivide in the future, 44.4 per cent stated that they intended to.

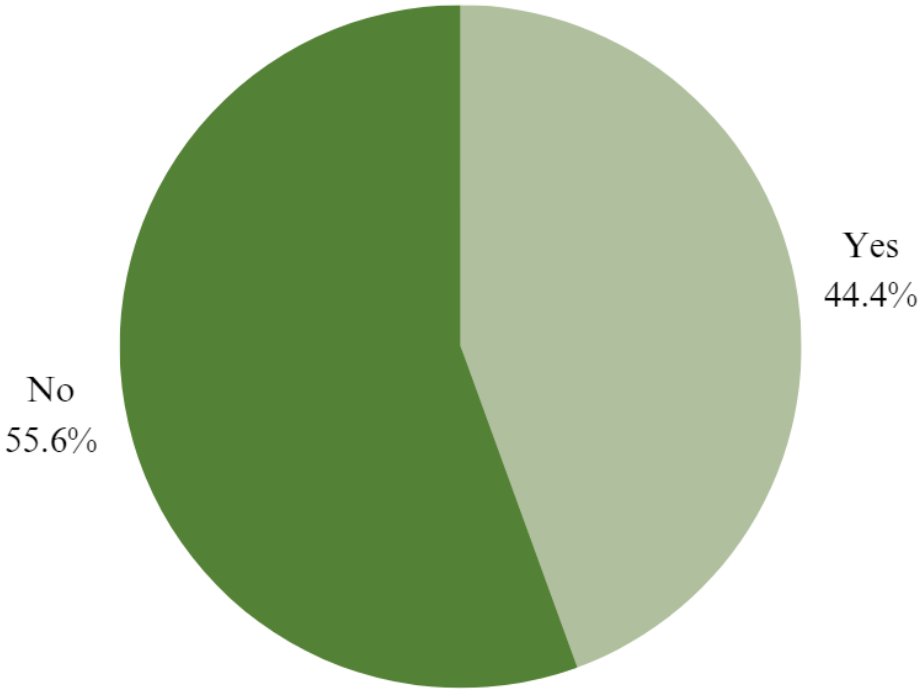


Figure 4: Percentage of survey respondents who plan to subdivide in the future

When followed up by asking why they planned to subdivide in the future, all but one explained that this was for economic gain, with the one outlier stating that *“I would like to, but the council has decided no”*.

Clearly, the potential economic benefits rural landowners stand to gain by subdividing their land for residential purposes is a strong motivator driving increased rural subdivision in the district. Other economic factors contribute to this, however, with several stakeholders mentioning the economic struggles that they face in the primary sector which presents subdivision as a more profitable endeavor (see Table 10).

Table 10: Stakeholder quotes related to the financial pressures to subdivide

Key Informant	Quote
KI 6	<i>“with the state of the industry and costs and stuff like that, all of a sudden, people are finding that, there's a sh**load more value in their land, as residential dwellings as there is as opposed to busting your a**, for not great returns sometimes”.</i>
KI 6	<i>“We have gone down that subdivision track... but we have certainly got land that's undeveloped at this stage that does have more value as a subdivision, or a block like that than it does for looking at developing it going forward.”</i>
Survey Respondent	<i>“My land is worth more financially if I subdivide it[,] it's the love for my work that stops me and im [sic] sure that many people are in the same boat. Eventually the smart thing to do will be to subdivide and what this means for central im [sic] not sure”.</i>
KI 3	<i>“We've got this example, when a farmer wants to plant a large part of his land but he does not have the money, so he can take this 2-3 ha blocks, subdivide it and get money to invest in his farm.”</i>
KI 7	<i>“I think most people have taken the view that they're gonna make a lot of money out of this (urban rezoning and subdivision), I think that's the first thing on their minds”.</i>

KI 7	<i>"Our wines have won lots of gold medals so we know we can produce really good fruit, our frustration is that if its zoned urban we will be priced off the land, we won't be able to afford to not develop the land".</i>

The quotes from Table 10 indicate that it is an expensive venture to be in the agricultural sector and that it has got, or is getting, to the stage where these expenses are making it more viable to subdivide (KI 3, 6 and survey respondent). Increasing economic pressures are highlighted, with KI 7 emphasising the influence that rezoning has on the price of land and therefore the viability of working in the agricultural sector.

Other pressures to subdivide are highlighted within the findings, specifically the pressure to collate funds for retirement. KIs 5, 8 and 9 all commented that this will be a key consideration when it comes close to their retirement age with KI 8 stating this is the case for a lot of people:

"You get to an age where it's harder to run your orchard... And then I imagine a lot of people think well let's make it easier for ourselves if it's able to be subdivided then maybe that's the next step." (KI 8)

Multiple survey respondents supported this consensus from the interviews (see Figure 5).

Why do you plan to subdivide in the future?



Figure 5: Key survey responses to Q11, 'Why do you plan to subdivide in the future?'

The sentiment that although money is an influence, it is not the key driver which the survey respondent on the left in Figure 5 presented is shared with KI 7 who stated:

"I think most people have taken the view that, oh, we're gonna make a lot of money out of this. You know, I think that's the first the first thing but (name excluded) and I are at an age now that money is important, but it's not the driver."

6.1.3. Environmental Drivers

Primary findings portray that environmental drivers are less significant than both social and economic drivers. Although there are several mentions of environmental factors influencing the current trends of rural subdivision in Central Otago, these were few and far between. The key environmental drivers include the suitability of much of Central Otago's land for development, the

draw of the rural environment, and the lack of land which is considered highly productive in the district.

The Central Otago environment is highly suitable for residential lifestyle blocks. KI 7 outlines how *"the flatland is easy to develop, and I think that's one of the attractions,"* however they maintain that although this is favourable to residential development, it is *"also from an agricultural and horticultural sense, the most valuable [land]"*. Also related to the suitability of the Central Otago environment, several survey respondents commented that there is plenty of land for agricultural purposes and as such, more should be opened up for development (expressed in Figure 6).

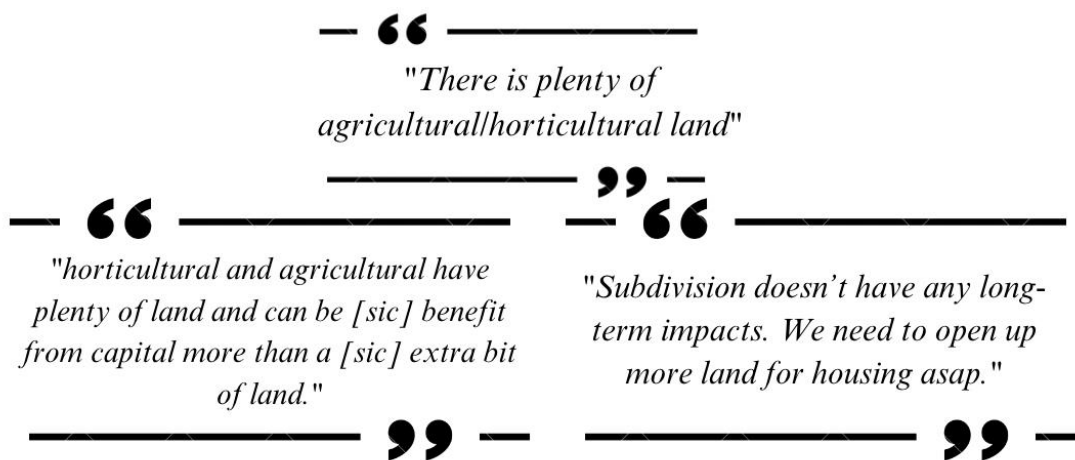


Figure 6: Survey respondent quotes related to the abundance of agricultural land

Presented earlier under the theme of ‘social drivers’ were a plethora of comments related to the draw of a rural lifestyle in Central Otago (see Table 8 & Figure 3). The general ideas that come through under this are the amenity values and the attractiveness of Central Otago’s environment. When viewed through an environmental lens rather than a social lens, these findings can also be seen as environmental drivers. This is because the environmental characteristics of Central Otago make rural lifestyle living so sought-after.

Furthermore, primary findings presented the fact that much of Central Otago’s land is not considered ‘highly productive’ (LUC 1 to 3). As such, the NPS-HPL does not apply, meaning that land is open to being subdivided if enabled by the district plan. KI 3 discusses this in detail

outlining that “most of the productive soils (in Central Otago) are classified between LUC 4 to 6” and highlighting three key examples of such land being used productively (expressed in Table 11).

Table 11: Quotes from key informant 3 related to soil productivity in Central Otago

Key Informant 3 Quotes
<i>“In the case of Queensberry, there is not much productive soil, so this area is not subject to NPS”.</i>
<i>“All the vineyards we have got in Bannockburn, I believe are 4 or 5 LUC”.</i>
<i>“I think Ripponvale is known for the best growing cherries in the district. Partly because it’s location and soils. So, we have got another big band of LUC 3 and 4.”</i>

6.1.4. Political Drivers

Survey respondents and KIs recognised several relevant political drivers which enable the current rural subdivision and land fragmentation trends. These drivers relate to the current rules and regulations within the CODP’s rural chapter.

A key political factor which is consistently highlighted across the primary findings as a contributor to current issues around rural subdivision is the current minimum allotment size. There is a range of perspectives and comments from across both KIs and survey respondents which highlight the role that this minimum allotment size has played in causing many issues in Central Otago. These are expressed in

Table 12.

Table 12: Stakeholder quotes about the minimum allotment size driving current trends/ issues

Key Informant	Quote
Survey Respondents	<p style="text-align: center;">Question:</p> <p style="text-align: center;">What do you think are the key considerations for local authorities when regulating rural land subdivisions in the Central Otago District?</p> <p style="text-align: center;">Answers:</p> <p style="text-align: center;"><i>“Minimum allotment sizes in rural areas usually result in all subdivision happening at that level...”</i></p> <p style="text-align: center;"><i>“The minimum size of land”</i></p> <p style="text-align: center;"><i>“Increase the minimum lot size, get rid of the 2ha minimum...”</i></p>
Survey Respondent	<p style="text-align: center;"><i>“...Rural subdivision isnt [sic] necessarily bad or inappropriate but minimum lot sizes need to reflect those things that the District [sic] want to protect. At the moment they dont [sic].”</i></p>
KI 7	<p style="text-align: center;"><i>“So, they're wasting that land... by insisting on that...minimum lot size of 2000 square meters. That's a waste of that land.”</i></p>
KI 6	<p style="text-align: center;"><i>“... guys are making these blocks two hectares because that's the minimum that they can, but actually no one really enjoys two hectares of land. Two hectares is old... the idea of a two hectare block was it was still... economic, well it's not anymore. And, it doesn't really matter what you do, two hectares of anything is kind of just a waste of your weekend”.</i></p>
KI 4	<p style="text-align: center;"><i>“For every two-hectare site you could have four houses that fit quite nicely, and half a hectare is still quite a lot of land you know... and whether there is one house on two-hectares or four... It doesn't change the fact that once you get residential development on there then you can't actually convert it into cherries or grapes.”</i></p>

KI 5	<i>"Honestly, the two-hectare minimum... is the biggest issue, because...these sections take up more space and spread out further into productive land..."</i>
KI 1	<i>"As soon as you set a minimum, everybody goes to the minimum".</i>

Table 12 shows the breadth of perspectives on the current minimum allotment size for rural land in Central Otago. It is clear from this table that there is a consensus that the current two-hectare size is not suitable for a range of reasons.

6.2. Discussion

The primary research findings shed light on two crucial factors that are fueling the existing challenges and patterns of rural subdivision in Central Otago. Firstly, supply and demand pressures exist stemming from various contributing factors. Secondly, political rulings, regulations, and protective measures play a role in facilitating and consequently driving many of the issues associated with rural subdivision in the district.

6.2.1. Supply and Demand

In its broadest and simplest sense, the current patterns of rural subdivision in Central Otago can be attributed to incentives to supply caused by an increase in demand. Supply and demand as discussed by Gale (1955), describes the relationship between price and demand, and price and supply. The price of a commodity is determined by the level of consumer demand it garners. As demand increases, the price increases, vice versa and *ceteris paribus*. With an increase in demand and therefore an increase in the financial gain to be had, there is more of an incentive to supply the commodity. Within the specific context of rural subdivision in Central Otago, the primary findings have highlighted several interrelated factors which are driving an increase in demand for subdivided rural lifestyle blocks in the district. This is causing an increase in the financial gain to be had by subdividing which when combined with external pressures, has significantly incentivised the subdivision of rural land from the perspective of landowners. The key contributing factors to this trend are highlighted in Figure 7.

THE DRIVERS OF RURAL SUBDIVISION IN CENTRAL OTAGO

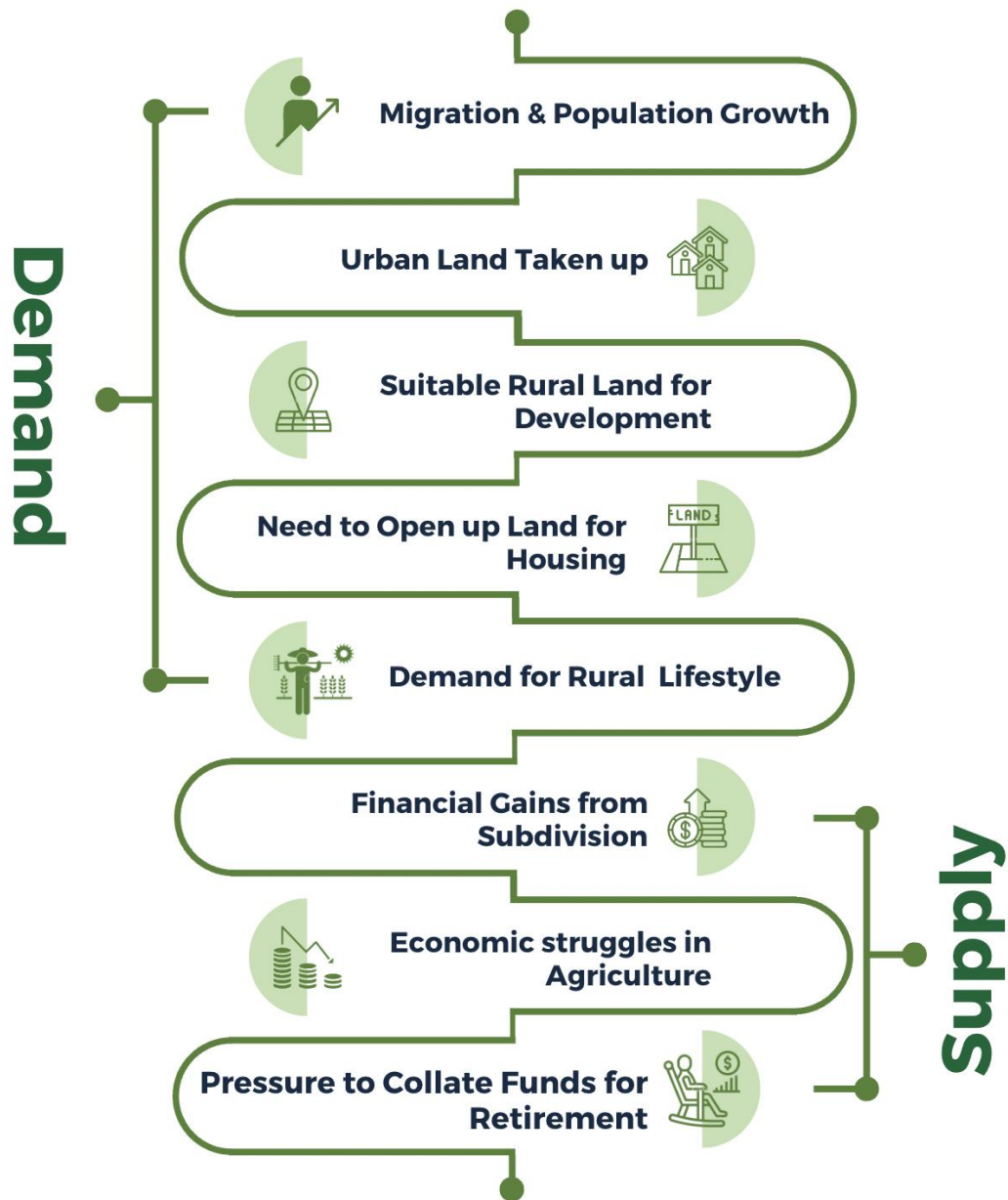


Figure 7: The drivers of rural subdivision in Central Otago – Demand and supply

6.2.1.1. The Drivers of Demand

The demand for subdivided rural land is driven by a range of factors as illustrated in Figure 7. The first and foremost factor which is consistently highlighted across the primary findings, and which was a recurring consideration brought to light in the literature review is migration and population growth. This population growth has resulted in urban land predominantly being taken up. When combined with the demographics coming in, the inherent New Zealand desire for rural lifestyle living and the unique Central Otago environment, this has created a huge demand for rural subdivisions.

Central Otago's population grew by 21.3 per cent between 2013 and 2018, bringing an influx of new residents into the district (CODC, 2020). The literature (discussed in Chapter 2) highlights that, although population growth can be driven by a range of factors, within similar contexts to the towns of Central Otago, it is primarily caused by urban-rural migration or, counter-urbanisation (Argent & Plummer, 2022; Bijker & Haarsten, 2012; Nel et al., 2019). The primary findings from Central Otago, portray a similar idea, with stakeholders mentioning that the people coming into the district are coming from the country's primary urban areas in search of a more rurally centric lifestyle (KIs 4, 7 & 6). Nel et al. (2019) argue that this type of growth is predominantly driven by elderly individuals and retirees which is also consistent with the findings in Central Otago.

The growing population necessitates an increased supply of housing to accommodate the expanding numbers. What the primary findings suggest is that this has resulted in the land which is demarcated for urban use being taken up with the full extent of the population not being provided for. This has created the need to open non-urban land for development purposes. Central Otago's landscape offers favourable conditions for development, boasting an abundance of 'flatland' that is deemed easily suitable for development. Additionally, the local community generally holds the perception that there is ample land available for agricultural purposes, further reinforcing this concept. This has led to an increase in the demand for rural subdivisions in Central Otago.

The findings also depict that individuals migrating to the district are driven by a desire for a rural lifestyle, often harbouring romanticised notions of what it means to live 'amongst the vines' in rural Central Otago (KI 7). The literature indicates that this inclination can be traced back to colonial times when many people were initially drawn to New Zealand as an escape from densely

populated urban environments in other countries (Fallon, 2021). The research conducted in Central Otago corroborates the enduring presence of these Arcadian ideals in the country, highlighting a significant finding that people possess an inherent affinity for rural living and frequently relocate to Central Otago to attain this lifestyle. This desire for rural living is bolstered by Central Otago's unique environment and landscape which offers sought-after characteristics and amenity values.

The literature review shed light on contrasting perspectives regarding the preferences of older migrants. Anderson et al. (2018) contend that older migrants are likely to move to seek a tranquil lifestyle, while Diamond and Jaye (2020) argue that the elderly are inclined to retire in their existing community rather than seek tranquillity elsewhere. Interestingly, within the context of Central Otago, both perspectives are seemingly correct. The findings portray that older migrants in Central Otago are drawn to the rural areas due to the allure of "tranquillity", "space", "peace", and "quiet". However, alternative findings also depict that when agricultural workers reach retirement age, they express a desire to remain within their existing rural environment, albeit on a smaller, more manageable section. Having retirees moving to Central Otago in search of tranquillity in addition to local elderly wanting to remain rurally in the district increases the demand for rural subdivisions two-fold.

In conclusion, the demand for rural subdivisions in Central Otago is driven by a combination of factors that are interrelated and mutually reinforcing. The primary factor contributing to this demand is migration and population growth necessitating a larger supply of housing, which has led to the consumption of urban land designated for development. When combined with the desire for a rural lifestyle deeply rooted in New Zealand's historical context and the preference of older migrants and locals to live rurally, the situation in Central Otago is one that sees a convergence of various factors fuelling a substantial demand for rural subdivisions.

6.2.1.2. The Incentivisation of Supply

Traditional supply and demand theory argues that with an increase in demand, there is typically an increase in its price resulting in the incentivisation of its supply. Within the context of rural subdivision in Central Otago, this is seemingly true, however, there are external influences which are also incentivising the supply of subdivided rural land, driving the current observable trends in the district (see Figure 7).

The supply of subdivided rural land is almost exclusively incentivised by economic factors. The primary incentive to supply is the financial gains that come with subdividing land. The literature review highlighted that the demand for rural lifestyle living is a key factor in driving up land and subdivision value (Turney, 1997; Curran-Cournane, 2016). It has been established that there is a significant demand for the use of rural land for residential purposes in Central Otago. This drives up the price of rural land, however, as argued by Turney (1997), the competition which this creates between those seeking residential land, and those wanting to use the land for agricultural purposes further escalates the land prices.

The financial gains which come from subdividing land are one of the key drivers of rural subdivision evident in the primary findings. Essentially, the supply of rural land for subdivision purposes is controlled by rural landowners. With large financial gains coming from subdividing, it seems, from their perspective, to be the rational choice.

External pressures also influence the rationale behind subdividing and selling rural land, further incentivising the supply of rural subdivisions in Central Otago. Despite Kininmonth's (2000) argument that an increase in the demand for agriculture leads to an increase in the demand for rural subdivisions, resulting in an augmented supply, the key findings from Central Otago present a contrasting narrative. There is a shared consensus among stakeholders in Central Otago that being in the agricultural sector is becoming less viable and more expensive. Despite the hardships felt in the rural sector, the demand for rural land is still high due to the plethora of people wanting to utilise it for residential purposes. Flipping Kininmonth's (2000) argument, the present situation in Central Otago is one in which the supply of rural subdivisions is being incentivised due to the lack of demand for working in agricultural industries. The following quote from KI 6 emphasises this point:

*“with the state of the industry and costs and stuff like that, all of a sudden, people are finding that, there's a sh**load more value in their land, as residential dwellings as there is as opposed to busting your a**, for not great returns sometimes”.*

Further financial pressures to subdivide exist within the rural sector, particularly those which are specifically relevant to Central Otago's ageing population. A plethora of primary data indicates that those nearing retirement age see subdividing their land as a way to downsize to something

which is more manageable, whilst at the same time gaining funds for their retirement. This pattern is particularly relevant to Central Otago which has an ageing population with a median age of 42.6 and nearly 40 per cent of individuals aged 50 and above (Stats NZ, 2023).

In conclusion, the supply of rural subdivisions in Central Otago is heavily incentivised by a combination of economic factors and external pressures. The financial gains associated with subdividing land incentivises the supply, as the demand for rural lifestyle living increases land and subdivision value. Rural landowners are motivated by the potential profits and view subdividing as a rational choice. Additionally, external pressures such as the declining viability and increasing costs of the agricultural sector contribute to incentivising the supply of rural subdivisions. The demand for the residential use of rural land remains high despite the challenges in the agricultural industry. Furthermore, the ageing population in Central Otago sees landowners considering subdivision as a means to downsize and secure retirement funds. These factors collectively contribute to incentivising the supply of subdivided rural land in Central Otago, shaping the current trends observed in the district.

6.2.2. The Role of Neoliberalism in Driving Rural Subdivision in Central Otago

As discussed in the literature review, neoliberalism is the current basis for all economic activity, thus informing the observable drivers of rural subdivision in Central Otago. The hegemonic nature of neoliberalism as an economic ideology encompasses values and a worldview directly relevant to this research.

Opening New Zealand up to external market influences in the 1980s had a profound impact on the economy (Larner, 1997). A key characteristic of the neoliberal agenda is the promotion of a free-market economy, globalisation and international trade. Key attributes of the neoliberal agenda are apparent in the Central Otago context. Competition is encouraged between suppliers as incentive to lower the market equilibrium price of land, and ultimately improve outcomes for consumers who have options within the market to purchase land at the lowest possible price (Larner, 1997). This aligns with the neoliberal notion that the market will allocate resources more efficiently than the government. Applying this theory to the case study of Central Otago grounds the explanation of the current trends driving rural subdivision in a wider theoretical sense, allowing us to derive meaning from, and deepen an understanding of what has led to the issue at hand.

As well as an overarching economic and political framework, neoliberalism serves as the dominant social paradigm, placing the onus of achievement on the individual (Dardot & Laval, 2014). This materialises as an increased desire to generate wealth, own land, and achieve what society deems ‘successful’ within the neoliberal agenda (Bargh, 2007). These characteristics are evident in the Central Otago context, subconsciously guiding consumer demand, as well as suppliers looking to generate the largest profit margins possible for their businesses.

Arfken (2018) contemplates how neoliberalism infuses an idealistic worldview with an economic framework to create a model that encompasses a way of living broader than simply market attitudes. We can see this ideology transpire within the context of this research, as demand for rural lifestyle goes hand in hand with the neoliberal understanding of lifestyle and economic growth. Dardot et al. (2014) reinforces such observation, explaining how the hegemonic nature of neoliberalism has transformed the existential ‘norm’, thus reshaping an individual perception of self. The individual is viewed as an enterprise through which success is defined using a market-based set of values. In the case of rural subdivision in Central Otago, this ideological hierarchy of what constitutes ‘success’ in the neoliberal present has motivated those wanting to subdivide their land into smaller parcels and make a profit. As outlined in the above results section, the social drivers of rural subdivision in the district are hugely influential. Neoliberal theorists explain how these are largely tied to perceptions of worthwhileness in today’s society (Bargh, 2007; Cassell & Nelson, 2013). The ideological implications of this are discussed by Dardot and Laval (2014), who explore how most people aren’t aware of neoliberalism, what it is and the role it plays, as it has been entrenched in wider society for so long. It is unknowingly imbued in people’s thought processes and worldviews. The consequences of this are broad but subtle, feeding into demand for rural subdivision in Central Otago.

The idea of a rural subdivision in the first place, essentially commodifies nature for the purchase of consumers, which is a strong indication of the neoliberal influence. However, the results from the primary data collection vary as to what extent they explicitly embody traditional neoliberal ideals. Such ideals can be seen in the responses of KIs and survey respondents who don’t want the CODC to restrict their livelihoods. This idea was heavily portrayed by KI 7 who fulfils the characteristic of a desire for the reduction in the role and ambit of the state. Most informants did not directly refer to the implications of neoliberalism, as we cannot expect the average informant

to be aware of, and reflective of the paradigms under which they are operating. Despite this, neoliberal ideals were clearly visible within the responses of KIs 6 and 8, as they expressed a desire to grow their business and retain their land without the interference of the CODC.

The role of neoliberalism driving the ambitions of individuals to subdivide and sell their land, does not stop the free will of individuals within the wider framework. Interviews with KIs 5 and 7 illustrate the desires of landowners that are motivated beyond simply financial gain. The aspirations expressed by KI 7 appear to stem from a desire to pass the land they currently possess onto their children to be enjoyed and utilised in the future. Similarly, KI 5 implies that their employer retains their land for enjoyment purposes. These KIs represent a group that given the choice, would prioritise other values above financial gain, indicating that within the context of this research in Central Otago, the ideals of neoliberalism are not necessarily at the forefront of every person's decision-making process.

A study by Cadieux (2008) had similar findings within the context of Christchurch's urban fringe. This study describes a situation in which residents recognised that their values and priorities contradicted the potential economic gains that would come from subdivision. These study participants reflected on the irony of this, yet their positionality in regard to the encroachment of urban development remained adverse. Furthermore, participants in Cadieux's study explained their distaste towards the fact that "people [are] getting away with producing urban sprawl while others voluntarily sacrificed the market benefits of developing their land in order to assert a different set of values" (p. 187 & 188). Findings of a similar nature are portrayed within the context of Central Otago by KIs 5 and 7. KI 7's quote in Table 10 builds upon this, making the argument that the economic impacts of the urbanisation of rural land goes beyond incentivisation towards inevitability due to associated rates and other costs. These findings in Central Otago, and their alignment with Cadieux's study (2008) prove as examples that not all individuals are driven solely by economic gain.

To summarise, the findings show that the population and key stakeholders in Central Otago both reflect and contradict neoliberal ideologies within their respective interviews. Whilst the associated ideals are prominent throughout Central Otago driving an increased desire for rural subdivision, they are not necessarily always reflective of the positionality shown by significant stakeholders. As this discussion has shown, neoliberalism as a theory can explain the prominence

of rural subdivisions in Central Otago, yet it does not fully encompass every decision made and value held by KIs. The importance of other drivers that do not always align with the traditional neoliberal agenda should be recognised.

6.2.3. Political Facilitation

The results and discussion presented in this chapter show that the current trends of rural subdivision in Central Otago are clearly influenced by a large demand and incentives to supply. However, KIs and survey respondents highlight that the issues associated with the subdivision of rural land are enabled through existing political regulations. These political regulations, as identified by participants, consist of district plan rules largely associated with minimum allotment size. Identification of minimum allotment size as a political driver was an anticipated primary result. Minimum allotment size was described in Chapter 2, as many scholars suggest minimum allotment size is a key driver for increased rural subdivisions (Turney, 1997; Curran-Cournane et al., 2016; Gray & Millsap, 2020). The argument made by authors was reinforced by the survey respondent who believes the use of minimum allotment sizes in rural zones typically results in all subdivisions occurring at that level. Therefore, implying that smaller minimum allotment sizes will result in an increased number of rural subdivisions. Once again, this finding can be reinforced through the literature as historical findings from Curran-Cournane et al (2016) & Kininmonth (2000) indicated that as minimum allotment size decreased, the demand for rural subdivisions increased. Linking this finding back to the previous discussions on demand and supply, minimum allotment size therefore plays a key role in dictating the level of demand, and also providing for or limiting rural subdivision supply. Hence, the political controls such as minimum allotment size are acting more as a tool for enabling and facilitating rural subdivision, as opposed to specifically driving the demand.

6.3. Summary

The primary findings presented in this chapter seek to fulfill Research Objective 1. The following discussion of said findings extrapolates upon key themes raised by KIs and survey respondents, highlighting the social, economic, environmental and political drivers of rural subdivision in Central Otago. Supply and demand are the main catalysts as there are financial gains to be made with the future expected migration and population increase within the district. The second half of

this research objective will be answered in the next chapter as these drivers can result in consequences.

7. Consequences – Results and Discussion

The previous chapter established the factors driving the ongoing trends of rural subdivision in Central Otago. While acknowledging that subdivisions themselves are not inherently negative or unsuitable, it emphasised that existing policies, rules, and regulations are enabling subdivisions to occur in a manner that has ramifications for the district. This chapter will explore those ramifications. The key findings from KI interviews and survey responses will be presented first, categorised into social, economic, and environmental subsets. These will then be discussed in a broader, more holistic manner, analysing how these consequences are intertwined with each other and the aforementioned drivers. The discussion will also explore how existing literature and theoretical ideas can help to make sense of the current situation in Central Otago.

7.1. Social Consequences

The key social consequences of the current and ongoing trends of rural subdivision highlighted within the primary research include reverse sensitivity effects, decreased urban amenity value and changing land uses.

7.1.1. Reverse sensitivity

Reverse sensitivity effects are some of the most recurring social consequences mentioned throughout the interview and survey responses. Reverse sensitivity effects occur two-fold with both productive land users and those who have moved rurally to enjoy a rural lifestyle.

The KIs described how reverse sensitivity effects impact those who use their land productively. The general consensus from these stakeholders is one that describes how people moving into rural lifestyle blocks do not understand the noises, smells and general disruptions which come from agricultural work. Because of this, such people complain and make it harder for productive land users to continue using their land in the same manner. Several comments from the interviews express this view. These are expressed in Table 13.

Table 13: Interview quotes related to reverse sensitivity effects.

Key Informant	Quote
KI 4	<i>(The demand for lifestyle blocks) “brings in lots of reverse sensitivity problems. You get people coming in and then you’ve got bird scaring guns, big structures being built, helicopters, or fog cannons and suddenly these people are really unhappy”.</i>
KI 7	<i>“Most people think it would be lovely to love out amongst the vines, but the reality is that I’m on the tractor for like eight hours on a Thursday or something, the neighbours don’t particularly like that”.</i>
KI 6	<i>“...there’s been quite a few lessons to industry or to individuals as well about the importance of social licence, and, you know, in maintaining those relationships with, with your neighbours and stuff as well.”</i>
KI 5	<i>“It has impacted hugely because you’ve got town people coming to the rural area and they are trying to limit what we do. What we’ve been doing for years, like cherry guns. You know like people writing on the back of your door. We’ve got a few formal complaints for shooting in the cherries.”</i>
KI 9	<i>“We’ve got all these neighbouring block... They grizzle at us because we’ve got windmills, we’ve got frost fans. We’ve got problems. You know about the reverse sensitivity. We fit within the district plan as far as noise generation goes, and all that, and yet, there’s pressure on us”.</i>
KI 9	<i>“I don’t mind that bailing machine going around middle of the night making noise. It’s fine. Primary Industry is industry. Industry makes noise and smells. And it’s called primary industry for a reason. I think people, they move into the rural sector thinking it’s all Dreamland and sweet and quiet and that nothing happens”.</i>
KI 8	

“That’s when those reverse sensitivity issues really come into play because that is an issue. Most growers round here just try to keep their heads down because they are within their rights but may well change. So, I think there is a bit of a clash.”

These quotes collectively underscore some of the social consequences of rural subdivisions in Central Otago upon productive land users. They illustrate the conflicts arising from differing expectations, lifestyles, and land uses between the existing agricultural community and lifestyle-oriented newcomers. The issues of reverse sensitivity, noise complaints, and clashes between traditional practices and the desires of lifestyle residents are evident, pointing to the fragmentation and strained relationships within the community. On the opposite end of the argument, multiple survey respondents discussed how they were impacted by those using land productively, blaming land users rather than those moving into the rural setting. These comments are expressed in Figure 8.

Q. What do you least enjoy about the rural environment?

A. “Noisy wind machines and the council’s lack of responsibility to ensure national and local noise limits aren’t being breached”.

“Any user of land should me [sic] made to not disrupt anybody else from their boundary such as noise. Loose rules about frost fans means neighbouring land [is] devalued because of the installation due to noise disruption and new builds having to increase noise insulation”.

Figure 8: Survey respondent quotes related to reverse sensitivity effects

The quotes presented in Figure 8 highlight that there are conflicting perspectives and concerns between the agricultural community and those who live rurally for lifestyle purposes. Essentially what is evident from both ends of the argument is that noise disruption is a significant issue which effects those who are not using their land for productive purposes, which then gets reflected back onto those using land productively, resulting in reverse sensitivity effects for both groups.

The general consensus from the KI quotes was one that would arguably contend that rural subdivision negatively impacts the social fabric of their community. Despite this, the survey with the general public portrays the opposite message (see Figure 9).

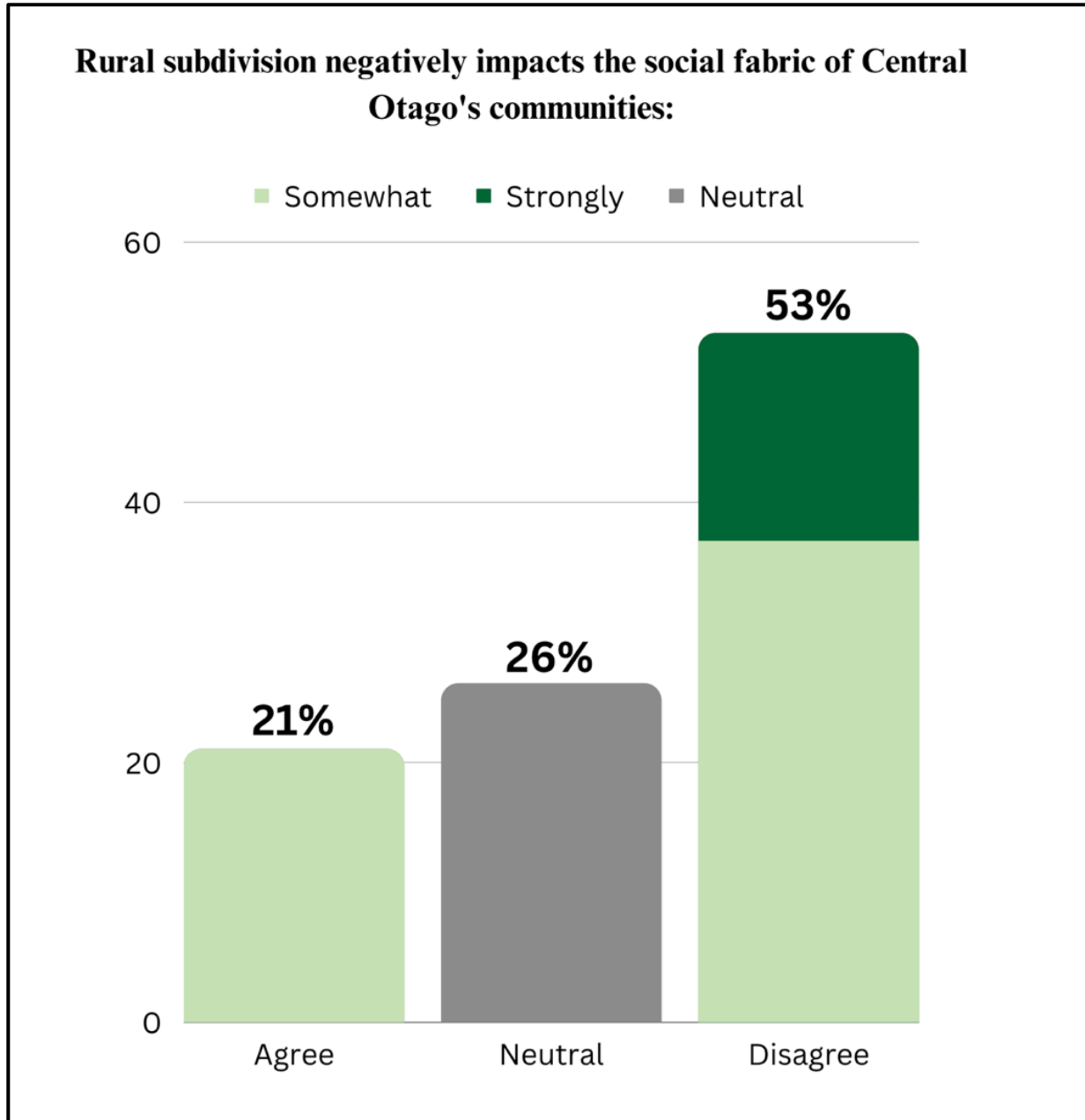


Figure 9: Survey respondent level of agreement/ disagreement with the statement: Rural subdivision negatively impacts the social fabric of Central Otago's communities

As illustrated in Figure 9, 53 per cent of the general public who took part in the survey indicated that rural subdivision does not negatively impact the social fabric of Central Otago’s communities. Additionally, 16 per cent of people strongly disagreed with the aforementioned statement, whilst 37 per cent somewhat disagreed. Conversely, 0 per cent strongly agreed with that statement and 21 per cent somewhat agreed, while 26 per cent of respondents felt neutral. What this portrays, when considered in relation to the quotes from Table 13 and Figure 9, is that there is a disconnect between the KI’s and the public when it comes to reverse sensitivity issues in the Central Otago district.

7.1.2. Amenity values

Another significant social consequence which is highlighted within the primary findings is that rural subdivisions have implications on rural amenity value. This perspective is captured in the following quote from KI 9;

“So you know that the horse is bolted in so many places and we talk about night sky and all that, you used to drive out here, so we’ve been here for seven years, and you’d used to drive out the gate and there was no lights, not one. We drive out there now and it’s just lights and lights and lights all round. And that whole night sky thing is gone.”

Other aspects of rural amenity beyond those which impact the night sky are highlighted by several survey respondents (see Figure 10).



Figure 10: Survey respondent quotes related to amenity value impacts

Despite this shared consensus, others, such as KI 1, argue that the council has done well to plan for subdivision and hide any impacts that such developments might have on rural amenity;

“I think that the council has done a really good job, you drive past Queensberry from the state highway and you can barely see that anybody's up there because the houses have all been appropriately planned and you know, the exterior colours and the roof colours, they're all very recessive in the landscape that they are in and it works fantastically. It's not until you actually get up there that you see all the houses. So from a wider perspective it really does fit quite nicely in that area.” (KI 1)

This contradictory statement highlights that people have mixed perspectives regarding the impact that rural subdivisions have on rural amenity values. These mixed perspectives are captured in the survey responses (see Figure 11).

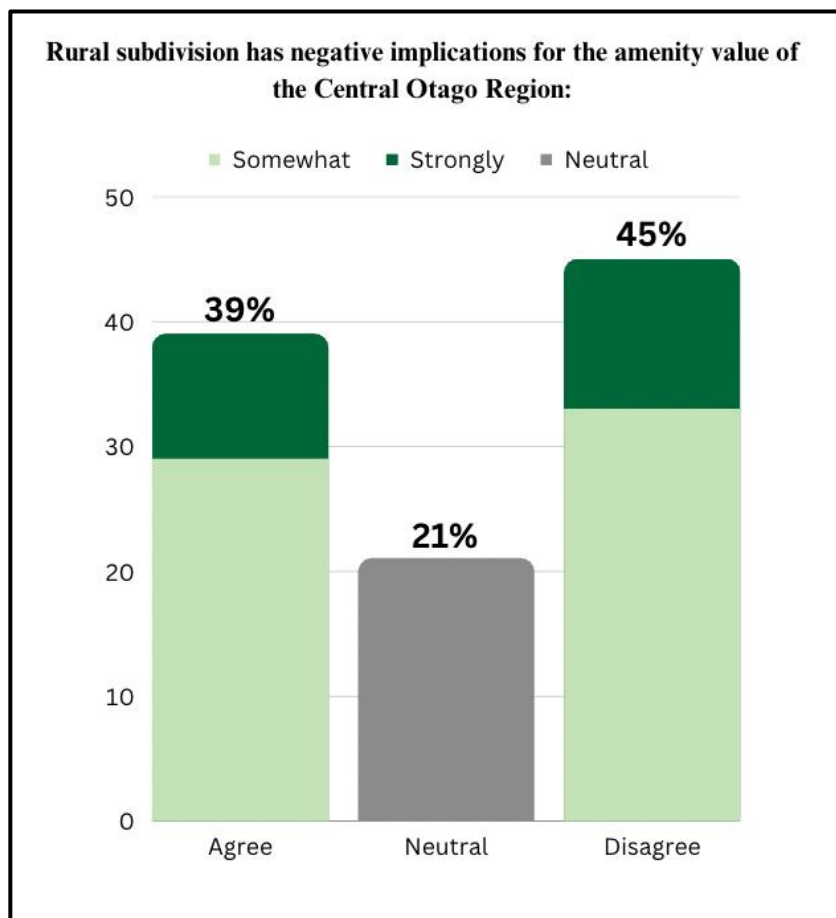


Figure 11: Survey respondent level of agreement/ disagreement with the statement: Rural subdivision has negative implications for the amenity value of the Central Otago Region

As depicted in Figure 11 there is a fairly even spread between people who think that rural subdivisions have a negative impact on the amenity value of the district and those who think the opposite. Figure 11 shows that 39 per cent of the respondents agreed that rural subdivisions have negative implications for the amenity value of the district. This 39 per cent is made up of 29 per cent of people somewhat agreeing and 10 per cent strongly agreeing. Conversely, 45 per cent of respondents felt that rural subdivisions do not have negative implications for the amenity value of the district, with 33 per cent somewhat disagreeing and 12 per cent strongly disagreeing with the aforementioned statement. Finally, 21 per cent of respondents remained neutral. This survey response confirms what was alluded to in the interviews. This being that stakeholders have mixed views regarding the impact of rural subdivisions on the amenity value of the district.

7.1.3. The social impacts of changing land use

The final social consequences highlighted in the primary findings are the various impacts of changing land-uses and zoning. KIs highlight a diverse variety of implications coming from changing land uses, ranging from the inability to continue family-run businesses, to the lack of infrastructure needed to support increasing rural populations.

A recurring perspective is that with the expansion of urban areas through two-hectare subdivisions, the ability to retain family-run businesses into the future is becoming less likely (see Figure 12).



Figure 12: Key informant quotes related to the impact of rural subdivisions on the plausibility of retaining rural land for future generations.

This perspective is similarly held by one of the survey respondents who states:

“If residential keeps on growing out into rural, it is not only the land taken up by residential which is impacted but the surrounding land. It’ll no longer be feasible to productively use land when surrounded by residential areas.”

The general idea that comes from these quotes is that the sprawl of rural lifestyle properties makes it less plausible to continue in the agricultural sector. Factors such as reverse sensitivity (KI 7) and economic incentives (KI 5), which come with the sprawl, are making it harder to continue working the land productively.

KI 7 expands on their perspective regarding this, discussing the impact that changing zones will have. They state that at a two-hectare size, it is still possible to continue their agricultural business, although this will be difficult. However, if their land is to be zoned urban (as is currently proposed), this *“means [their] valuations are going to go through the roof, and [their] rates are going to go through the roof, and [they] will be forced to sell and not continue with the vineyard...”* When prompted whether there is a possible way forward in setting up the vineyard somewhere else KI 7 responds:

“It has taken us 25 years to get to this point, you know, we have invested 25 years in what we’ve done because we started out with two old orchards and pulled out all the fruit trees and transferred it over to a vineyard. And I don’t have the energy to do that again. That’s a younger person’s (job). Yeah, it’s a huge amount of work. So yeah, just leave me alone.”

KI 7’s vineyard is located roughly one kilometre from the nearest urban zone. This shows not only the consequences of the current trends of rural subdivision, but also the consequences which could come from rezoning, which is a potential strategy to reduce urban sprawl and land fragmentation.

Other KIs discussed the consequences of changing land use on infrastructure, expanding upon how this impacted them. Under this theme, there are two groups. One welcomes the subdivision of rural land as it comes with better services, and the other argues that such development strains existing infrastructure and services. One survey respondent states that they *“...welcome subdivision as [sic] will mean better services available such as fibre.”* This perspective is shared with another survey respondent who similarly states that *“surrounding subdivisions similar to mine have brought with*

them better services for me”. Other survey respondents portray the stresses that increased subdivisions put on important infrastructure and services (see Figure 13).

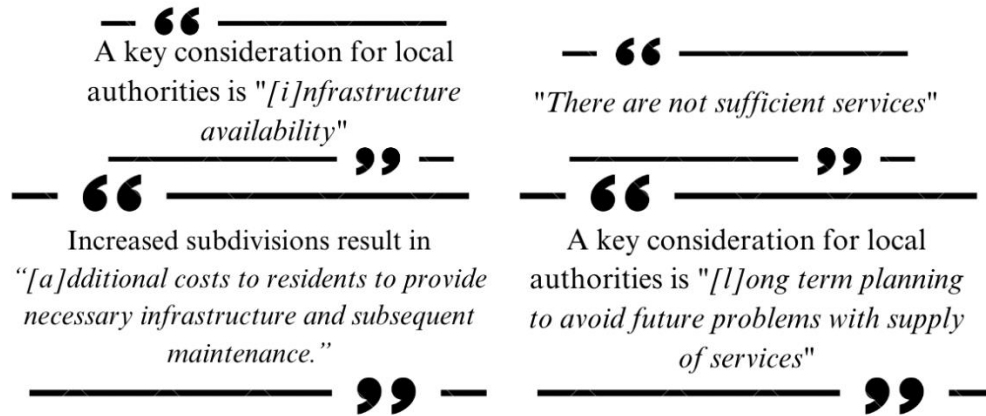


Figure 13: Survey responses related to the stress that increasing subdivisions put on infrastructure and services.

KI 7 also expressed a similar perspective related to the stresses that rural subdivisions put on existing infrastructure and services. They stated that:

“A minimum lot size of 2000 square meters means that everyone has to be on the council's wastewater scheme. The Regional Council put out a report on septic tanks and basically and said that the minimum lot size in rural areas should be 3000 square metres so that there's not nitrate enrichment of groundwater and contamination of groundwater [...] Because there's high-value groundwater under here, all of the houses you see in front of you are all reliant on groundwater as their drinking water source. So, we're not connected to the council's water supply”.

The survey responses indicate that the subdivisions that are occurring, most of which are two hectares, are putting stress on existing infrastructure and services. They stress that this is a significant consequence of rural subdivisions and that this should be a key consideration for the district council going into the future. KI 7 builds upon this, discussing the stress that a smaller minimum allotment size puts on wastewater management, and groundwater quality, outlining that

if a minimum allotment size of less than 3,000 square metres is adopted, all subdivisions must be attached to the council’s wastewater scheme.

Despite the recognition of the aforementioned consequences across both the survey and the interviews, the general public does not consider that the subdivision of rural land in Central Otago is happening too quickly (see Figure 14).

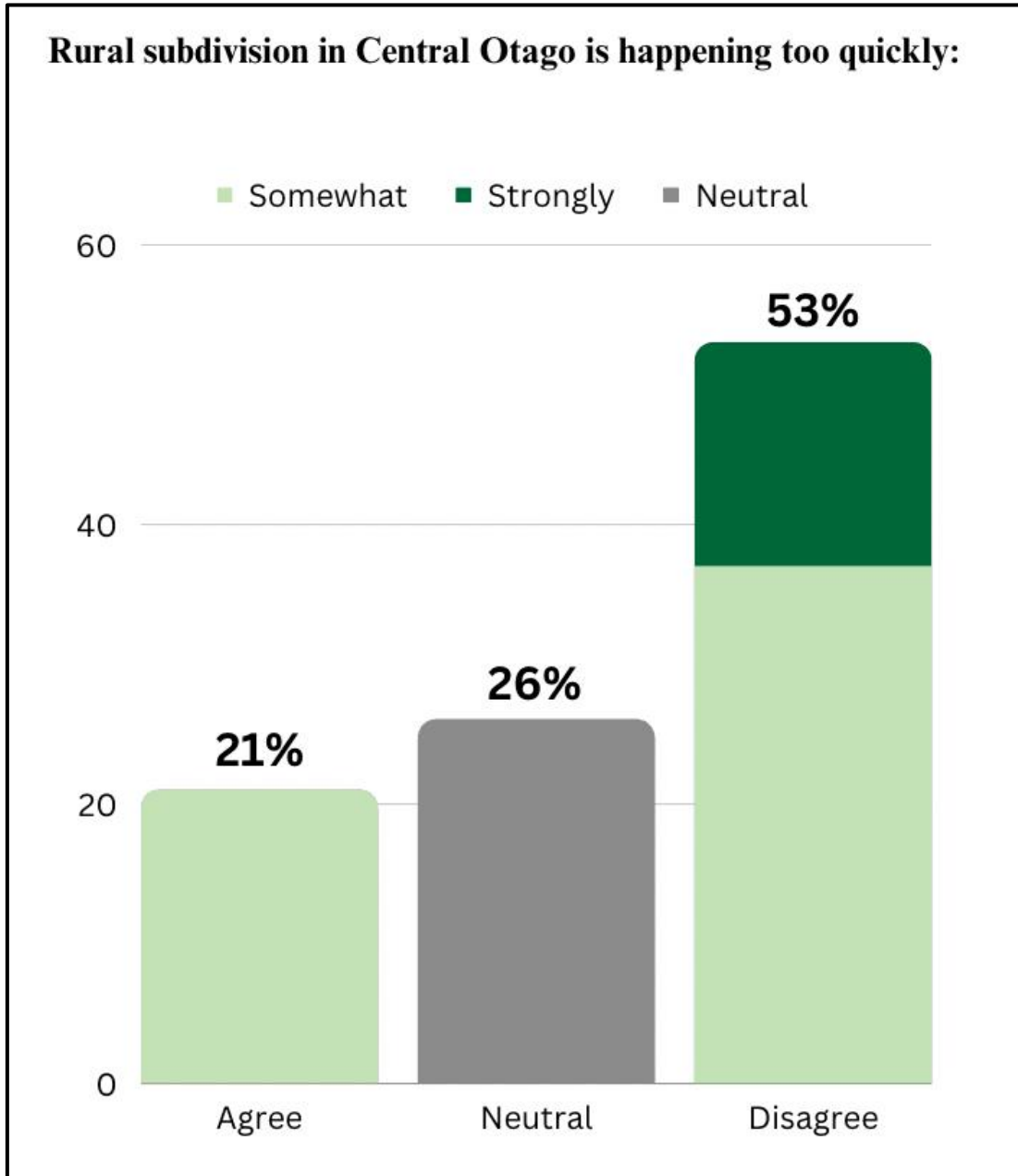


Figure 14: Survey respondent level of agreement/ disagreement with the statement: Rural subdivision in Central Otago is happening too quickly

As depicted in Figure 14, 53 per cent of the survey participants feel that rural subdivisions are not happening too quickly. 16 per cent of respondents felt strongly about their disagreement with the aforementioned statement and 37 per cent somewhat disagreed. Alternatively, just 21 per cent of the respondents thought that the subdivision of rural land is happening too quickly, with all of these people registering that they somewhat agree with this statement and no one registering a strong agreement. Additionally, 26 per cent of the respondents remained neutral. When considered in relation to the survey and KI quotes, the response to this survey question indicates that although people are aware of the stresses that increased subdivision puts on infrastructure and services, they consider that the current trends are not occurring at a rate which is of significant concern. This puts the perspectives of many of the quotes in the future tense, highlighting the potential consequences that subdivisions might have on services and infrastructure if they continue to become more common. Also, in relation to the social implications of the changing land use associated with the subdivision of rural land, several KIs expressed their general perspectives on the matter.

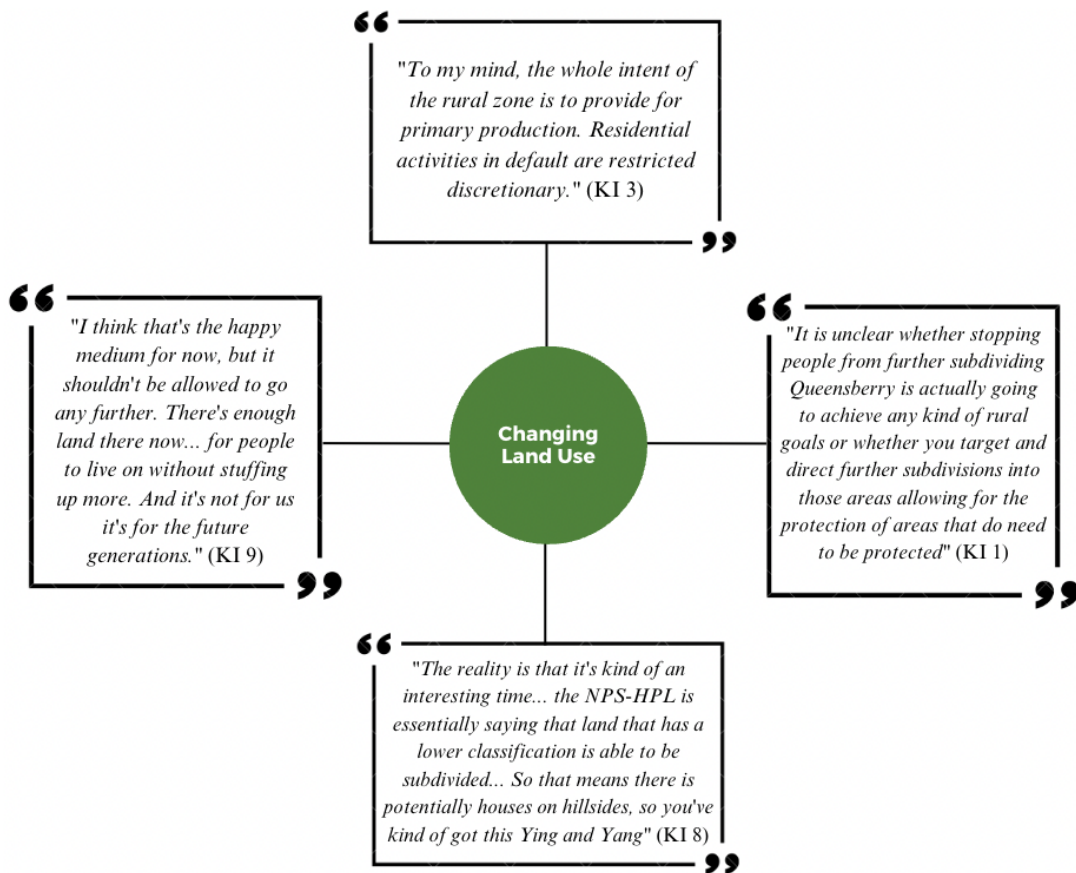


Figure 15: The general perceptions on land use changes associated with rural subdivision

The general ideas which come from these quotes are that the planners and agriculturalists who state them accept the transition of land from rural to residential which has occurred. However, there is an understanding that any further changes from rural to residential would likely have further ramifications, highlighting that the amount of land that has been opened up is sufficient going into the future, and that no more land should be taken up for residential purposes.

7.2. Economic Consequences

The key economic consequences of the current and ongoing trends of rural subdivision highlighted within the primary research are based on the current minimum allotment size. This section will discuss the results related to minimum allotment size and productivity, practicality, and affordability, before presenting the general public’s perception of the role that rural subdivisions play in the district's economy.

7.2.1. Two hectares and productivity

Across the KI interviews, there was a recurring perspective that the current two-hectare minimum allotment size is too small to be used in a productive manner. This was expressed in a multitude of interview responses (see Table 14).

Table 14: Interview quotes related to the minimum allotment size and productivity potential

Key Informant	Quote
KI 6	<p><i>“If you're going to do a subdivision and guys are making these blocks two hectares because that's the minimum that they can, but actually no one really enjoys two hectares of land. two hectares is old, you know, I don't know when it when it goes back to, but the idea of a two-hectare block was it was still economic, well it's not anymore.”</i></p>
KI 9	<p><i>“Whereas most operations today, you wouldn't do anything under 20 hectares, you either gonna do something small, or gonna jump on 20 hectares. And that was the story. You show me your 14 hectare block of productivity somewhere. It sits in between but it's not efficient.”</i></p>

KI 1	<p><i>“So obviously, there's a huge demand for lifestyle and kind of rural residential living in Central Otago, you can see that around Queensberry, there's been quite a lot of subdivisions. I don't think anybody would define that area anymore as rural. Definitely not productive rural have any, any kind. So that's, it's happening now even without the zoning that would better support that kind of subdivision.”</i></p>
KI 7	<p style="text-align: center;">Question:</p> <p>You have 8 hectares here for your vineyard, how small do you think you could go while still being productive or economically sustainable?</p> <p style="text-align: center;">Answer:</p> <p><i>“Well, I think this is pretty much the limit, you wouldn't want to go below this, you know, I mean, it's not a big money earner.”</i></p>
KI 4	<p><i>“Two hectares doesn't really work for productivity... I would like to see rural residential at half a hectare”</i></p>
KI 8	<p><i>“If you had two hectares of cherries planted, it's probably worth about 350 a hectare, that's land and development, not in an intensive zone. So it's probably about 350 – 400,000 to put in all the stuff, that irrigation, management, posts, wires, nets, trees. So on 2 hectares would you do it? That's a lot of capital, probably not.”</i></p>
KI 5	<p style="text-align: center;">Question:</p> <p>What would you think would be the smallest size you could go and remain economically viable?</p> <p style="text-align: center;">Answer:</p> <p><i>“I reckon it would be 5 hectares. Something like that to make a living.”</i></p>

From these quotes, it is noticeable that key stakeholders have differing opinions regarding the minimum allotment size required to be productive or economically viable. KI 9 argues that you need around 20 hectares to be economically viable, whilst KIs 7 and 5 argued that it is possible to

be productive on 8 and 5 hectares respectively. Despite these differing opinions on how small a section can be whilst still being productive, all of the KIs presented in Table 14 agree that two hectares is too small to be productive or economically viable.

Despite the recognition that two hectares is not enough land to be economically viable (expressed in Table 14) KIs 3 and 8 discuss the significance that the ability to subdivide down to this size has in offering capital to invest into the land which is retained. KI 3 gives an example of this stating;

“We’ve got an example when a farmer wants to plant a large part of his land but he does not have money so he can take this 2–3-hectare block, subdivide it and get money to invest in his farm. So, we need to consider whether cutting small pieces of land will have an impact on the productivity.”

What this shows is that despite two hectares not being a productive or viable size, the ability to subdivide and sell land at this smaller size enables people to invest in their land, ultimately leading to an increase in productivity on the land which is retained.

7.2.2. Two Hectares and Practicality

The previous sub-section has established that two hectares is not a productive size, however, another key finding from the primary data is that this size is also impractical for lifestyle use. Across both the interviews and survey responses, there is unanimity that two hectares is a large amount of land to be used for lifestyle purposes. The comments related to this are captured in Table 15.

Table 15: Survey and interview quotes related to two hectares being too large for rural residential purposes

Key Informant	Quote
KI 6	<i>“I don’t want two hectares; I just want somewhere to put my house... I don’t need two hectares.”</i>
Survey Respondent	<i>“The current minimum allotment size is far too big for lifestyle purposes, far too big for most people.”</i>

KI 8	<i>“Not everyone wants a large lot... They've come to realise that they don't need two hectares... you put plans in place to keep the size large, where it shouldn't be”.</i>
KI 9	<p style="text-align: center;">Question:</p> <p style="text-align: center;">“Yeah. So, where it's appropriate then maybe that lot size should be a bit smaller.”</p> <p style="text-align: center;">Answer:</p> <p style="text-align: center;">“Yes”</p>

What these quotes show is that there is a general understanding that two hectares is a lot of land for a lifestyle property. KI 6 outlines their personal experience when subdividing, stating that they do not need two hectares because they just want somewhere to put their house. This perspective is supported by KI 8 who recalls knowing people who have purchased a two-hectare allotment due to availability but have come to realise that they do not need that much land. The survey respondent outlines how the current minimum allotment size is too big for lifestyle purposes and KI 9 believes that the allotment size should be smaller.

7.2.3. Two Hectares and Affordability

In addition to the aforementioned issues with the two-hectare allotment size, another aspect which needs consideration is the implications that such a size has on the affordability of the properties.

KI 7 goes into detail about this, outlining that even at a smaller minimum size of 2000 square metres (0.2 hectares), affordable housing is still not provided. KI 7 states;

“By adopting the standard of 2,000 square metres for this extension of the urban zone, there's no way that's going to be affordable housing, those blocks will be probably half a million dollars or more...it's elitism, it really is. The land component is expensive, the houses are going to be expensive, it's going to mean the gentrification of the town. You're going to have retired people and rich people; poor people won't be able to afford to live here.”

KI 8 also touches on this factor, stating that with the minimum allotment size and towns reaching development capacity, *“suddenly then you have people who can't afford to live here because the*

sections are too big and too expensive”. These statements highlight the consequences of large minimum allotments in contributing to economically biased inequities regarding access to housing in Central Otago. The quote from KI 7, although referring to a minimum allotment size of 2,000 square metres, can be interpreted with applicability to the current minimum allotment size for rural areas of two hectares. If an allotment of 2,000 square metres is not affordable, then it can be interpreted that a section sized at two hectares would be valued even further from an ‘affordable’ figure.

7.2.4. Rural Subdivisions and the Central Otago Economy

Despite the recognised economic issues that are associated with rural subdivision in Central Otago, the general public consider that, on a broader scale, such subdivisions are good for the district’s economy (see Figure 16).

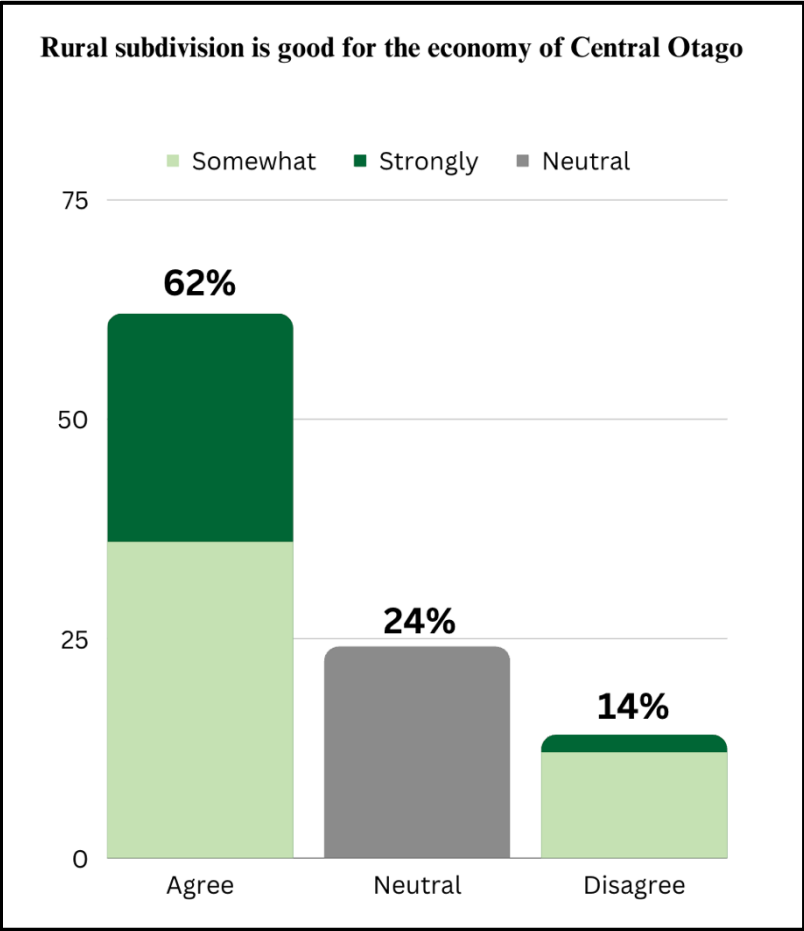


Figure 16: Survey respondent level of agreement/ disagreement with the statement: Rural subdivision is good for the economy of Central Otago

Figure 16 indicates the distribution of opinions regarding the economic benefits of rural subdivision among the surveyed participants. The majority, 62 per cent, believe that rural subdivision is beneficial for the economy. Within this majority, 26 per cent strongly agree, while 36 per cent hold a more moderate level of agreement. On the other hand, a smaller proportion, 12 per cent, express a slight disagreement, and only 2 per cent strongly disagree with the idea that rural subdivision is good for the economy. 24 per cent of the survey participants remained neutral with regard to this statement. The findings from this question are interesting and indicate that the general public sees subdivision as an economic positive for the district.

In support of this perspective, multiple quotations from the surveys explain the rationale behind the economic positives which come from enabling the subdivision of rural land. These are expressed in Figure 17.

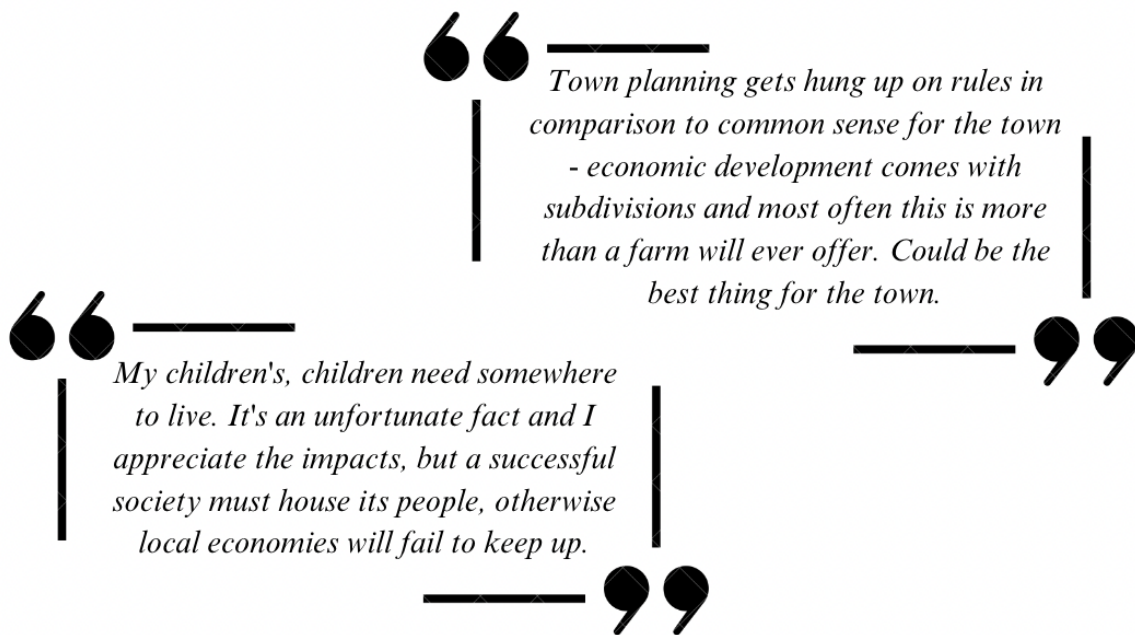


Figure 17: Survey respondent quotes related to the relationship between rural subdivision and the district's economy

These quotes show that there is a perspective, from the general public, that the local economy is reliant on subdivisions due to the need to open up more housing. The arguments put forth are rooted in the belief that expanding populations contribute to economic growth and development, surpassing the economic benefits provided by farms. Subdivisions are a requirement to house expanding populations, and therefore fuel the local economy.

7.3. Environmental Consequences

The key environmental consequence of the current and ongoing trends of rural subdivision highlighted within the primary research is the associated loss of valuable land. This consequence is highlighted throughout the survey and the interviews. Various quotes related to this consequence are displayed in Figure 18.

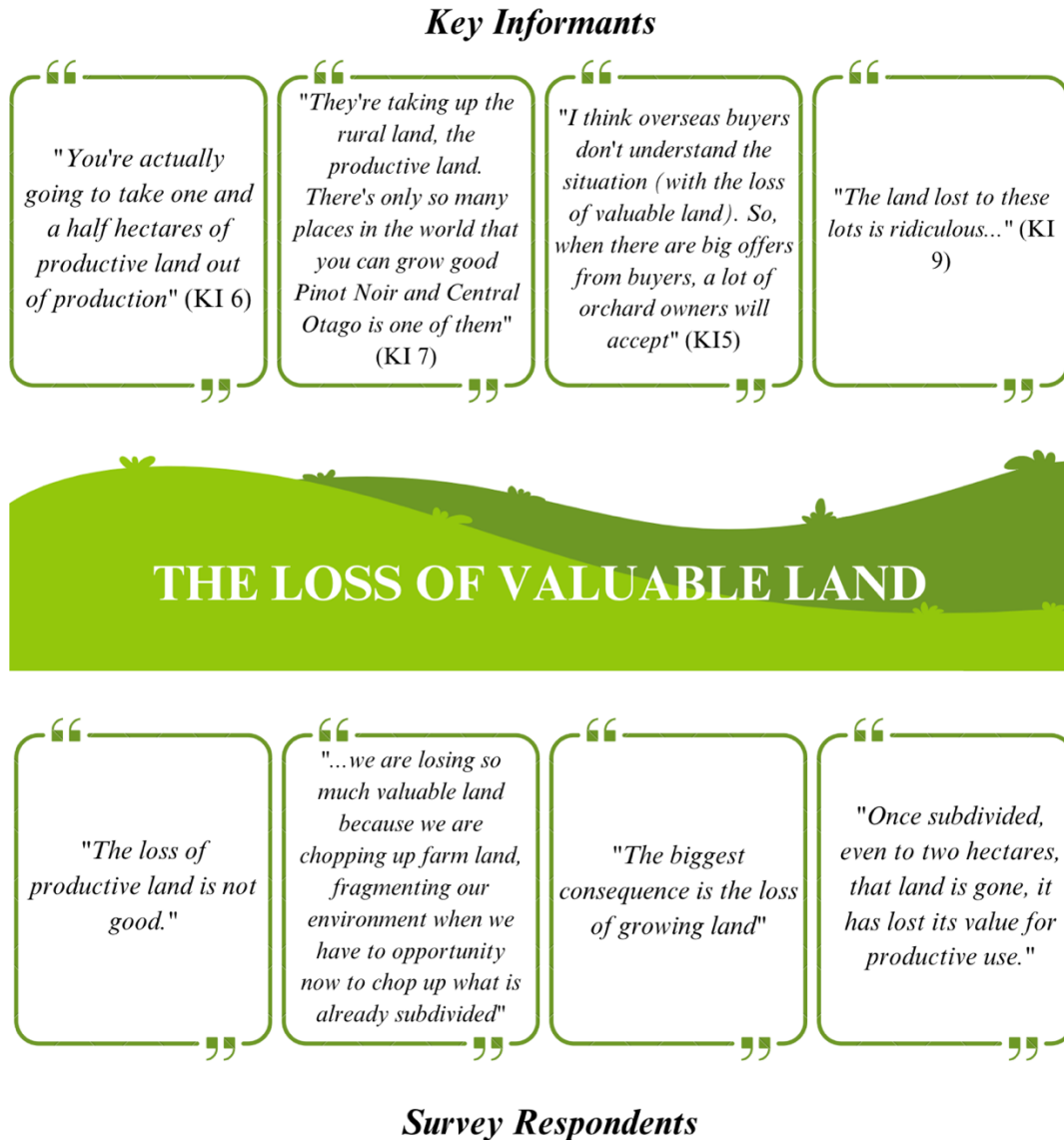


Figure 18: Interview and survey quotes related to the loss of valuable land associated with rural subdivision

There are clear concerns amongst both the KIs and the survey respondents related to the loss of land which comes from the subdivision of rural land. These concerns specifically relate to rural land transitioning into residential land through subdivisions. KIs discuss the fact that subdivided land is being taken out of production, calling this “ridiculous” (KI 9), and stressing how significant the land which is being lost is for uses such as growing grapes for “good Pinot Noir” (KI 7). The survey respondents highlight that the loss of productive land is one of the biggest consequences, that two-hectare allotments cause the loss of a significant amount of land per subdivision, and that such land loss is leading to land fragmentation.

The survey results further underscored the significance of safeguarding agricultural land, as the majority of respondents expressed the importance of its preservation and its prioritisation over the development of residential and commercial areas (see Figure 19).

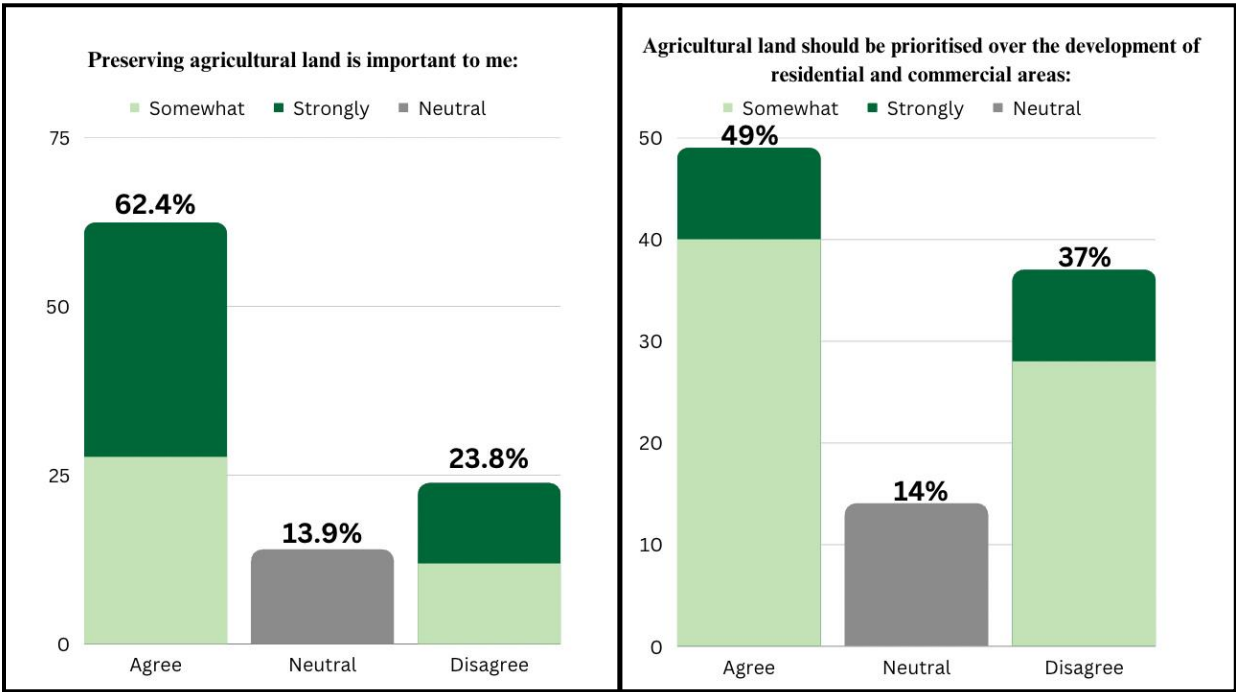


Figure 19: Survey respondent level of agreement/ disagreement with the following two statements: Preserving agricultural land is important to me and agricultural land should be prioritised over the development of residential and commercial areas

Figure 19 indicate the distribution of opinions regarding the importance of preserving and prioritising agricultural land among the survey participants. 62.4 per cent of participants registered that preserving agricultural land is important to them, far more than the 23.8 per cent who registered the opposite. Interestingly, however, just 49 per cent of respondents thought that agricultural land should be prioritised over the development of residential and commercial areas. Because the percentage of people who registered a neutral response across each question remained almost constant, this infers that approximately 13 per cent of the survey respondents felt that it is important to preserve agricultural land, but not to the extent where it should be prioritised over the development of residential and commercial areas. Despite this, the majority, 49 per cent, registered that agricultural land should be prioritised over urban land uses whilst just 37 per cent felt the opposite way. These responses highlight that the general public of Central Otago tends to recognise

the importance of agricultural land in the district. Survey respondents were also asked to state whether they thought that rural subdivisions have negative environmental impacts, and the responses yielded a more contentious outcome (see Figure 20).

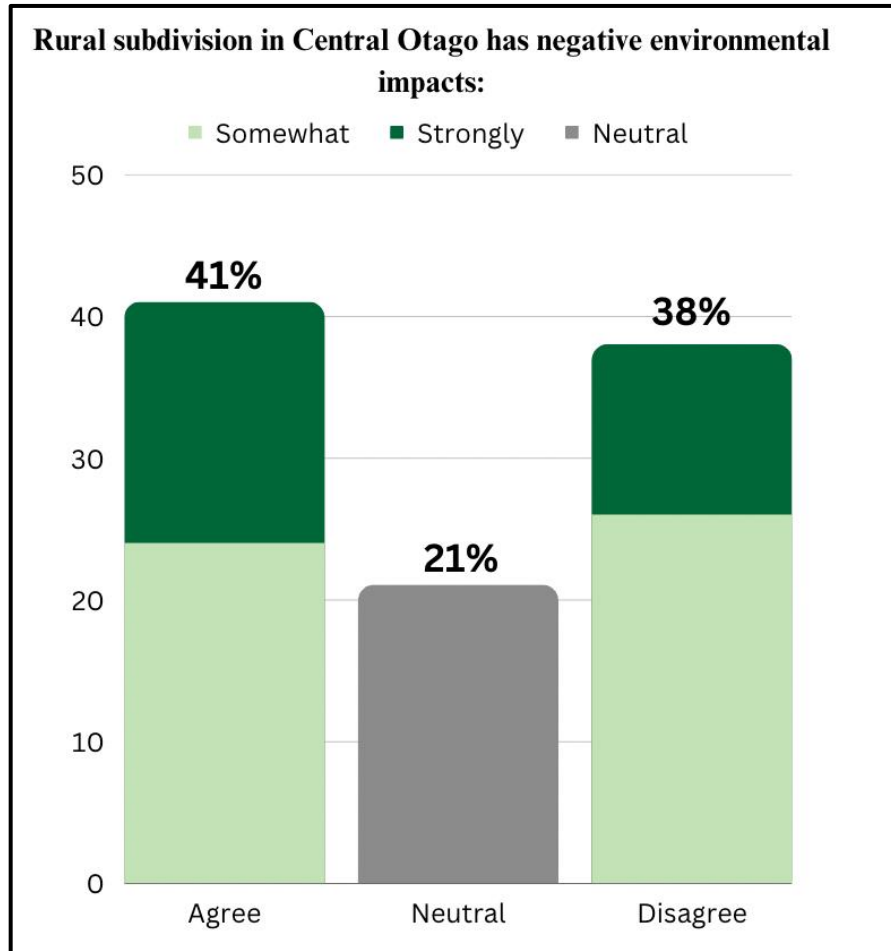


Figure 20: Survey respondent level of agreement/ disagreement with the statement: Rural subdivision in Central Otago has negative environmental impacts.

Figure 20 reveals a relatively balanced distribution of opinions regarding the statement, “rural subdivision in Central Otago has negative environmental impacts.” The survey responses showcase a close split, with 41 per cent of respondents expressing agreement and 38 per cent expressing disagreement. Among those who agreed, 17 per cent strongly agreed and 24 per cent somewhat agreed, whereas among those who disagreed, 12 per cent strongly disagreed and 26 per cent somewhat disagreed. 21 per cent of respondents remained neutral with regard to the aforementioned statement. This data reflects a lack of consensus among Central Otago’s general public regarding the environmental consequences of rural subdivisions in the district.

While the question of whether rural subdivisions in Central Otago have negative environmental impacts remains a subject of contention among the survey respondents. The KI quotes, survey quotes, and additional survey responses shed light on the substantial adverse environmental consequences associated with rural subdivision in the district. The implications primarily revolve around changing land use, but other factors, albeit less prominent, are also highlighted, such as the impact on pest management. One KI stated that “if you are not able to use these lots productively, a hectare is a lot of rabbits”, whilst a survey respondent commented that there are “big problems with pest control” with regard to rural subdivisions in the district. What these quotes allude to is that underutilised subdivisions can lead to an increase in rabbit and pest populations, indicating that potential ecological imbalances and challenges managing pests are also environmental consequences related to rural subdivision in Central Otago.

7.4. Discussion

The primary research findings shed light on various consequences related to the existing patterns of rural subdivision in Central Otago. These consequences can be separated into disadvantages and advantages which has been done so for the purpose of this discussion.

7.4.1. Disadvantages

The interpretation of the primary research has elicited several key consequences of current rural subdivision trends in Central Otago, as well as highlighting the potential externalities of a change in minimum allotment size. The ensuing discussion will firstly analyse the disadvantages of rural subdivision at a residential scale, calling attention to the issues of reverse sensitivity, impacted rural amenity and changing land use. Following this, the disadvantageous consequences of rural subdivision will be underscored at a larger district level. A discussion of the disadvantages to the district council, namely the mitigation of stakeholder conflicts, will round out this section.

7.4.1.1. Residential / Business Owners

The consequences of rural subdivision traverse residential, district and national scales (Cadieux, 2008). At a residential level, the disadvantages of current observable trends of rural subdivision within the district are largely social in nature. Despite the social draw that several KIs emphasised

as critical to driving their desire to live rurally, those same informants highlighted the corresponding negative consequences associated with rural living (KIs 4,5,6,7). Residential development within the peri-urban zone was highlighted throughout this research as a key contributor to the restructuring of rural localities, inciting subsequent disadvantages for landowners.

Issues of reverse sensitivity were positioned by KIs at the forefront of the primary results, with the majority citing the occurrence as highly adverse. As surmised in the Literature Review, reverse sensitivity occurs as a direct consequence of counter-urban migration (Stockdale, 2006), when various parties occupying the same space impede upon what the other perceives as the 'function' of, or 'rationale' for living in rural areas. The externalities of agricultural business production negatively impact those living rurally for lifestyle purposes, taking the form of loud noises, unfavourable smells and visual blemishes on the landscape. Consequently, complaints are made from those residents, often resulting in the imposing of restrictions on disruptive activities. Andrew and Dymond's (2013) research suggests that the cyclical nature of reverse sensitivity is an impediment to both parties, heightened by an increase in rural subdivision. Their argument is attested to in this research's primary findings, as interviews with KIs 5 and 7 drew clear connections between the disruption of rural residents' perceived amenity value via agricultural activity, and the (at times) turbulent disposition of the rural locality. Hu et al. (2022) reiterates our findings within Central Otago, arguing that the changing standards for farmers in the peri-urban zone creates significant stress for agri-business owners. Their study conferred with the views of KIs, that living alongside rural residential properties subjects the farmers to demand for improved animal welfare and lessened commercial externalities (e.g. frost fighting fans, loud machinery, etc). Farmers within Central Otago are therefore forced to reshape their systems of production to work alongside a deregulated planning system and within a reconstructed urban fringe.

The disadvantages outlined by the primary findings for residents, pose a question of worthwhileness for those looking to reside rurally. As evidenced by the primary findings, the decision of whether to live on rural land despite the disadvantages, appears to come down to an individual choice of what each resident values most. An opportunity cost will be incurred, and as raised by various survey respondents, a decision to live rurally will inevitably be accompanied by associated disadvantages.

Implications for agricultural livelihoods were one of the more prominent consequences of rural subdivision throughout this research. A loss of land for agricultural purposes, and the negative impact this has on the industry and livelihoods of those for whom agriculture is a main source of income (Turney 1997, Andrew & Dymond, 2013), was recurrent throughout KIs 5, 6 and 7 interviews and Survey Responses. Changing land use at the urban edge to accommodate increased migration to the district, while advantageous to some (at a residential level), is highly adverse to others. The construction of the urban edge is sorely contested, with urban planners asserting the value of the preservation of greenspace adjacent to the city (Hall et al., 1973). Various scholars reiterate this argument, maintaining the notion that parks within the urban fence cannot fulfil the same purpose of the open countryside to the average urban dweller (Abercrombie, 1944; Cadieux, 2008). In the case of Central Otago, the rural amenity value provided by the greenspaces and vast expanses of natural environment are fundamental to the district's character (KI 4). By minimising the rural subdivision lot size, the urban edge is opened to the potential for significantly increased residential development. Memon (2002) argues this transition will result in the conversion of once agricultural land, into residential land, instigating controversy and concern at local, district and national scales. The value of access to the open countryside for the average Central Otago resident will decline.

7.4.1.2. District

Viewing the consequences of rural subdivision at a wider district scale, it has been made explicit that increased rural subdivision has the potential to impede on not only the character of the Central Otago district, but its primary industry and local economy.

A key finding from the results is that a growing population in Central Otago is placing strain on available housing within the district. The sprawl of Central Otago's urban centres is a direct result of the district's growth, bolstered by the CODP's discouragement of residential buildings that exceed two stories. As per the CODP, there is no outline for the increased densification of housing in urban areas to accommodate an increasing population. Currently, section 6.2.4 discourages buildings of more than two stories to preserve the residential character and amenity value of urban areas. Resultingly, KI 1 asserts that the unprecedented growth of Cromwell, for example, constrained by the District's Housing Plan, has resulted in urban sprawl into rurally zoned land. This sentiment is reflected throughout interviews with KI 6 and 7 as well as survey respondents.

Loosened restrictions imposed by government on development at the urban fringe gives rise to unfettered urban sprawl, and subsequent spatial disparities (Memon, 2003). This is because mechanisms such as green belts and the urban fence, which are designed to mitigate unchecked sprawl, are bypassed. Cadieux (2008) reinforces Memon's stance on the conversion of land use, affirming the agreement that the expansion of the urban form beyond those devices put in place to constrain the urban edge from extending too far from the centre, challenges the efficacy of rural activities and their function. Unchecked urban sprawl within Central Otago will also increase car usage, degrade town character and incur increased costs for the district to facilitate urban growth, such as new roads and water supply. Memon (2003) and Cadieux's' (2008) consensus is reflected by KI 8, who strongly expressed the need for the CODC to strengthen the rules and regulations in place on the urban fringe. Strong differentiation between the land use zones recurred frequently throughout this research as a strategy to mitigate the disadvantages of rural subdivision within the Central Otago district. Despite the clear disadvantages accompanying the reconstitution of the urban fringe, some respondents indicate that the encroachment of residential areas onto productive lands is an unavoidable circumstance that, while adverse, is justifiable in its ability to meet the district's growing demand for housing.

The expansion of the urban form into, and in some cases, beyond the urban fringe directly impedes upon the rural amenity highly valued throughout the district. The construction of subdivisions beyond original town boundaries disrupts the rural amenity of the given area. In the case of Cromwell, allowing subdivision to creep beyond State Highway 6, a town boundary line, while expanding the urban fringe, also impedes on the visual amenity of residents living within the urban fence. By extending the urban edge via increased subdivision, the draw of living in Central Otago may be lessened for some residents. Hu et al. (2022) further explores the disadvantages associated with the restructuring of the urban fringe and subsequent shift in land use. Their study examines the impacts of the emergence of a new multi-functional peri-urban zone in the Illawara region in New South Wales. Outlining the numerous disadvantages to farmers operating within the peri-urban environment, Hu et al. explore the associated implications for the wider community and economy. The research undertaken in Central Otago confirms what Hu et al., and other scholars postulate (see for example Cadieux, 2008). The negative impact the restructuring of rural localities at the urban fringe has on food production, rural function and the associated local economy is emphasised across Central Otago (see KI 9, Table 12). This takes the form of increased land prices

for productive land, and increased costs of production to adhere to evolving standards for agricultural activity. The neoliberal landscape serves to exacerbate these issues, as competition for land is heightened, and agri-businesses that were once the backbone of the local economy, are forced to diversify and find new avenues of revenue beyond food production. This transformation is evident across Central Otago, as agri-businesses have opened up their land to tourists for wine-tastings and vineyard tours, as many can no longer afford to stay in the district without doing so (KIs 5 and 7).

In regard to the wider economic consequences to Central Otago, and how this can inform the recommendations of this research, the literature signposts the advantages and disadvantages of lot size. Smaller lot size that facilitates rural lifestyle living is accompanied by a strengthened housing market (Gray & Millsap, 2020), and a growth in population that can boost the local economy, however, it reduces the availability of productive soils for agricultural use (Andrew et al., 2012). Hall and LeVein (1978) assert that maintaining a larger minimum lot size will benefit agricultural businesses, yet it will discourage development. The district then, is posed with a dilemma where regardless of which lot size is determined, there will be associated disadvantages. By increasing the minimum rural lot size and intensifying the district's urban centres, those pursuing rural lifestyle living may be less inclined to migrate to Central Otago. This will lessen the advantages that accompany the rural lifestyle demographic. Conversely, by decreasing the minimum lot size in rurally zoned areas (as suggested by KI 4) the district's economy may be crippled by a loss of agricultural business and activity. This is because a smaller allotment size would further encourage the subdivision of rural land, having flow on effects to the wider population, eliminating jobs and forcing people out of the area who can no longer afford to remain there.

While Woods' (2009) work was explored in detail in Chapter 2 of this report, as this research progressed, their work became increasingly applicable to the Central Otago district. The implementation of new ideas and frameworks within Woods' work further enhance an understanding of the results. Specifically, the concept of the 'global countryside' emerged as a notable theme throughout relevant academic discourse, applicable to the rural development Central Otago is experiencing, and explaining the consequences that are occurring above and beyond the district level. One can view the case of rural subdivision in Central Otago through the framework of the 'global countryside' (Woods, 2009), to address the disparate consequences of globalisation

processes on rural localities. The influence international markets can have on the primary and secondary sectors located in rurally zoned land is evident within the response of KI 5: *“I know my boss was approached many times with big offers, foreigners, rich millionaires.”* Proposed changes to the land use zoning and minimum lot size for rural subdivision within the district plan will have intergenerational implications, as current owners are priced off the land by international buyers. Furthermore, Central Otago’s primary industry’s (Horticulture) dependency on the supply of international labour will be impacted given a restructure of the rural locality. Woods’ argues that increased development occurs as a result of increased international amenity migration - an idea that will only be exacerbated within Central Otago by a change in minimum lot size or land-use zoning, as international markets look to capitalise on the district’s potential for development. Increased pressure to subdivide the rural landscape to keep pace with international pressure to develop will have wide-ranging disadvantages for residents, business owners, the local economy and environment.

7.4.1.3. Council

There are several disadvantages of current trends of rural subdivision posed to the CODC. These range from the costs attached to implementing infrastructure to enable rural lifestyle, to facilitating and finding consensus between the conflicting desires of different land users and their expectations for the future, and associated land use management.

Memon (2002) argues that local councils struggle to deny requests for subdivision developments, due to the capitalist oriented values of our neoliberal society. Memon expands on this, arguing that this is a shortcoming of planning in New Zealand; the RMA is not strong enough to stop development for development's sake. Understandings of sustainability are varied throughout our society, and inevitably challenges to the decisions made under the RMA are continuous, largely for the purpose of economic gain. In this vein, we can see the motivations behind the CODCs brief. Their planners are faced with mitigating the opposing interests of those wanting land for rural lifestyle purposes versus those who want to utilise the productive soils. Justifying the minimum size for rural subdivision will decide who is more likely to be able to build, as residential developers will want smaller lots that are more manageable than the size required by agri-businesses to remain economically viable (Turney, 1997). In the context of Central Otago, changes in the minimum lot size of rural subdivision are likely to catalyse residential developers, despite

an effort by the Council to constrain urban sprawl. The conflicts spawned from the councils' goals for the district, and the competing interests of agri-businesses and residential developers is inauspicious to local Council, exacerbating what Sharp (1982) describes as an already strained relationship between local authorities and constituents.

Additional research pertaining specifically to the attitudes of those living rurally to Local Council's implementation of the RMA and NPS would be beneficial in further elucidating the ramifications of rural development on local council, residents, and the wider district.

7.4.2. Advantages

Despite the breadth of disadvantages associated with rural subdivisions in Central Otago, it is important to acknowledge that these subdivisions do offer certain advantages. Although significantly less pertinent in our findings in comparison to the disadvantages, some participants expressed economic advantages and other aspects related to the draw of the district.

It is evident that Central Otago needs to open up land for housing. Several KIs and survey respondents express this opinion, and the CODC recognises it as a significant challenge going into the future (CODC, 2020). Although key literature argues that developing urban areas by sprawling into rural land is not ideal (see for example Johnson, 2001; Skog & Steinnes, 2016), the supply of land resulting from this style of urban expansion in Central Otago is providing accommodation for the district's growing population. As mentioned in chapters 2 and 6, Central Otago grew 21.3 per cent between 2013 and 2018 bringing in a significant amount of people to the district (CODC, 2020). As outlined by one of the survey respondents, "a successful society must house its people," and currently, the subdivision of rural land is how this is being achieved.

Furthermore, the style of property that is being provided attracts people to the district who are in search of that lifestyle. The provision of the 'lifestyle property' as enabled through the subdivision of rural land provides the quarter acre dream that is inherently entrenched into the mindset of New Zealanders. Additionally, it attracts people to the district who are wanting to get away from the country's main urban centres. As established by key stakeholders such as KI4 and KI7, these factors are essential in the decision of many people to move to Central Otago, and therefore are key contributors to the growth of the district.

This growth is primarily in the form of population, however, it also translates into broader economic growth. Andrew and Dymond (2013), argue that small-town population growth is hugely beneficial for the local economy. This seems to hold true within the context of Central Otago, as 82 per cent of survey respondents who held an opinion agreed with this (see Figure 16). Written survey responses further support this idea, with one person stating that without subdivisions, “local economies will fail to keep up,” while another person asserts that “economic development comes with subdivisions, and most often this is more than a farm will ever offer”. These ideas are supported by the arguments of Coale and Hoover (2015) who discuss the positive implications of small-town population growth. They outline further benefits such as the fact that it can cultivate a more vibrant local economy with a wider range of offerings for residents and visitors alike.

There is clearly an argument to be made as to the aforementioned benefits of the provision of rural subdivisions in their current manner. However, it is important to note that these benefits would likely remain, even if changes are made. Essentially, the argument that the provision of rural lifestyle blocks draws people who are after the quarter-acre dream or wanting to get away from traditional urban living to the region, would exist even with the implementation of a more sustainable minimum allotment size. These benefits are likely to derive from urban growth in any form, no matter how it is managed (Peterson, 2017). Thus, it is important to facilitate growth in a manner where these benefits can remain, but at the same time, the associated disadvantages can be mitigated. This would most likely still allow for rural lifestyle properties, but at a more maintainable and sustainable size. The practicality of this, along with other strategies to manage rural subdivisions will be explored in the following section.

8. Suggestions, Policy Analysis, Goals Achievement Matrix

This chapter focuses on the suggestions by KIs and survey respondents for CODC when adjusting the rural chapter of the district plan. Drawing from interviews with KIs and survey results, this section analyses topics and solutions of priority to planners, business owners, and the wider public, highlighting the need for a plan change to be implemented to the CODP.

The suggestions made by KIs, and survey respondents have been divided under the following five themes: demand for rural lifestyle and urban sprawl; protection of highly productive and valuable land; objectives, policies, and rules; zoning; and allotment size. Based off the findings and discussions regarding these themes, this section will additionally discuss the applicability of management techniques adopted by alternative district councils. These councils have been established through consultation with people working in the planning sector and through the researchers' understanding of other district plan applicability.

The five alternative councils which will have their plans analysed in this section include: Dunedin City Council (DCC), Queenstown Lakes District Council (QLDC), Porirua City Council (PCC), Tasman District Council (TDC), and Central Hawkes Bay District Council (CHBDC). The CODP will also be analysed. Through this analysis, each of these plans will be considered alongside the key suggestions and priorities which have come from KIs and survey respondents. This allows for the consistencies and shortfalls of each plan to be highlighted, answering the second research objective of this study which is outlined in Chapter 1.

This chapter will conclude with a summary of the policy analysis in a clearly communicable manner through the utilisation of a GAM. The incorporation of the GAM succinctly evaluates the approaches outlined in the policy analysis against the strongest community aspirations for the management of rural subdivision. The findings from the wider policy analysis, suggestions, and GAM play a vital role in informing the final recommendations of this research which are presented in the following chapter.

8.1. Suggestions

8.1.1. Demand for Rural Lifestyle Development and Urban Sprawl

As identified in Chapter 6, urban sprawl and the demand for rural lifestyle development are driving Central Otago’s demand for rural subdivision. This section will outline the suggestions for Council made by KIs and survey respondents in response to these two significant rural subdivision drivers.

With regard to urban sprawl, many participants stated that they wanted to see the Council encourage intensified development within urban centers and existing subdivisions. This suggestion is depicted in Figure 21 below.

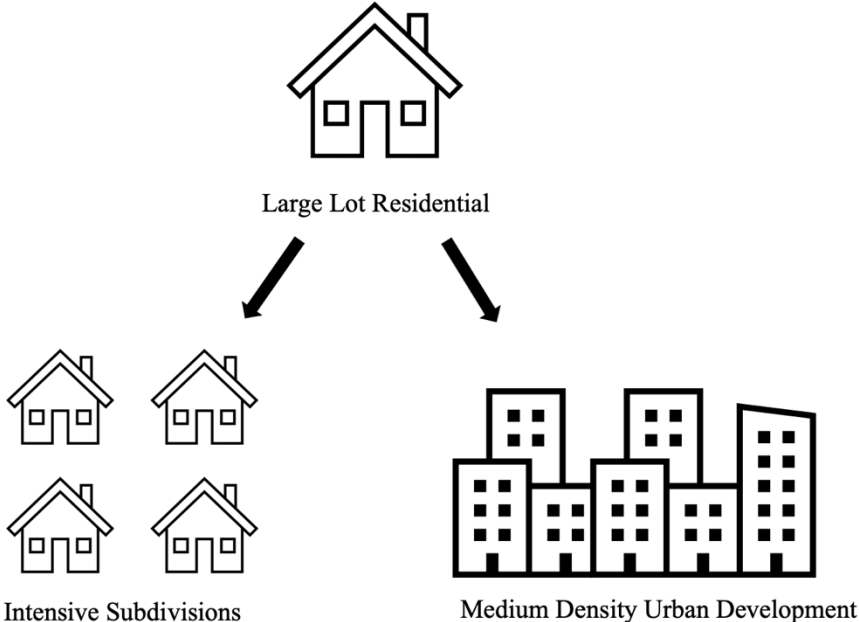


Figure 21: Conceptualization of the change from large lot residential properties towards intensive subdivisions and medium density urban development

Several KIs and survey respondents suggested these changes as a tool to combat urban sprawl. Quotes relating to this intensified development suggestion are displayed in Table 16 below. There was variation within the responses, with some KIs suggesting intensified development within the district’s main urban centers, Alexandra, and Cromwell. While others wanted to see rural lifestyle subdivisions achieving higher density development to also combat urban sprawl.

Table 16: KI quotes relating to intensified development

Key Informant	Quote
KI 7	<i>“They can allow for intensification in the towns, So, you’ve got a quarter acre section, which is roughly 1000 square metres, you could allow three or four apartments, or you can have twin two stories or three stories”.</i>
KI 7	<i>“Maybe they should consider something like New York, where you have Central Park, which is surrounded by high rises, but have medium rise apartments”.</i>
KI 8	<i>“I personally like the idea of intensive subdivisions, because it gives people choice, not everyone wants a large lot”.</i>
KI 8	<i>“Allow for four story apartments, because some people don’t actually want any land, so that just gives opportunities for people”.</i>
KI 2	<i>“... identifying parts where it is acceptable to have greater density, whether that’s because they are closer to articulated networks to main arterial groups”.</i>

Despite the above responses, not all participants agreed that intensifying development would positively benefit the community. Two survey responses commented on the “*charm of the small town being lost*” through processes of intensification, with one stating that:

“If the authorities wanted to take people into consideration, I recommend they move into the thick of town for a week and try out one of these new stack and pack subdivisions before having an opinion”.

The quote above implies that the respondent feels that Council is disconnected from the reality of intensified development and that before they advocate for this direction, they should first understand it from the public’s point of view. When considered in relation to those within Table 16 the quotes recognise and highlight disparities between the views of the general community (survey respondents) and business owners, planners and advocacy group members (KIs 7, 8 and 2).

8.1.2. Protection of Highly Productive and Valuable Land

Both the literature and primary data results illustrate that a major consequence of poorly managed rural subdivisions is inadequate protection of highly productive and valuable land. This section will display the results obtained through KI interviews and survey responses which offer important considerations relating to protecting valuable land in the district. The quotes displayed in Table 17 below showcase the contrasting views which participants expressed when providing suggestions for protecting valuable land.

Table 17: KI and survey respondent quotes providing suggestions for managing highly productive and valuable land within the Central Otago district

Key Informant	Quote
KI 4	<i>“I think there should be some zones where significant crops are enabled, like our best cherry and grape growing areas, while also looking at areas which are likely to become premium areas with the added effects of climate change. So future proofing”.</i>
KI 8	<i>“I think we’re trying to lock up this highly productive land for the long term and I’m not sure that’s the right thing... You are kind of making decisions for family way down the track and I don’t know if that’s entirely appropriate”.</i>
Survey Respondent	<i>“It’s an economic argument, highly productive fertile land should be retained for farming”.</i>
Survey Respondent	<i>“Don’t chop up farmland but allow for the chopping up of lifestyle land which is too big for most people – we are losing so much valuable land because we are chopping up farmland and fragmenting our rural environment”.</i>
Survey Respondent	<i>“The loss of productive land is not good. Any rural subdivision should be on non-productive land”.</i>

Table 17 exemplifies the various approaches suggested by participants for managing productive and valuable land. KI 4 and KI 8 have contrasting views on how productive land throughout the district should be managed. KI 8 disapproves of strict zoning regulations due to the influence it will have on future generational decision making. On the other hand, KI 4 believes areas of productive and potentially productive land should be zoned to ensure productive land uses are prioritised for future generations. The opinions of three additional survey respondents clearly align with the notion presented by KI 4, being that productive land should be retained for productive uses.

The quotes displayed in Table 17 offer broader suggestions on participants' perceptions of how highly productive and valuable land should be managed across the district. When applying these suggestions to a planning context, the most common suggestions were centered around changes in the district plan objectives, policies, zoning classifications, and minimum allotment sizes. These suggestions are displayed in the following sections.

8.1.3. Policy, Objectives and Rules

As established in the review of literature, political controls play an influential role in driving the patterns and outcomes of rural subdivision and lifestyle demand (Gurran et al., 2014; Menon, 2002; Turney, 1997). A lack of directive policy can create inconsistencies within a specific district plan zone and result in increased pressures on councils to allow or decline certain development projects based on historic justifications (Gurran et al., 2014; Menon, 2002; Turney, 1997). Multiple KIs recognised that these pressures exist in Central Otago and that as a result there have been inconsistencies within the rural zone. To add, many KIs made suggestions as to how the CODP could be changed to have more directive rural policy, objectives and rules to address the associated issues. KI 4 compared the rural chapter of the DCC's District Plan to the equivalent chapter of the CODP. In doing this, KI 4 highlighted that DCC has "*stronger policies and objectives on the rural land which really discourages that development...*" in comparison to the CODP. It is important to acknowledge that KI 4 was advocating for policy and objectives which protect rurally zoned land from subdivision development. KI 4 also suggested that CODC should adopt policies and rules which enable higher density development in specified areas, stating:

“I would like to see rural residential at half a hectare and make more policies that enable development at that size. Then at the same time, you strengthen the objectives and policies for the rural zone”.

Not only are policies and objectives an important tool for regulating rural subdivision, but the specific rules relating to allotment size and zoning are also critical. In a discussion regarding the inconsistencies relating to lifestyle blocks and development appearing across the districts rural zone, KI 2 said:

“If the Council is concerned about it then they need to put some rules in place. The NPS is just a policy statement and it’s their job to have strong rules that their people who are interpreting them can rely on”.

This statement was supported by concerns from KI 8, a local advocacy group member and business owner, who stated *“I think what we want is just some surety around the rules, I get that the rules change but I think some more clarity around rural subdivision is needed”*. Discussions specifically relating to district plan rules on allotment size and zoning were recurrent throughout the interview process and will be discussed in the sections below.

8.1.4. Zoning

Utilising a new zoning system within the rural areas of the Central Otago district was a common suggestion made by every group who participated in the data collection process. Below Table 18 shows the multitude of opinions and suggestions relating to changing the existing rural zoning structure. The suggestions outlined in Table 18 are largely focused on zoning which retains HPL for productive use, while enabling intensive development in specified areas to provide for rural lifestyle demand.

Table 18: KI and survey respondent quotes proposing a new rural zoning framework

Key Informant	Quote
KI 2	<i>“Instead of parcels being carved up, identifying parts where it is acceptable to have greater density, whether that’s because they are closer</i>

	<i>to articulated networks or close to main arterial groups. I just think it's about defining the areas".</i>
KI 4	<i>"From my perspective we need to protect those land (land with potential for future productive use) through special purpose zoning where subdivision development is really tough to achieve. You could say one residential dwelling per 20-hectare unit or something to make it not particularly economically viable to do developments".</i>
KI 1	<i>"I definitely think that Council needs to explore the idea of using zoning, if you sent anybody out to Queensberry and asked them to describe what they're seeing they would definitely be saying rural residential or rural lifestyle, they would not call that a rural area. So, it seems unnecessary to place a rural zone over it, because that undermines the integrity of the rule framework that goes with it".</i>
KI 7	<i>"They've got the balance wrong; I think there needs to be intensity there and leave the rural land alone as much as possible. Try and draw a red line and go okay, we're inside this intensification boundary in here so we'll try to make it more permissible".</i>
Survey Response	<i>"Don't chop up farmland but instead allow for the chopping up of lifestyle land which is too big for most people. Emphasis on this last point – chop up what has been chopped up already".</i>

The suggestion for council displayed in Table 18 is that of a new zoning system. This new zoning would aim to protect the valuable rural land more accurately for productive purposes and intensify the development within areas which have already been “chopped up” (Survey Respondent). KI 1 uses Queensberry as an example of land which has been subdivided into multiple lifestyle properties but remains under the rule and policy framework of the rural zone. Participants suggest that areas such as Queensberry, which have been heavily subdivided in the past, are zoned to encourage more intense rural lifestyle development, leaving the remainder of the rural zone for productive use. KI 1 believes this would act as a solution to the existing inconsistencies within the rural zone, which they believe currently undermine the integrity of the rule framework.

Suggestions regarding the minimum allotment sizes within this new zoning system will be explored in the section below.

8.1.5. Allotment size

Another suggestion for updating the CODP's rural chapter is to change the specified minimum allotment sizes. As outlined in the section above and Table 18, multiple participants believe that CODC should adopt a new rural zoning system which specifies areas for residential lifestyle development and areas for rural productive purposes. Participants were asked to expand on this by outlining the specific minimum allotment sizes they believed would accurately achieve the goals of each zone.

Participants largely focused their responses on changes to the minimum allotment sizes relating to the suggested rural lifestyle zone. The suggestions made by KIs and survey respondents regarding a new minimum allotment size for a rural lifestyle zone are displayed in Figure 22 below.



Figure 22: KI and Survey Responses Relating to Suggested Changes to the Minimum Allotment Size within a Rural Residential Zone

Figure 22 highlights a general agreement among stakeholders that the current 2-hectare minimum is inadequate for accommodating rural residential and rural lifestyle activities effectively. Nevertheless, the responses do not present a clear consensus regarding a more applicable minimum allotment size.

As stated above, interviews were commonly steered towards changes to the minimum allotment size for rural lifestyle activities. However, there was relatively less emphasis on the broader rural setting and any adjustments to the minimum allotment size within the Rural General Zone. In response to inquiries about potential changes to the minimum allotment size in the General Rural Zone, KI 4 expressed the following viewpoint:

“From my perspective, we need to protect those lands (land with potential for future productive use) through special purpose zoning where subdivision is really tough to achieve. You could say one residential dwelling per 20-hectare unit or something to make it not particularly economically viable to do developments”.

In this quotation, KI 4 is not explicitly proposing the implementation of a 20-hectare minimum allotment size. Instead, they are acknowledging that regulations which impose lower density requirements decrease the likelihood of rural lifestyle development because it becomes economically unviable for individuals to purchase such large lots. By creating larger minimum allotments in the General Rural zone, KI 4 believes land of a highly productive nature would be better protected. When discussing a similar point, KI 2 immediately recognised the large minimum allotment and density rules that QLDC have adopted in their rural amenity zone. This zone enables one residential dwelling per 80-hectare unit creating the expectation that the rural environment is retained for large lots and open space. The acknowledgement of QLDC leads into the following section which establishes the alternative councils that planning professionals have suggested for analysis.

8.1.6. Alternative Councils

During the interview process, planning professionals were asked if they had any previous experience or knowledge of alternative councils which have designed effective policy and rules for managing rural subdivisions. The three councils recommended were DCC, PCC and QLDC. Each council's geographical jurisdiction is represented in Figure 23 below.

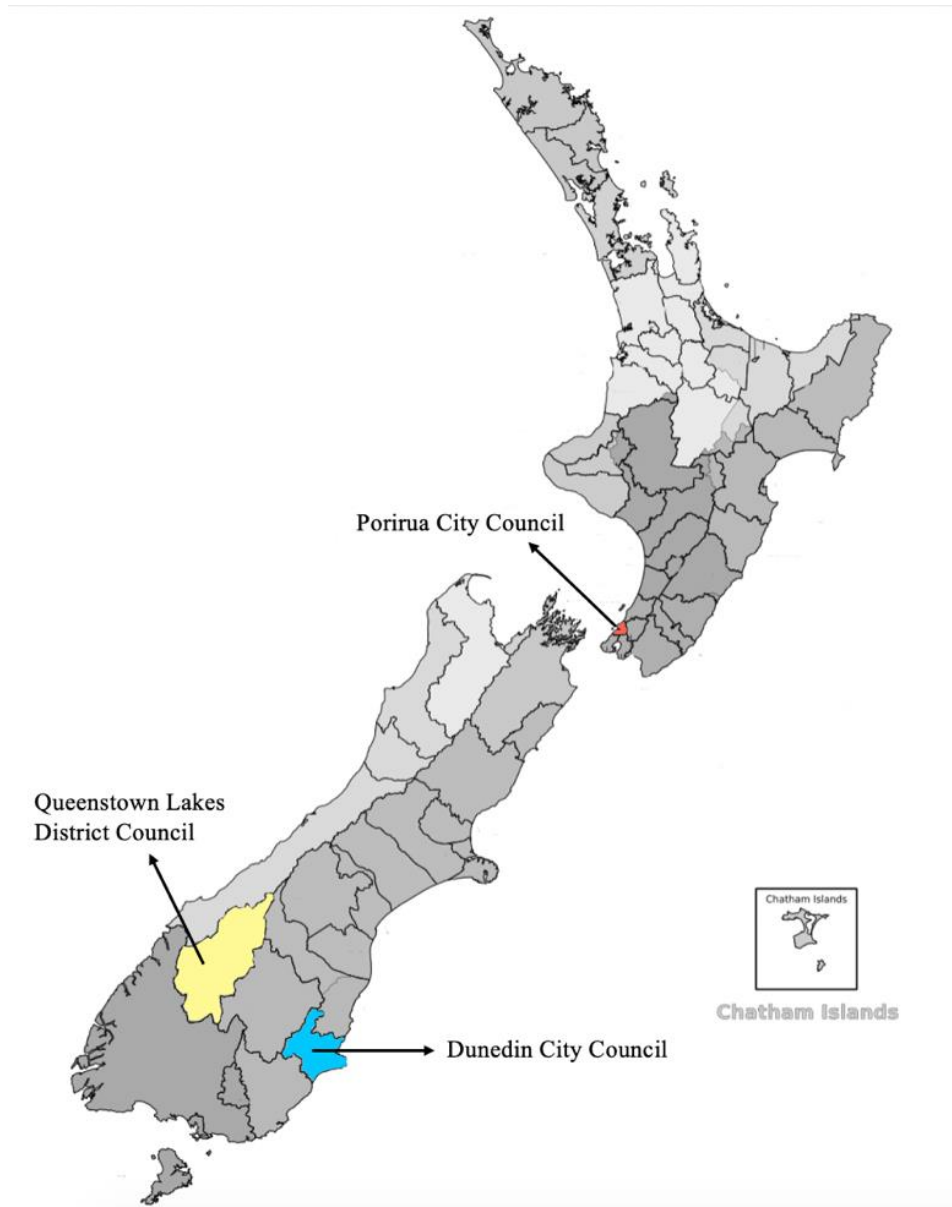


Figure 23: Suggested Councils for Analysis, Dunedin City Council, Queenstown Lakes District Council, and Porirua City Council

DCC was recommended by KI 4 due to the strengths of the 2nd Generation District Plan (2GP) objectives and policies. KI 4 advocates for the various minimum allotment sizes within the DCC’s 2GP rural zone, stating that the DCC has “*done a pretty good job*”.

KI 2 recommended and praised QLDC’s District Plan. This plan has a specified rural lifestyle zone where allotment sizes are “*generally expected to be smaller than the rural zone and of a higher density*” (KI 2). KI 2 advocated for such management of rural land in Central Otago, stating that a

“*less is more*” approach, with the implementation of two distinct rural zones, would be the most suitable way to update the CODP.

KI 1 suggested that CODC adopted a similar approach to managing rural subdivisions than that which is currently utilised by PCC. KI 1 advocated for the way that the Porirua City Plan managed aspects such as density, access, and minimum allotment size standards. Additionally, KI 1 highlighted the way in which PCC engaged with the community throughout their plan change process, recommending that CODC do the same. In making these recommendations, KI 1 did acknowledge the significant differences between the environmental and landscape characteristics of Porirua and Central Otago. However, they established that despite these differences, the aforementioned aspects of the PCC approach are very applicable to Central Otago.

The recommendations outlined in this section regarding modifications to CODC's objectives, policies, and rule framework will undergo thorough examination in the subsequent sections through a policy analysis. These suggestions will be evaluated comparatively, considering the existing district plan approaches of CODC and the proposed alternative Councils. This analysis will also encompass two additional Councils with similar land uses and rural subdivision demand to Central Otago, thereby broadening the scope of the evaluation.

8.2. Policy Analysis

The previous section identified three councils and plans which have been highlighted by planning professionals for their effective management of rural subdivisions. This included DCC, PCC, and QLDC. It has been acknowledged by both the researchers and the recommenders that the geographical size, location, economy and prevailing rural land use of these areas differ significantly from Central Otago. Because of this, this section will also analyse the plans of TDC and CHBDC. These specific councils have been recognised and selected due to their similarities in land-uses and issues surrounding rural subdivisions. Like Central Otago, the Tasman and Hawkes Bay districts both rely heavily on the horticultural and viticultural industries. Additionally, these areas have identified similar challenges regarding the subdivision of rural land which they have aimed to mitigate through updates to their district plans.

This section will analyse these district plans alongside those recommended by planning practitioners in the KI interviews. This allows for the policy analysis to compare the existing strategies of the CODP to plans which are notably effective, and to plans which govern notably similar districts. The focus of the analysis will be on the specific management tools and strategies employed by each council. Elements relevant to this analysis, such as objectives, policies, minimum allotment size, and zoning, have been identified based on the suggestions outlined in sections 8.1.2 to 8.1.5 of this Chapter. This comparative analysis will highlight the similarities and discrepancies in the approaches adopted by various councils, shedding light on how they manage rural subdivision demand in comparison to CODC.

8.2.1. Objective Analysis

The first area of a district plan important for managing the effects of rural subdivision is the objectives. Section 8.1.3 of this Chapter identified the importance that many participants place on having strongly worded and directive objectives within the district plan. The Quality Planning (2017) website acknowledges the importance of having appropriate and specific objectives as they act as the framework in which even more precise policy and rules are formed under. This website also provides guidance on what constitutes ‘good practice’ when writing an objective for a district plan, including, but not limited to, the following pieces of advice:

- The objective should be state **what** is to be achieved, **where** and **when**
- The main issue which the objective is based off, either specified in the plan or not, should be clearly identifiable to the reader
- The objective should be accessible i.e., it will be clear to those implementing the plan when the objective has been achieved.

The following analysis will outline the key objectives within both the CODP and the alternative Council’s district plans. This will focus on whether or not the advice of Quality Planning is achieved. Table 19 below outlines an objective from each council’s rural chapter. Some of the objectives displayed in the table are abbreviated for relevancy’s sake. To keep consistency across each plan, an objective relating to amenity and rural character was selected for analysis. Highlighted are the terms, sentences, or phrases which are considered to encompass the Quality Planning’s definition of precise and specific language.

Table 19: Objective Analysis - Analysing rural objectives within each Councils district plan

Local Authority	Objective identification	Objective
DCC	Objective 16.2.3.	<p>The rural character values and amenity of the rural zones are maintained or enhanced, elements of which include:</p> <ul style="list-style-type: none"> a. A high ration of open space, low levels of artificial light, and a low density of buildings and structures; b. Buildings that are rural in nature, scale, and design, such as barns or sheds; c. A low density of residential activity, which is associated with rural activities; d. A high proportion of land containing farmed animals, pasture, crops, and forestry...
PCC	GRUZ – O2	<p>The predominant character and amenity of the General Rural Zone are maintained, which include:</p> <ul style="list-style-type: none"> a. A working environment where rural activities generate noise, smells, light overspill, and traffic... b. Rugged hill country with a predominance of pasture for grazing and vegetation of varying types... c. A low-density built form with open space between buildings that are predominantly used for rural activities, (barns and sheds and generally one residential unit per site); and d. The presence of rural infrastructure etc.
QLDC	Objective 21.2.1	<p>A range of land uses, including farming are enabled while:</p> <ul style="list-style-type: none"> a. Protecting the landscape values of Outstanding Natural Features and Outstanding Natural Landscapes; b. Maintaining the landscape character of Rural Character Landscapes and maintaining or enhancing their visual amenity values; c. Maintaining or enhancing amenity values within the rural environment; and etc.
TDC	Objective 7.4.2	<p>Avoidance, remedying or mitigation of the adverse effects of a wide range of existing and potential future activities, including effects on rural character and amenity values.</p>
CHBDC	GRUZ – O2	<p>The predominant character of the General Rural Zone is maintained, which includes:</p> <ul style="list-style-type: none"> a. Overall low-density built form, with open space and few structures; b. a predominance of primary production activities and associated buildings (barns, sheds, seasonal worker accommodation, crop protection structures); c. the sounds, smells, and traffic associated with primary production activities;

		<ul style="list-style-type: none"> d. existing rural communities and community activities, such as rural halls, reserves and educational facilities; e. a landscape within which the natural environment predominates over the built one; and f. an environmental contrast and clear distinction between town and country (including a general lack of urban infrastructure, such as street lighting, solid fences, and footpaths).
CODC	Objective 4.3.3	To maintain and where practicable enhance rural amenity values created by the open space, landscape, natural character, and built environment values of the district's rural environment, and to maintain the open natural character of the hills and ranges.

The objectives outlined in Table 19 show the vast differences in the way that various council's aim to maintain and enhance rural character and amenity. The objectives from DCC, PCC, and CHBDC can be described as very specific in terms of their goals for maintaining the character of the rural environment. Each of these three objectives clearly describe 'what' the existing rural character looks like, using examples such as "sounds, smells, and traffic associated with primary production activities" (Central Hawkes Bay District Council, 2023). Additionally, CHBDC specifies that the rural environment will be clearly distinct from the characteristics of urban spaces. Not only is this distinction clearly stated, but it is also followed by clear examples such as a lack of street lighting and footpaths.

The CODC objective for maintaining rural amenity does include greater specifics than that from TDC, stating the rural environmental values are created by the "open space, landscape, natural character, and built environment". However, when contrasting this list with that from DCC, PCC, and CHBDC, it becomes clear that the latter three have included greater detail in what defines their rural environments. As the Quality Planning website states, it needs to be clear to those implementing the plan when the objective has been achieved. Without clear definitions surrounding what these rural environmental values look like, implementation becomes an ill-defined area.

The key message from KI interviews surrounding the district plan objectives was a desire to see more specific language. If the characteristics of CODC's rural zone are too broad to encompass a list as specific as the likes of DCC, PCC, and CHBDC, then further suggestions were made by KIs to split up the rural zone. The opportunity for alternative zoning classifications will be explored in more detail in section 8.2.3 of this chapter.

8.2.2. Policy Analysis

Similar to objectives, having clearly defined and directive policies was a key suggestion made by interview participants for better management within CODC's rural zone. Before introducing a policy from each of the six councils, it is first important to recognise the key aspects of an effectively written policy. Policies are intended to provide those implementing the plan with a course of action, essentially a more detailed step for achieving the objective. This course of action has the ability to be both flexible or inflexible, broad or narrow (Quality Planning, 2017). The level

of flexibility that is intended by the policy writer will be illustrated through the use of either directive or non-directive language. The Quality Planning website exemplifies this notion with two examples; where a policy is intended to be flexible, words such as ‘should’ or ‘may’ will be used. For policies intended to be inflexible or of a directive nature, words such as ‘shall’ or ‘must’ will be used.

In the following analysis, a policy from each of the six council’s district plans will be chosen for comparison and displayed in Table 20. In some cases, the policies have been abbreviated or shortened to ensure only the relevant aspects to this study are included. The terms highlighted in yellow are considered directive, while those in green can be described as more flexible or indirective language.

Table 20: Policy Analysis – Analysing rural policies within each Councils district plan

Local Authority	Policy identification	Objective
DCC	Policy 16.2.4.3	<p>Only allow subdivision activities where the subdivision is designed to ensure any future land use and development will:</p> <ul style="list-style-type: none"> a. maintain or enhance the productivity of rural activities; b. maintain highly productive land for farming activity, or ensure the effects of any change in land use are: <ul style="list-style-type: none"> i. insignificant on any high class soils mapped area; and ii. no more than minor on other areas of highly productive land; c. maintain land in a rural rather than rural residential land use; and d. not increase the potential for reverse sensitivity
Porirua City	GRUZ – P8	<p>Avoid activities which:</p> <ul style="list-style-type: none"> a. Are incompatible with the purpose, character and amenity values of the General Rural Zone; or b. May limit or constrain the use of land for primary production.
QLDC	Policy 21.2.8.1	<p>Prevent subdivision and development within the building restriction areas identified on the District Plan web mapping application, in particular:</p> <ul style="list-style-type: none"> a. in the Glenorchy area...; b. in Ferry Hill...
TDC	Policy 7.1.3.5.	<p>To limit further subdivision and residential development of existing small allotments in the Rural 1 and Rural 2 zones to avoid the potential for reverse sensitivity and increasing value of surrounding land that cumulatively adversely affect the potential of that land to be used for plant and animal production.</p>
CHBDC	GRUZ – P8	<p>To limit residential and rural lifestyle subdivision that results in fragmentation of the rural land and/or that restricts the use of rural land for productive purposes.</p>
CODC	Policy 4.4.10	<p>To ensure that the subdivision and use of land in the Rural Resource Area avoids, remedies or mitigates adverse effects on:</p> <ul style="list-style-type: none"> a. The open space, landscape and natural character amenity values of the rural environment in particular the hills and ranges, b. The production and amenity values of neighbouring properties, c. The loss of soils with special qualities, etc... <p>particularly through the use of minimum (and average) allotment sizes.</p>

Each of the policies outlined in Table 20 have been selected due to their relevancy to this research. A particular focus was given to policies that are based on managing the demand for rural subdivisions and land fragmentation. For the PCC district plan there was no specific wording relating to subdivision or land fragmentation, therefore a more general policy relating to the protection of land for primary production was selected.

As highlighted in yellow in Table 20, the policies from DCC, PCC, and QLDC all use inflexible or directive language. The use of the terms ‘avoid’, ‘prevent’, and ‘only allow’ ensure those implementing the plan are all following the same course of action. Labelling an activity, such as subdivision or development as ‘avoid’, removes any room for non-aligning interpretation and provides a clear pathway for achieving the specified environmental outcome.

Both TDC and CHBDC use the term ‘to limit’ residential subdivision and development. This type of language can be described as more flexible or indirective as it doesn’t provide the implementer with a clear or direct course of action. ‘To limit’ rural subdivision and residential development becomes up to interpretation and those implementing the policy have the ability to argue and decide upon what level of limitation is appropriate. TDC does go on to include a more directive and specific direction by stating “to avoid the potential for reverse sensitivity and increasing value of surrounding land”. This more clearly outlines what environmental effects need to be avoided during this limitation process and creates more of a specified course of action for the implementer.

Finally, CODC utilises the commonly used resource management phrase, ‘avoid, remedy, or mitigate’ in its rural subdivision policy. The use of these three terms in both the RMA and lower-level planning documents is an area of debate within the environmental management space (Smith, 1995). In Smith’s (1995) report on the RMA, it is acknowledged that in some situations the ‘avoid, remedy, or mitigate’ option acts as a hierarchy in which the avoidance of adverse effects should take priority over the remedy or mitigation options. This idea is recognised in a report by Wallace (2012) on New Zealand’s resource management in the context of habitat and species protection. Wallace (2012) does, however, state that where environmental policy may seemingly support this idea, if remedy and mitigation alternatives are proposed then the strength of the avoidance term is significantly weakened. In other words, by stating the adverse effects of an activity can either be avoided, remedied, or mitigated, the directive nature of the avoidance term is lost and left behind

is a more flexible or interpretive course of action. The CODC policy states that subdivision in the Rural Resource Area should avoid, remedy, or mitigate environmental effects relating to amenity, production values, and soil loss. Therefore, creating a sense of flexibility in terms of the course of action chosen by those proposing the activity. The course of action has potential to disregard the avoidance term and strive to remedy or mitigate the adverse effects.

The general consensus from those who participated in the study was a desire for more directive and strongly worded policy. As described above, directive policy provides a clear and detailed course of action, leaving little room for interpretation. This policy analysis showcases the way that simple alterations in the language of a policy can completely change the way it is interpreted and applied across a district. It is clear based on the QLDC's policy that all applications for subdivision within the identified areas of the plan shall be 'prevented'. This type of strong and directive language is what many KIs recommended that CODC adopt in their alterations to the district plans rural chapter.

8.2.3. Rules Analysis

Finally, the specific and detailed tool for implementing a district plans policy and objectives are known as the rules. Rules should provide the plan user with a clear direction of the effects and the requirements to meet this effect, often achieved through the use of regulations and activity status. This section of the policy analysis will differ from that of the objectives and policies, in which the broader wording of the statement will not be analysed, but rather the specific contents of the rule. This section will be broken down into the main areas of the district plan that were critiqued by KIs and survey respondents. This includes the types and classifications of rural zones and the minimum allotment sizes within.

A commonly identified issue with CODC's existing Rural Resource Chapter is the zoning classifications. The need to improve such areas of the CODP was suggested by a broad range of KIs. The general consensus was the desire to have specified areas where rural lifestyle development is enabled, and then the remainder of the rural zone is left alone for large lot, productive purposes.

Table 21 below indicates the different zones that each council has adopted relating to the rural environment. The details of each zone, applicable to the corresponding council, will be detailed

within the table. An analysis of the contents of the table in relation to the suggestions from KIs and survey respondents will be explored below.

Table 21: Zoning classifications and minimum allotment sizes within each Councils District Plan

	DCC	PCC	QLDC	TDC	CHBDC	CODC
Rural Residential Zone	Rural Residential 1 - 2 hectares Rural Residential 2 - 1 hectare		4000 m ²	Broken into nine different specified areas – each with their own minimum allotment size		Average of no less than 2 hectares
Rural Lifestyle Zone		2 ha	1 hectare, average no less than 2 hectares		2500 m ² , with a minimum 4000 m ² average	Rural resource (5) is further broken into seven site specific rural lifestyle areas – each with varying minimum allotment sizes
Rural General	Coastal – 15 ha High Country – 100 ha Hill Country – 100 ha Hill Slopes – 15 ha Middlemarch Basin – 4a Peninsula Coast – 20 ha Taiari Plain – 25 ha	40 ha	Rural General & Gibbston Character - no minimum Wakatipu Basin Amenity - 80 hectares Wakatipu Basin Lifestyle - 6000 m ²	Rural 1 - 12 hectares Rural 2 - 50 hectares Rural 3 - 50 hectares	20 hectares	Average of 8 ha, minimum of 2 ha
Rural Production					12 hectares	
Rural Resource						Five site specific resource areas within the rural zone with varying minimum allotment sizes

A key message which came through in the KI interviews and survey responses was the need for simplicity. As Table 21 above depicts, the CODC rural zones are extensive and complex, with multiple site-specific areas each constituting their own minimum allotment size. The entire rural zone follows the minimum of 2 hectares and an average of 8 hectares rule. However, within the rural zone there are specifically designated areas known as “Rural Resource” areas that each have their own minimum allotment size classification. Further to this, Rural Resource area (5) is broken down into seven site specific rural lifestyle zones, again, each with their own minimum allotment sizes. KI 2, a planning professional summed up the general analysis of CODC’s rural zones with the following statement:

“They have so many rural zones that it’s so confusing, I’ve been practicing for 13 years and I still struggle with the plan”.

The desire for a simplistic approach emerged, with KI 2 stating that “less is more”. This less-is-more approach can be observed in the table through the approaches utilised by PCC and CHBDC. Each of these councils have adopted a simplistic framework for managing their rural environments by confining rural activities to two or three broader, but well-defined zones. PCC has a Rural Lifestyle Zone with a minimum allotment size of two hectares and a General Rural Zone with a minimum allotment size of 40 hectares. As outlined in sections 8.2.1 and 8.2.2 above, the objectives and policies of the General Rural Zone are specific and directive in terms of the types and scale of activities which are expected. This type of language and level of detail is also observed within the Rural Lifestyle Zone Chapter of the district plan. This approach has ensured that rural lifestyle activities have their place but are not encroaching on the rural character and productive potential of the wider rural environment. This approach was commended by KI 1, a planning professional with previous experience working in the PCC district. KI 1 acknowledged the lack of rural productive activities which occur in the PCC district but stated that the local communities value the character and amenity of the rural environment. The implementation of the 40-hectare minimum in the General Rural Zone prevents the rural environment from being divided up into lifestyle blocks, a future not wanted by Porirua residents’ states KI 1.

CHBDC utilises a similar approach. A distinct variation in the CHBDC approach is the use of a Rural Production Zone. Unlike Central Otago, this district is comprised of a high proportion of

Class 1 to 3 soils which require stricter protection under the NPS-HPL. However, the Rural Production Zone also recognises the high productive value which Class 7 soils have for viticultural production. Although Class 7 soils are not controlled under the NPS-HPL, CHBDC has chosen to include them in their Rural Production Zone due to their productive potential in the viticultural industry. A similar message emerged throughout the research process with regard to HPL in Central Otago. Central Otago lacks an abundance of Class 1 to 3 soils which are covered by the NPS-HPL. However, lower class soils (LUC 4 to 6) are extremely prevalent and when combined with the environmental and climatic characteristics of the district, prove to create high productive value for horticultural and viticultural activities. The inclusion of Class 7 soils in the CHBDC Rural Production Zone is an example of how zoning classifications, combined with non-flexible objectives and policies, and a specified rule framework can create adequate protection of district specific environmental features. It is assumed that the 12-hectare minimum allotment size has been created based on existing land uses and the economic viability of certain activities. Adopting a Rural Production Zone in the Central Otago district would likely require a smaller minimum allotment size based on the responses from KIs and the predominance of cherry growing in the district (Te Puni Kōkiri, 2023).

Another common suggestion from KI interviews and survey responses was the need to reduce the minimum allotment size for residential or lifestyle areas. The suggestion arose due to the common belief that two hectares is too large for lifestyle development where no productive activities take place. As outlined in section 8.1.5 of this Chapter, there were multiple suggestions in terms of a new minimum allotment size for the Rural Lifestyle Zone. Despite this lack of direction on a definitive new minimum standard, it became clear that the general consensus favoured a size that was one hectare or below. The district plans which present a minimum allotment size consistent with this suggestion include CHBDC, QLDC, and TDC. TDC, however, utilises a similar approach to the current CODC sizing, where the Rural Residential Zones are site specific and broken down into several minimum allotment sizes. This presents a more complex and detailed approach which based on KI and survey responses, should be moved away from when changing the current rural chapter. Therefore, the minimum allotment sizes within QLDC and CHBDC are deemed the most consistent with the suggestions for CODC.

As the discussion above has recognised, there is a large demand from KIs and survey respondents for new minimum allotment sizes and zoning classifications. The topic of conversation which commonly emerged in the research process was centered around changes to the minimum allotment size for rural lifestyle purposes. Less commonly spoken about was the wider rural environment. However, those who did comment argued for an increase in the minimum allotment size within the General Rural Zone. This larger lot size is reflected by the minimum allotment standards within all of the alternative council's district plans. Although Central Otago does have 'Rural Resource Areas', the largest of which has a minimum allotment size of 10 hectares and an average of 25. These areas are site specific and do not reflect the rule framework which covers the vast majority of the districts rural environment. One survey respondent stated that:

“Minimum allotment sizes need to reflect those things that the district wants to protect, at the moment they don't”.

With the district wanting to protect the amenity and character of the rural environment, then increases to the minimum allotment size of the wider rural environment need to occur. Minimum allotment sizes, as portrayed by the alternative council's General Rural Zones, provide for the large lot, low density, and open space requirements of the rural environment.

8.3. Goals Achievement Matrix

To summarise the analysis presented in this chapter, a GAM will be utilised. As described in Chapter 3, GAM is a popular method for evaluating how various strategies or approaches achieve a set of criteria obtained from community engagement (Sager, 1981). In the context of this research, the various strategies are the district plans from the five alternative councils. The set of criteria used to evaluate each district plan have been selected based on the common themes and suggestions made by KIs and survey respondents. Suggestions were displayed as primary data results in section 8.1 of this chapter. These results were then used to guide the direction of policy analysis, including which alternative councils were analysed and selecting the specific aspects of each district plan to evaluate. Finally, the outcome of both the suggestions and policy analysis is summarised in the GAM displayed below in Table 22.

Table 22: Goals-Achievement Matrix

	DCC	PCC	QLDC	TDC	CHBDC
1. Directive and strong objectives	☑	☑			☑
2. Directive and strong policies	☑	☑	☑		
3. Smaller rural lifestyle minimum allotment size than the existing rules	☑	☑	☑	☑	☑
4. Simplified zoning		☑			☑
5. Protection for valuable land that is not considered highly productive					☑

Hill (1968) identifies the importance of defining the selected goals in an operational or attainable way. This ensures the degree of achievement can be clearly identified in the analysis. Each goal, displayed on the left-hand column of Table 22, has been previously described in the policy analysis and suggestions sections of this chapter.

The GAM clearly identifies that the main suggestions and aspirations of the community can be observed within the CHBDC and PCC plans. Out of the five goals presented in the matrix, both of these councils achieved four. The GAM model does not present any ranking or hierarchy of goals. This lack of hierarchy within the goals can be attributed to limitations of the study scope. If district

wide engagement was obtained and the participant numbers were therefore increased, preferences of each goal would be clearer, and a ranking system could be implemented. It can therefore be assumed that each goal is of equal importance to one another.

The only district plan which achieves Goal 5 is CHBDC. As described in section 8.2.3 above, CHBDC utilises a Rural Production Zone which includes land classed as LUC 7 due to its importance for the districts viticultural sector. As the only council who have adopted this approach, it is important that the methods utilised by CHBDC are appropriately considered when applying this to Central Otago. In addition to CHBDC achieving this goal, the zoning approach and the utilisation of a Rural Production Zone was commended by Horticulture NZ (Hort NZ) in their submission on the CHBDC plan. Hort NZ supports the use of a Rural Production, Rural General, and Rural Lifestyle Zone for providing adequate means for protecting highly productive and valuable land, while also providing for lifestyle development (Hort NZ, 2021).

The submission by Hort NZ also commented on the importance of adequately managing the effects of reverse sensitivity on the viability of productive activities. As a key consequence that emerged in this study, effective management of reverse sensitivity is an important consideration when analysing the application of alternative district plans. Hort NZ offered four key suggestions for CHBDC, particularly focusing on the Rural Production Zone. These are setback distances, exclusion of non-productive activities, reverse sensitivity as a discretion matter, and clear policy direction. Out of these four suggestions, this study revealed that participants also recognise the importance of excluding non-productive activities from rural zones and a clear policy direction for effectively managing rural subdivisions.

A simplified zoning technique came through in the results as a primary aspiration when altering the district plan. The policy analysis revealed that both the PCC and CHBDC plans utilise a simplified zoning system, where the rural environment is classified into a minimal two or three zones. The difference between the two plans with regard to the environmental and economic characteristics of Central Otago, is the lack of consideration for smaller scale horticulture and viticulture within the PCC approach. Smaller scale horticulture and viticulture activities such as cherry orchards are not a priority within the PCC district and therefore the rural zones are not required to reflect this need. Comparatively, the CHBDC plan utilises the smaller Rural Production

Zone which provides for this type of activity. The CHBDC's Rural Production Zone therefore contributes to both Goal 4 and 5 of the GAM.

The PCC plan displays directive and strongly worded objectives and policies, while the CHBDC plan only achieved strongly worded objectives. However, it is important to note that due to study limitations relating to timeframes and workload it was only possible to review and analyse one policy from each plan. A brief review of the CHBDC plan reveals it is unreasonable to conclude that there are no directive policies and therefore this goal may be achieved. This limitation also applies to the QLDC and TDC district plans in the context of them also not achieving Goal 1 and/or 2.

As the GAM illustrates, every council's district plan achieves the goal of a smaller Rural Lifestyle Zone. To achieve this goal the Rural Lifestyle or Rural Residential Zone must be smaller than 2 hectares. The GAM has been designed to illustrate which alternative councils have the most applicable functions in their district plans based on the common aspirations obtained from the primary research. The purpose of the GAM is not to conclude which district plan functions should be directly copied into the alterations of the CODP. Rather it provides a clear and simplified picture of how alternative frameworks for managing rural subdivisions can prove relevant to the community aspirations for Central Otago.

8.4. Summary

The aim of this chapter was to utilise the most common suggestions made by KIs and survey respondents with regard to altering the CODP's rural chapter, and therefore the approach to managing rural subdivision across the district. The key suggestions were displayed and summarised in terms of five main themes. The first two themes followed a broad nature which offered a general notion on community opinions and standpoints regarding rural lifestyle development, urban sprawl, and the protection of valuable land. Following this, more specific suggestions regarding district plan objectives, policies, and rules pertaining to zoning and allotment size were displayed. The suggestions regarding district plan objectives, policies, and rules provided specific direction and guidance on the districts aspirations for what an altered rural chapter would look like.

To provide a deeper analysis into these suggestions, while also answering Research Objective 2, a policy analysis was conducted. Planning professionals were asked which alternative councils, in their experience, have adopted effective methods for managing rural subdivision. The results from this interview question, along with the selection of two additional councils, created the scope of the policy analysis. The aspects of each council's district plan were analysed based on the suggestions displayed in the previous section. These were objectives, policies, and rules regarding zoning and minimum allotment size. The policy analysis provided a detailed discussion on the techniques and methods used by five alternative councils for managing rural subdivision based on the aspirations of participants within Central Otago.

Finally, the policy analysis was summarised using a GAM which clearly identifies which district plans achieve the goals raised by the study participants. Combining the findings from the primary data results, policy analysis, and the GAM, it is recognised that to accurately achieve the suggestions from KIs and survey respondents, changes to the existing objectives, policies, and rules must occur at an overarching and comprehensive level. The analysis revealed that without clear and decisive objectives and policies, the nature and purpose of a zone cannot be fully realised or upheld. While the specific rules regarding minimum allotment size must accurately reflect the activities intended for the zone. The results and information obtained from this analysis will be applied to the context of Central Otago to create the recommendations. These recommendations will be consolidated in the following chapter.

9. Recommendations

The findings from this study have explored the drivers and consequences of rural subdivision, alternative management strategies of other councils, and how these can be applied in the Central Otago context. The following set of recommendations are directed to the CODC to help address the research aim through identification of an appropriate minimum allotment size which ensures effective management of the district's rural environment and its resources. Our recommendations confront the difficulties and complexities of classifying the rural environment using zones and minimum allotment sizes. These recommendations have been heavily informed by our policy analysis. They seek to apply alternative, successful and applicable approaches to Central Otago in a way that accurately reflects the contextual situation and aspirations obtained through primary data collection. The three recommendations regarding proposed new minimum allotment sizes and zoning classification will be supported by two additional considerations for CODC. The recommendations and supporting considerations are:

Recommendation One: Rural Lifestyle Zone

The primary data research revealed there is a consensus among participants, both KIs and survey respondents, that the current minimum allotment size is too large to appropriately provide for rural lifestyle development. A common suggestion which emerged in our research in response to this concern was the creation of a rural lifestyle zone that has a minimum allotment size between 5000 m² and one hectare. Study participants failed to provide a unanimous agreement on the exact size of this zone, which is why a specific allotment size has not been recommended. We recommend that CODC investigate the requirements of this zone further in order to determine an exact figure. We would like to emphasise that our recommendation regarding a new minimum allotment size should not be a range, however based on the findings of our research, a size between 5000 m² and one hectare would likely be appropriate. Our policy analysis revealed that the majority of alternative council plans have adopted a smaller minimum allotment size within their rural residential and rural lifestyle zones. This reinforces our recommendation and legitimises the suggestions from participants that the existing size in Central Otago is too large.

We would like to acknowledge that our primary data and literature review analysis revealed that the consequences of rural subdivision more consistently fall under the disadvantageous or negative category. Despite this, we have found there is a major demand for rural subdivision across the Central Otago district and believe that effective management through rural lifestyle zoning may combat the intensity and frequency of these consequences. In regard to the location of the rural lifestyle zone we would like to offer two suggestions. We propose that pockets of existing rural lifestyle which are dotted around the rural landscape be classed as rural lifestyle, for example Queensberry. These pockets should be confined to areas where rural land has already been divided up for lifestyle development and the productive potential has therefore been lost. Multiple participants suggested this approach as it would provide consistency throughout areas of the rural environment where the current land use activity does not fit with the purpose and nature of the zone. This approach would help retain the amenity and character within the rural environment by avoiding the approval and development of lifestyle activities which disrupt the natural rural environment. Additionally, we also suggest the application of the rural lifestyle zone around the outskirts of urban and town centres. Our discussion of the literature revealed that this approach has the potential to exacerbate issues relating to urban sprawl. However, within the context of Central Otago our study participants and research revealed the importance of locating intensified development within access to reticulated networks and main arterial groups. We believe a balance could be struck between providing for more intensive development within urban centres to provide for growth. While also locating lifestyle development on the outskirts of town to ensure the rural nature of Central Otago townships are maintained.

Recommendation Two: Rural Production Zone

The goal of the rural production zone is to cater for the predominance of horticultural and viticultural activities across the district. The idea to incorporate a zone of this nature was drawn from the management approaches utilised by CHBDC and was reinforced by a submission on the CHBDC Plan by Hort NZ. The rural production zone would cater for land that is protected under the NPS-HPL, while also including land not covered by the NPS-HPL but due to its climatic, environmental, social, and industry specific characteristics, is extremely valuable to the food growing industry. A key message which arose from our research was the need to protect valuable land for future generations. This point was reinforced through our conversations with CODC as an

upmost priority when updating the CODP. The rural production zone would be reserved for productive activities and in doing so, would protect this significant natural resource and industry from inappropriate subdivision and residential development. When determining which areas of land would be located within this zone, we want to emphasise the need for CODC to consider all environmental and social factors which contribute to an area's productive viability. A major consideration, that will be explained further in consideration two below, is reverse sensitivity.

Our recommendation for the rural production zone includes a proposed minimum allotment size of approximately five hectares. Cherry orchards are a major industry across Central Otago and when combined with adequate water resources and environmental conditions, can be an economically viable operation on five-to-two-hectare allotments. The five-hectare minimum allotment size would not prohibit primary production activities which are viable at a smaller scale, however, the approval of such activities would require a greater understanding of, and reliance on the available water sources for their success.

Recommendation Three: Rural General Zone

Our final recommendation to CODC is the adoption of a rural general zone with a minimum allotment size upwards of 20 hectares. As discussed in Chapter 5, the scope of our research was limited in terms of pastoral farming and therefore our recommendation on the appropriate minimum allotment size for this zone will require further investigation by CODC. However, our recommendation for this zone, in a general sense, is supported by primary data findings and the policy analysis.

A commonly identified issue across stakeholders and survey participants was the disruption that rural subdivision was having on the large lot rural character of Central Otago. By fragmenting the land into smaller pockets of development, the existing natural beauty that so many participants valued was being lost. By categorising smaller density rural activities, such as residential development and smaller scale production into the rural lifestyle and rural production zones, the remainder of the rural environment could be reserved for large scale primary production.

Our policy analysis also revealed that all other district councils that we analysed, utilise a larger rural minimum allotment size than that of the existing regulations within Central Otago. The policy

analysis showed that this minimum allotment size standard was varied across the different districts, likely due to disparities between environmental conditions such as water availability, soil quality, and conventional primary productive activities. Hence, we would again like to reinforce the idea that such a zone would require additional investigation by CODC.

Consideration One: Stronger Objectives and Policies

Each of the recommended zones highlighted above would require new or altered objectives and policies. Highly suggested throughout this research was the need for strongly worded and directive objectives and policies to accurately reflect the purpose and nature of each zone. Each proposed rural zone outlined above has a clear and distinct purpose and activity type, these being; lifestyle development, primary production, and large lot primary production. The use of directive objectives and policies would provide those implementing and following the CODP, a clear and consistent understanding of each zone's purpose. Something which our findings revealed was currently unclear.

By separating the most common and important rural activities into their own zones, the associated objectives and policies can be worded more clearly, strongly, and directly towards the zones intended use. At present we found that participants were unsure on the purpose of the rural zone due to inconsistencies that were emerging through the approval of rural lifestyle development. KI 4 commented on the use of strongly worded objectives and policies as a tool for effectively managing appropriate rural activities. We believe that by adopting this measure, combined with the recommended zoning classifications, greater management of the rural environment would be achieved.

Consideration Two: Effective Management of Reverse Sensitivity Issues

A major driver and consequence of poorly managed rural subdivision which emerged throughout our research was issues surrounding reverse sensitivity. Additionally, a key component of the brief involved recommending a new minimum allotment size framework which adequately manages potential reverse sensitivity issues. Therefore, it was deemed important that our recommendations included provisions which help effectively manage issues of reverse sensitivity. The proposed

consideration relating to reverse sensitivity issues have been formed based on participant engagement, the policy analysis, and the priorities of Hort NZ in their submission to CHBDC.

A simple tool for ensuring each zone remains reserved for its specified use is the provision of a detailed and comprehensive list of intended activities. By doing so, plan users are fully aware of the types of activities which are expected to occur in each zone, and council planners are equally equipped. The aim of such an action would help to reduce the likelihood of inconsistent and sensitive activities being approved where not appropriate. By reducing the approval of such activities in zones where they are not appropriate, the likelihood of reverse sensitivity would be reduced.

Additionally, the CHBDC Plan and the submission by Hort NZ outline the importance of including reverse sensitivity as a matter of discretion. The inclusion of this discretion matter ensures that where activities are proposed that do not entirely fit the purpose of the zone, the council can assess the proposal based on the activities likelihood of generating reverse sensitivity effects. It is recommended that CODC adopt reverse sensitivity as a discretion matter into the proposed rural production, rural general, and rural lifestyle zones as a tool for managing the on-going negative consequences relating to this issue.

Finally, it is also worth noting that the proposed recommendations and considerations would also act as tools for managing reverse sensitivity across the district. Specified zones for residential activities would help to remove the likelihood of disruption to both those living rurally and those utilising the rural environment for primary production.

10. Conclusion

Central Otago has been facing rapid population growth in recent years resulting in the sprawl of urban land and fragmentation of rural land. Despite the fact that urban growth inevitably results in urban expansion, shortfalls in the current CODP exist which have enabled for the continuous and extensive subdivision of land leading to consequences on both a residential and district scale. Indeed, this study has attempted to establish the key drivers and consequences of current rural subdivision trends, using these to establish a foundation from which potential mitigation techniques can be analysed and applied to the specific context of Central Otago.

The aim of this research was to identify an appropriate minimum allotment size to ensure the effective management of the district's rural environment and its resources. To achieve this aim, the following research objectives were utilised:

1. To engage with business owners, advocacy group representatives, and community members to understand the key drivers and consequences regarding rural subdivision in Central Otago.
2. To identify key suggestions made by stakeholders and use these to investigate frameworks and methodologies used by other Territorial Authorities to determine appropriate minimum allotment sizes for rural subdivision.
3. To make recommendations to CODC as to how the rural zone can be more effectively managed to mitigate the adverse effects associated with rural subdivision.

Attempting to achieve the research aim and objectives involved the adoption of a mixed-method data-collecting approach. The primary techniques included semi-structured interviews with KIs and a survey questionnaire applicable to the general public. The secondary methods involved a literature review, policy analysis and GAM. The data gathered from the primary techniques was coded under broad themes including drivers, consequences and suggestions before being analysed with consideration given other findings under those themes, highlighting sub-themes of relevance to the study.

The core ideas of the research were first grounded within wider academic discourse before introducing the specific socio-environmental and policy contexts within which the study was situated. Following this, the methodological approach was established along with the researcher's ethical and positional considerations. This was followed by various results and discussion sections which were specifically aimed at addressing the study's research objectives.

To address the first research objective, the study employed a mixed-methods approach, including interviews and a survey questionnaire. The findings revealed that the demand for rural subdivisions was driven by various interconnected social, economic, environmental, and political factors. Simultaneously, the supply was incentivised by economic factors, external pressures, and the desire to downsize for retirement. The consequences of current trends of rural subdivision included reverse sensitivity, amenity value, changing land use, and environmental impacts, affecting both the residential and district scale.

The second research objective was achieved by analysing common suggestions from stakeholders and examining the rural chapters of other district plans. This analysis identified five key suggestion themes: directive and strong objectives, directive and strong policies, smaller rural lifestyle minimum allotment size, simplified zoning, and protection for valuable but less productive land. Comparatively, the district plans of Porirua City and Central Hawkes Bay best aligned with these suggestions and the aspirations for Central Otago.

Based on the research findings, three recommendations are proposed which aim to promote more effective management of rural subdivisions in Central Otago, thus achieving objective 3. These recommendations are as follows:

1. Establish a Rural Lifestyle zone with a minimum allotment size between half a hectare and one hectare.
2. Create a Rural Productive zone with a minimum allotment size of approximately 5 hectares.
3. Implement a Rural General zone with a minimum allotment size of approximately 20 hectares.

Additionally, two supporting considerations have been provided to assist in the implementation of these recommendations. These being to:

1. Adopt strongly worded and directive objectives and policies for each recommended zone, reflecting their intended use; and
2. Effectively manage issues surrounding reverse sensitivity through detailed activity lists and matters of discretion.

This research was constrained by several factors. The brief time available to physically be in Central Otago limited the extent of this research. Similarly, by distributing the survey via Facebook, a proportion of potential respondents were precluded from participating. Future, broader studies can answer questions within this scope of research this study did not have the resources to cover. Concerns regarding the minimum allotment size for rural subdivision in Central Otago are nuanced, deeply rooted within the social fabric of the local community. This research has offered recommendations on how best to proceed in addressing the necessity to explore new avenues of district planning. Consequently, this study encourages ongoing consultation with local constituents, and further analysis of the methodologies employed by other district councils, to gain a more holistic and informed view of what will work best for the Central Otago district.

Despite its limitations, the research has shed light on the pressing issue of rapid population growth in Central Otago which has resulted in the sprawl of urban land and the fragmentation of rural areas. The study's findings emphasize the need to address the shortfalls in the current Central Otago District Plan (CODP) to mitigate the adverse effects associated with rural subdivision. By engaging with stakeholders and exploring frameworks used by other Territorial Authorities, the study has successfully identified appropriate minimum allotment sizes for different rural zones, aimed at effectively managing the district's rural environment and resources.

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Appendices

Appendix A: Potential Questions for Key Informants

Appendix B: Questionnaire Survey

Appendix C: Ethics Form

Appendix D: Information Sheet for Interview Participants

Appendix E: Consent Form for Interview Participants

Appendix F: Information Sheet for Questionnaire Survey Participants

Appendix A: Potential Questions for Key Informants

Question Set for Agricultural Business Owners

1. Can you tell me a little about your farming operation and the land you manage?
2. In your experience, how has demand for rural subdivision impacted agricultural/highly productive land in Central Otago? Have you seen any positive or negative impacts on agricultural production or yields as a result of smaller allotment sizes in Central Otago?
3. In future what impact do you believe land subdivisions will have on the viability and sustainability of agricultural businesses in Central Otago?
4. In your opinion, should there be the minimum allotment size required to maintain the productivity of agricultural/highly productive land in Central Otago? And if so, what do you believe is an appropriate size?
5. Do you believe that there should be different minimum allotment sizes for different types of agricultural land, such as irrigated land or viticulture?
6. Have you heard of any frameworks or methodologies or any best practices or models from other regions or countries to determine minimum allotment sizes for highly productive agricultural land? If so, which ones? Do you think that could be applied to Central Otago?
7. How do you think establishing minimum allotment sizes for highly productive agricultural land could impact the value of agricultural land in Central Otago?
8. Are there any other specific concerns or considerations you believe should be considered when determining minimum allotment sizes in Central Otago? For example, do you think the minimum allotment sizes for highly productive agricultural land could impact the value of agricultural land in Central Otago?
9. Do you believe that productive soils and rural open spaces should be retained in Central Otago? If so, do you have any suggestions or recommendations how can this be achieved through rural subdivision policies? Or what measures do you think can be taken to promote sustainable economic development in our rural area that does not compromise the viability of agricultural businesses?
10. What role do you believe agricultural businesses should play in shaping land use policies and planning decisions related to minimum allotment sizes in our rural area?

Question Set for Planning Professionals

1. There is a significant demand for rural subdivisions and lifestyle properties in Central Otago. How do you feel about this trend? Does it feel worrying, or do you think it is beneficial? What kind of consequences can this trend bring to Central Otago?
2. Can you describe the current land-use policies and regulations regarding rural subdivisions in Central Otago?
3. What methods of stakeholder engagement do you or intending to use to involve the public in the decision-making process?
4. Currently there are different minimum lot sizes for different zones Do you know what was the process that led to the current minimum lot size?
5. Who is responsible and what is the process of getting access to rural subdivision lots? For example, landowner of large lot who subdivides the land with no current road access, who's in charge of getting access - NZTA? Council? The landowner selling land?
6. The National Policy Statement for Highly Productive Land requires the country's most productive land to be identified and managed to prevent inappropriate subdivision, use and development. In Central Otago the most productive agricultural soils are classified in LUC 4-6 land units which are considered not very productive. However, Central Otago has unique climate and soil qualities enabling the development of highly productive agriculture. In your opinion, what measures legally can be taken protect highly productive soil in Central Otago? Should we set up and use different classification or set up something like a special Central Otago soil sanctuary/zone?
7. What factors should be considered when establishing minimum allotment sizes for highly productive agricultural land in Central Otago? For example, buffers for infrastructure required, manage potential reverse sensitivity, workers accommodation or residential activities?
8. Will there be any potential legal challenges might be associated with reducing lot size? Again, do you think the benefits outweigh the costs?
9. Do you know any practices or models from other regions or countries that could be applied to Central Otago to establish minimum allotment sizes for highly productive agricultural land?

10. If you think there will be negative impact from the increased rural subdivisions in Central Otago, how will you mitigate it? For example, there is increased subdivision because of reducing lot sizes, and more houses are being built and more people come to the rural area, as a result you will need a roundabout for increased traffic. Do you think the costs of that going to outweigh the benefits of increasing the rural population?

Appendix B: Questionnaire Survey

Facebooks groups posted in:

- Alexandra NZ Noticeboard
- Cromwell Today
- Cromwell Community Noticeboards
- Central Otago in General

Part one – All Participants:

Question 1: Do you live in town or rurally?

- Town
- Rurally

Question 2: Where do you live in Central Otago?

- In or near Cromwell
- In or near Alexandra
- In or near Clyde
- In or near Springvale
- In or near Bannockburn
- In or near Ida Valley
- In or near Pisa Mooring
- In or near Lowburn
- In or near Naseby
- In or near Tarras
- In or near Omakau
- In or near Oturehua

Part two – Rural Participants:

Question 3: What industry are you in?

- Farming
- Horticulture
- Viticulture
- Other, please specify [text field option]

Question 4: What factors influenced your decision to pursue this industry?

[text field option]

Question 5: What do you enjoy most about the rural environment?

[text field option]

Question 6: What do you enjoy the least about the rural environment?

[text field option]

Question 7: Approximately how large is the piece of land you own?

[text field option]

Question 8: How long have you (including previous generations) owned this land?

- 1-5 years
- 6-15 years
- 16-30 years
- 30+ years

Question 9: Has your land been subdivided in the past? If yes, please explain why.

- Yes [text field option]
- No

Question 11: If you use this land for productive/business purposes e.g., fruit growing, how long have you been in this business?

- 1-5 years
- 6-10 years
- 11-20 years
- 21+ years

Question 10: Do you plan to subdivide in the future? If yes, please explain why.

- Yes [text field option]
- No

Question 12: What would be an approximate minimum size of land needed to efficiently run your business?

[text field option]

Question 13: Are there any challenges you are currently facing and/or expect to face related to the subdivision of rural land and the growth of communities/townships?

- Yes [text field option]
- No

Part Three – Both Rural and Town Participants:

Question 14: How familiar are you with rural subdivision in Central Otago?

- Not familiar at all
- Slightly familiar
- Moderately familiar
- Very familiar
- Extremely familiar

Question 15: Perception of rural subdivision in Central Otago

- a. Rural subdivision in Central Otago is happening too quickly?
 - Strongly disagree
 - Somewhat disagree
 - Neutral
 - Somewhat agree
 - Strongly agree
- b. Preserving agricultural land is important to me?
 - Strongly disagree
 - Somewhat disagree
 - Neutral
 - Somewhat agree
 - Strongly agree
- c. Rural subdivision has negative environmental impacts?
 - Strongly disagree
 - Somewhat disagree
 - Neutral
 - Somewhat agree
 - Strongly agree
- d. Rural subdivision is good for the economy of Central Otago?
 - Strongly disagree
 - Somewhat disagree
 - Neutral
 - Somewhat agree
 - Strongly agree
- e. Rural subdivision negatively impacts the social fabric of Central Otago communities?
 - Strongly disagree
 - Somewhat disagree
 - Neutral
 - Somewhat agree
 - Strongly agree
- f. Rural subdivision has negative implications for the amenity value of the Central Otago District?

- Strongly disagree
 - Somewhat disagree
 - Neutral
 - Somewhat agree
 - Strongly agree
- g. Agricultural land should be prioritised over the development of residential and commercial areas?
- Strongly disagree
 - Somewhat disagree
 - Neutral
 - Somewhat agree
 - Strongly agree

Question 16: If any, please state the possible long-term impacts that rural subdivision might have on you or the Central Otago District?

[text field option]

Question 17: Do you think current regulations adequately protect highly productive soils and rural open spaces in Central Otago?

- No
- I don't know
- Yes

Question 18: Do you think minimum allotment sizes should be based off the productivity of the soil and the size of the rural open space?

- No
- I don't know
- Yes

Question 18: If you have any further thoughts, what do you think are the key considerations for local authorities when regulating rural land subdivisions in the Central Otago District?

[text field option]

Appendix C: Ethics Form

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Form Updated: November 2021

UNIVERSITY OF OTAGO HUMAN ETHICS COMMITTEE APPLICATION FORM: CATEGORY B

(Departmental Approval)

Please ensure you are using the latest application form available from:
<http://www.otago.ac.nz/council/committees/committees/HumanEthicsCommittees.html>

1. University of Otago staff member responsible for project:

Thompson-Fawcett, Michelle, Professor

2. Department/School:

School of Geography

3. Contact details of staff member responsible (always include your email address):

Room 4C17, Richardson Building
Ph: 03 479 8762
Email: michelle.thompson-fawcett@otago.ac.nz

4. Title of project:

Optimal Minimum Allotment Size for Rural Subdivision in Central Otago

5. Indicate type of project and names of other investigators and students:

Student Research Names

Tim Boyle Maisie Fisher

Ana Klemick Rachel James

Ekaterina Ponomarenko

Level of Study (Masters)

Master of Planning

6. When will recruitment and data collection commence?

Recruitment: April 2023 (making contact with potential key informants)

Data collection: commencing 1st May 2023

When will data collection be completed?

31st May 2023

7. Brief description in lay terms of the aim of the project, and outline of the research questions that will be answered (approx. 200 words):

Research Aim:

The aim of this research is to explore the impact of rural subdivision on highly productive land and to recommend a methodology for determining appropriate minimum allotment sizes within the Central Otago District, ensuring that productive soils and rural open spaces are retained.

To achieve this research aim, we seek to achieve the following research objectives:

- a. To investigate frameworks and methodologies used by other Territorial Authorities to determine appropriate minimum allotment sizes for rural subdivision.
- b. To engage with business owners and advocacy group representatives to understand perceptions and considerations regarding rural subdivision in Central Otago.
- c. To recommend a framework or methodology for determining minimum allotment sizes with the rural zones of the Central Otago District.

8. Brief description of the method.

Policy Analysis – Planning and policy documents from local and central governments will be analysed. This will provide information into the types of policy, objectives, and methods implemented by government with regard to highly productive land and rural subdivision. This will provide the research with information that may not be readily available within the interview process. This supplementary information will help support any findings from the research.

Semi-Structured Interviews – Interviews will be conducted with key people such as business owners and advocacy group representatives to understand their perception of the key considerations when developing a minimum allotment size. Interviews will also be conducted with key people involved in the planning and policy development, from Local and Regional Councils across New Zealand. Key stakeholders may include:

- Council Officers – including planners, technical experts, policy developers, community engagement officers
- Community Business Owners – including orchards, wineries, farmers, etc.

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- Advocacy Group Representatives – including Federated Farmers, Horticulture NZ, Winegrowers NZ.
- Planning Consultants

Ten to fifteen semi-structured interviews be conducted. Interviewees will be recruited through snowball sampling, starting with existing personal connections, advice from CODC staff members, and research of the community.

Survey and Clip-board Conversations– Survey and clip-board conversations will provide a more general overview of what members of Central Otago District communities feel about rural subdivisions and the loss of highly productive land.

Interviews will, whenever feasible, take place in person, and participants will be contacted by phone or email. Zoom or phone calls will be an alternative if the availability of in-person interviews is restricted by the circumstances. It is typical for interviews to last between 30 and 60 minutes. A set of themes and questions that are relevant to the knowledge and experiences of the person being interviewed will guide the discussion.

Provided the interviewee gives permission, the interview will be recorded and transcribed at a later date. The transcription will be conducted by the research group.

Data will be collected across the Central Otago District between the 1st and 5th of May, 2023. This data will inform the final report and inform the recommendations provided to Central Otago District Council. This will be used for assisting the Council in giving effect to the National Policy Statement for Highly Productive Land and protecting highly productive land within the district.

Gathered data will only be accessible to student researchers and the supervisor of the project. The data will be stored on password protected devices and the sharing of passwords outside of group members is a prohibited action to ensure the anonymity of those involved. Audio and written record of the interviews will be deleted following the completion of the project.

9. Disclose and discuss any potential problems and how they will be managed:

There are no medical/legal problems, issues with disclosure, or conflict of interest issues with this project. Due to the nature of the research, it is unlikely that interviewees will be exposed to any harm or discomfort. No research is being taken undertaken involving vulnerable participants. However, steps will be taken to ensure that any risk of discomfort will be minimised. This includes establishing informed and uncoerced consent prior to the interview – through the presentation of a detailed information sheet and consent form. Participants will also be informed prior to the interview beginning – both through the consent form and verbally – that if at any point they become uncomfortable they may refuse to answer a question or terminate the interview.

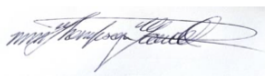
Furthermore, in order to prevent deception, prior to all interviews the research team will make it clear to interview participants the researchers do not represent the Central Otago District Council and are undertaking the research as part of the Master of Planning programme. Thus, participants will be made aware that this research is of an informative nature and not part of official Council decision-making processes. The research team will also wear University of Otago identification while conducting research in public, including on-site visits, in order to

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reinforce this independence from the Council and to attempt to minimise any conflict that could arise from the presence of the researchers in public.

As researchers, we acknowledge that there is likely to be a range of different perspectives between interviewees and thus that interview participants make seek to be advised as to what other interviewees have said within the interview process. Given this, the research team will attempt to ensure that the transfer of information does not occur. Additionally, care will be taken by the researchers to assume a neutral position throughout the interview process. The research team also understand that there are a number of cultural, social, and commercial sensitivities associated with this research project.

All participants will be offered the opportunity to remain anonymous within the research report, although participants may also choose to waive anonymity. Unless this preference to waive anonymity is indicated, participants' identity will be concealed through the use of pseudonyms, and any identifying contextual information will be treated with care so as to avoid as far as possible identifying the individual interviewee. The interviewee will, however, be advised that it is not always possible to fully maintain anonymity from people who know the context well or were also at the events described. Furthermore, given the potentially contentious nature of the research, every attempt will be made to prevent the transfer of information between interviewees.



***Applicant's Signature:**

Name (please print): Michelle Thompson-Fawcett

Date: 18 April 2023

**The signatory should be the staff member detailed at Question 1.*

ACTION TAKEN

- Approved by HOD Approved by Departmental Ethics Committee
 Referred to UO Human Ethics Committee

Signature of **Head of Department: *Douglas Hill*

Name of HOD (please print): ..Assoc. Prof.. Douglas Hill (on deputation).....

Date: ..30/04/2023.....

****Where the Head of Department is also the Applicant, then an appropriate senior staff member must sign on behalf of the Department or School.**

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Departmental approval: *I have read this application and believe it to be valid research and ethically sound. I approve the research design. The research proposed in this application is compatible with the University of Otago policies and I give my approval and consent for the application to be forwarded to the University of Otago Human Ethics Committee (to be reported to the next meeting).*

IMPORTANT NOTE: As soon as this proposal has been considered and approved at departmental level, the completed form, together with copies of any Information Sheet, Consent Form, recruitment advertisement for participants, and survey or questionnaires should be **emailed as one complete fully-signed PDF to HECapplications@otago.ac.nz**

Appendix D: Information Sheet for Interview Participants

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[Reference Number: *as allocated upon approval by the Human Ethics Committee*]

[Date]



Optimal Minimum Allotment Size for Rural Subdivision in Central Otago INFORMATION SHEET FOR PARTICIPANTS

Thank you for showing an interest in this project. Please read this information sheet carefully before deciding whether or not to participate. If you decide to participate we thank you. If you decide not to take part there will be no disadvantage to you and we thank you for considering our request.

What is the Aim of the Project?

The aim of this research is to explore the impact of rural subdivision on highly productive land and to recommend a methodology for determining appropriate minimum allotment sizes within the Central Otago District, ensuring that productive soils and rural open spaces are retained.

What Types of Participants are being sought?

The researchers seek to contact various key stakeholders, who may include residents/ community groups, advocacy group representatives, local businesses, planning consultants, amongst other groups. Interviewees are to be recruited through discussions with Council staff, identification through local media, and word of mouth.

What will Participants be asked to do?

Should you agree to take part in this project, you will be asked to participate in an interview of between 30 and 60 minutes in length. With your permission we will audio record this interview to enable later interview transcription by the researchers.

During the course of the interview, you may refuse to answer any questions, or request a change in topic of conversation. Furthermore, you may request to stop the interview at any time without any detriment to yourself. Participants may also withdraw themselves and any information provided in the interview at any point prior to the 1st of June 2021. Please be aware that you may decide not to take part in the project, or withdraw from this project, without any disadvantage to yourself.

What Data or Information will be collected and what use will be made of it?

This research will involve the use of the semi-structured interview style. This involves the exploration of a series of key topics, and some proposed questions. As a result, the interview process remains open and takes the form of a conversation around these topics. Given this, the

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School of Geography has been made aware of the broad topics of conversation but has not reviewed specific questions. The general line of questioning may include topic areas such as:

- The National Policy Statement for Highly Productive Land (NPS-HPL)
- Land fragmentation within the Central Otago District
- Key environmental characteristics important for successful crop production within your industry
- Key infrastructure requirements for your business
- Existing policy and rules from Regional and Local Council regarding rural subdivision, minimum allotment sizes and the protection of highly productive land.

However, it is critical to note that because the researchers are not using previously prescribed questions, the course of the interview may change based on your answers. As stated above, if you feel uncomfortable at any time you may refuse answer a question, request a change of topic or request that the interview end immediately.

With your expressed permission (please indicate on the attached consent form) we will audio record the interview to be transcribed by the research team. As a result, the audio recording of your interview will be available only to the research team. During the transcription process all participants will be anonymised and referred to using pseudonyms. If desired (please indicate on the consent form) you will be offered the opportunity to have your name publicly available.

No material that could personally identify you will be used in any reports on this study. However, people very familiar with the context may be able to identify you through what is said in the interview process. A final report on the research will be made available to the CODC, however all attempts will be made to provide for anonymity unless you prefer otherwise. The CODC will not have access to any personal or identifying information.

Following the conclusion of the project all identifying information will be destroyed.

Can Participants change their mind and withdraw from the project?

All participants are available to withdraw from the project prior to the 1st of June 2023 without any disadvantage to themselves.

What if Participants have any Questions?

If you have any questions about our project, either now or in the future, please feel free to contact either:-

Tim Boyle

or

Professor Michelle Thompson-Fawcett

School of Geography

School of Geography

boyti447@student.otago.ac.nz

03 479 8762

michelle.thompson-fawcett@otago.ac.nz

This study has been approved by the School of Geography. However, if you have any concerns about the ethical conduct of the research you may contact the University of Otago Human Ethics Committee through the Human Ethics Committee Administrator (ph +643 479 8256 or email gary.witte@otago.ac.nz). Any issues you raise will be treated in confidence and investigated and you will be informed of the outcome.

Appendix E: Consent Form for Interview Participants

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Optimal Minimum Allotment Size for Rural Subdivision in Central Otago CONSENT FORM FOR *PARTICIPANTS*

I have read the Information Sheet concerning this project and understand what it is about. All my questions have been answered to my satisfaction. I understand that I am free to request further information at any stage.

I know that:-

1. My participation in the project is entirely voluntary;
2. My interview responses will be audio-recorded;
3. I am free to withdraw from the project prior to the 1st of June 2023;
4. This project involves a semi-structured questioning technique. The general line of questioning may include areas such as: the NPS-HPL, land fragmentation, key environmental and infrastructural considerations, and opinions on current policy and plans regarding rural subdivision, minimum allotment sizes and the protection of highly productive land. The precise nature of the questions that will be asked has not been determined in advance, but will depend on the way in which the interview develops and in the event that the line of questioning develops in such a way that I feel uncomfortable I may decline to answer any particular question(s) or may withdraw from the project without any disadvantage of any kind;
5. Personal identifying information (such as audio recordings) will be destroyed at the conclusion of the project;
6. Results from this research will be made available to the Central Otago District Council. However, all reasonable attempts will be made to preserve anonymity if this is my preference (please indicate below).

I, as the participant:

- a. Agree that my name can be made publicly available
- OR
- b. Request that my name be kept anonymous

I agree to take part in this project.

.....
(Signature of participant)

.....
(Date)

.....
(Printed Name)

